SUICIDE SCIENCE

Expanding the Boundaries

Edited By
Thomas Joiner
M. David Rudd

Kluwer Academic Publishers

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DEDICATION

To my Aunt Beegee, my Uncle Jim, and my Uncle Bill. And in memoy of their brother (my dad and of their mom and dad.
T.J.

To Loretta, Nicholas, and Emma, for their unwavering love and support.
M.D.R.

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PREFACE

Suicide kills and maims victims; traumatizes loved ones; preoccupies clinicians; and costs health care and emergency agencies fortunes. It should therefore demand a wealth of theoretical, scientific, and fiduciary attention. But in many ways it has not. Why? Although the answer to this question is multi-faceted, this volume supposes that one answer to the question is a lack of elaborated and penetrating theoretical approaches. The authors of this volume were challenged to apply their considerable theoretical wherewithal to this state of affairs. They have risen to this challenge admirably, in that several ambitious ideas are presented and developed.

If ever a phenomenon should inspire humility, it is suicide, and the volume's authors realize this. Although several far-reaching views are proposed, they are pitched as first approximations, with the primary goal of stimulating still more conceptual and empirical work.

A pressing issue in suicide science is the topic of clinical interventions, and clinical approaches more generally. Here too, this volume contributes, covering such topics as therapeutics and prevention, comorbidity, special populations, and clinical risk factors.

On the fronts of theory development and interventions, then, the book indeed expands boundaries. Our hope is that improved theorizing will set off a chain reaction, culminating in more effective clinical approaches, and ultimately, saved lives.

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NEW LIFE IN SUICIDE SCIENCE

Thomas Joiner[1]
Florida State University

Does suicide science need "new life?' On the one hand, no. There are currently many highly creative and careful scientists devoting their careers to suicidology, and in some cases, their work has produced tangible benefits for people grappling with suicidal symptoms. Indeed, some of these scientists have contributed to this volume, and in Chapter 2, David Lester awards his own personal prizes to some of the leading innovators in suicidology.

But on the other hand, yes, the area cries out for new life, particularly in the areas of theorizing and the development and empirical testing of interventions (a sentiment seconded in Lester's self-described "crabby" Chapter 2). Regarding theory, it is remarkable that Durkheim's (1897) work, which is absolutely ancient relative to the field's age, remains a prominent theory of suicide. In my view, this can only be explained in two ways: Either Durkheim had it essentially right, and/or, competing theories have not been sufficiently developed to replace and supersede Durkheim's. It is difficult to make a persuasive case that Durkheim's theory, whatever its merits, was so comprehensive and accurate as to obviate the need for further theoretical refinements. I thus incline toward the view that a theoretical vacuum exists in suicidology, and that this vacuum is filled by the most compelling material available. That Durkheim's work partly fills this vacuum says less about his work than it says about the size and power of the theoretical vacuum.

The development and empirical testing of interventions represents another area where progress is needed. Here, one could argue that the need is even more compelling than in the area of theorizing, for the simple fact that, as I write, people are dying from suicide. Although I very much sympathize with this view, it is partly wrong--theory is at least as important as interventions, because the latter will spring from the former. Readers who doubt this should consider the classic example of phenylketonuria (PKU), which, unlike other forms of mental retardation, is prevented by a diet lacking phenylalanine. Mendels (1970, p. 35) wrote "… had we taken 100, or even 1,000, people with mental deficiency and placed them all on the phenylalanine-free diet, the response would have been insignificant and the diet

would have been discarded as a treatment. It was first necessary to recognize a subtype of mental deficiency, phenylketonuria, and then subject the value of a phenylalanine-free diet to investigation in this specific population." The theoretical explication of PKU was a clear prerequisite for effective intervention, and the lack of such explication may have resulted in the rejection of a very effective treatment. So it may be with suicidality.

On the counts of fresh theorizing and attention to interventions, the current volume fares well. Indeed, one of its main goals was to recruit successful theorists who have primarily focused on topics not directly related to suicidality to apply themselves to suicidality. While the majority of the volume's chapters attend to theory development, explicitly novel theoretical views are offered by Abramson et al. (Chapter 3), Vohs and Baumeister (Chapter 4), Cornette et al. (Chapter 5), Hastings et al. (Chapter 6), Catanzaro (Chapter 7), Riskind et al. (Chapter 8), and Verona and Patrick (Chapter 10). Several chapters mix reviews of relevant theory with development of new hypotheses and clinical implications, prominent among these being the chapters by Schmidt et al. (Chapter 9), Davila and Daley (Chapter 11), Sachs-Ericsson (Chapter 12), and Young et al. (Chapter 13). In four cases, new empirical data are presented to test hypotheses (Hastings et al. in Chapter 6; Schmidt et al. in Chapter 9; Sachs-Ericsson in Chapter 12; Young et al. in Chapter 14).

The novel theoretical perspectives presented in the volume emphasize clinical-social psychological approaches, which, in one sense, is highly appropriate, in that there is a relative lack of persuasive theories from this perspective. On the other hand, the volume's theoretical emphasis is perhaps too exclusive, in that neuroscience is not a focus. Importantly, this is not meant to imply that neuroscience is unimportant in suicidality (anyone who is paying attention to the relevant literature will attest that it is quite important). Rather, I view the current emphasis on clinical-social psychological theory as an invitation for future theoretical integration with neuroscience (and anyone who is paying attention to the relevant literature will affirm that such integrative efforts are likely requirements for comprehensive and rapid progress). Indeed, the chapters by Vohs and Baumeister (Chapter 4), Riskind et al. (Chapter 8), and especially Verona and Patrick (Chapter 10) point the way to promising avenues in this regard

Topics of clinical interest also figure prominently in this volume. Of course, intervention is emphasized, and this is especially the case regarding the three concluding chapters (Kalafatin Chapter 14; King & Knox in Chapter 15; and Rudd in Chapter 16). The authors of each of these three chapters state just how much is left to be done in this area of interventions, which, in my view, is a particularly appropriate way to conclude the volume. But readers interested in issues of comorbidity will not be disappointed (see especially Riskind et al., Chapter 8; Schmidt et al., Chapter 9; Verona & Patrick, Chapter 10; and Davila & Daley, Chapter 11), and indeed, issues of clinical risk factors and targets for therapeutics emerge throughout the entire volume. Several chapters also contain interesting illustrative vignettes (see especially the very interesting case description provided by Abramson et al. in Chapter 3), and address suicidality in particular populations of interest (see especially Chapter 12 by Sachs-Ericsson and Chapter 13 by Young et al.).

To summarize, despite the efforts of some extremely talented scientists, suicidology contains large gaps, particularly in the areas of theorizing and

interventions. The authors of this volume attempt to fill these gaps, but they make clear (either explicitly or implicitly) that these are only attempts—attempts that ultimately should be evaluated relative to their main purpose, which is to spur more penetrating theories and more refined interventions.

A REPRESENTATIVE PROGRAM OF RESEARCH

My own research program in suicidology is representative of both the promise and the pitfalls of suicide science. Together with (and largely because of) David Rudd, I have been able to make contributions in four main areas: Risk assessment; the nature and parameters of suicide crises; interpersonal factors in suicide; and treatment of suicidal symptoms. Across these four areas, the distinctiveness of "multiple attempters" (those who have attempted suicide twice or more), demonstrated by David and I (Rudd, Joiner, & Rajab, 1996) and affirmed by others (e.g., Stein, Apter, Ratzoni, Har-Even, & Avidan, 1998), figures prominently. Below, I address each of the four areas in turn, and then point out areas where my research program has fallen victim to some of the pitfalls of current suicide science.

Clinical Risk Assessment

My colleagues and I showed that the factor space containing suicidal symptoms can be adequately explained by two factors, which we named "resolved plans & preparations" and "suicidal desire & ideation" (Joiner, Rudd, & Rajab, 1997). We showed that, although the presence of symptoms corresponding to either factor is of clinical concern, the symptoms of "resolved plans & preparation'' are, relatively speaking, of more concern than the symptoms of "suicidal desire & ideation" (e.g., "resolved plans & preparation" was more related than " suicidal desire & ideation" to pernicious suicide indicators such as having recently attempted suicide).

The "resolved plans & preparation" factor was made up of the following symptoms: a sense of courage to make an attempt; a sense of competence to make an attempt; availability of means to and opportunity for attempt; specificity of plan for attempt; preparations for attempt; duration of suicidal ideation; and intensity of suicidal ideation. The "suicidal desire & ideation" factor was comprised of the following symptoms: Reasons for living; wish to die; frequency of ideation; wish not to live; passive attempt; desire for attempt; expectancy of attempt; lack of deterrents to attempt; and talk of death/suicide.

We argued that this perspective has considerable clinical value. For example, a patient who expresses a wish to die, who talks of suicide, and who reports frequent suicidal ideation is typically quite worrisome to the clinician. However, in the absence of symptoms from the "resolved plans & preparation'' factor, these symptoms probably do not warrant a high-risk designation.

Two details of this study were particularly interesting. First, features of suicidal ideation load in distinct ways onto the ''resolved plans & preparation" factor and the "suicidal desire & ideation" factor. Specifically, *intensity* and *duration* of ideation load onto "resolved plans & preparation", whereas *frequency* of ideation loads onto "suicidal desire & ideation." Accordingly, we suggested that

intensity and duration of suicidal ideation are more pernicious suicide indicators than frequency of ideation.

Second, items on suicide-related writing (including suicide notes) loaded *negatively* onto the "resolved plans & preparation" factor, indicating that the more a patient is writing about suicide, the *less* s/he is likely to display the other "resolved plans & preparation" symptoms, such as competence, courage, specificity of plan, and so on. We interpret this result in light of the work of Pennebaker and colleagues (e.g., Francis & Pennebaker, 1992), who have argued that writing about personal traumatic experience has long-term beneficial effects on an array of health and functioning indicators. Similarly, we suggest that writing has protective functions in that it reduces impulsive and maladaptive problem-solving, and allows for more effective emotion regulation (both of which skills are key aspects of psychotherapy for suicidal patients; e.g., Rudd et al., 1996).

Based partly on this work, my colleagues and I suggested a general framework for suicide risk assessment (Joiner, Walker, Rudd, & Jobes, 1999). Briefly, we argued that assessment of two domains--history of past attempt and the nature of current suicidal symptoms--when combined with evaluation of other relevant risk factors, produces a relatively objective categorization scheme. Our framework can be summarized as follows: For multiple attempters, *any* noteworthy finding from the domains of current suicidal symptoms, precipitant stressors, general symptoms/hopelessness, predispositions, and impulsivity translates into at least moderate suicide risk. For non-multiple attempters, the combination of notable suicidal symptoms from the "resolved plans & preparation" factor *and* at least one noteworthy finding from the other domains translates into at least moderate suicide risk. For non-multiple attempters who display *no* suicidal symptoms from the "resolved plans & preparation" factor but who *do* display symptoms from the "suicidal desire & ideation" factor, the presence of two or more noteworthy findings from the other domains translates into at least moderate suicide risk.

Another study from our program examined agreement between self- and clinician-rated symptoms of suicidality (Joiner, Rudd, & Rajab, 1999). Of course, ideally, agreement would be high, but discrepancies clearly occur. We found that such discrepancies mostly occurred because clinicians took a (probably advisable) "better safe than sorry" approach, and saw patients as more suicidal than patients viewed themselves. However, patients' self-report was better than clinicians' views at predicting suicidality several months later, suggesting that patient self-report has substantial probative value, even compared to clinician-ratings. Importantly, two sources may contribute to clinicians' over-estimates of suicidality. First, clinicians may view a past history of a single suicide attempt in the same way they view a history of multiple attempt, whereas we argue that only the latter group deserve special categorization. Second, clinicians may be sensitive to patients' personality traits, particularly histrionic personality symptoms, which may serve to artificially inflate clinicians' risk estimates.

Parameters of Suicidal Crises

Remarkably little research has been conducted on the parameters (e.g., intensity, duration) of suicidal crises, not to mention variables that may predict these parameters. Borrowing from past conceptual work on the effect of previous suicidal

and depressive experience on later functioning, we hypothesized that negative events would be related to intensity of suicidal crises among never- and first-attempters but not among multiple attempters, and, that negative events would be related to duration of suicidal crises among multiple attempters but not among never- and first-attempters (Joiner & Rudd, in press). Our results conformed to prediction: Negative events were predictive of intensity of suicidal crises among never- and first-attempters but not among multiple attempters; negative events were predictive of duration of suicidal crises among multiple attempters but not among never- and first-attempters. We concluded that previous suicidal experience alters the parameters of current suicidal crises. These results may be of interest to clinicians. In empirically validated approaches to treating suicidality (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Rudd & Joiner, in press), clinicians who thoroughly assess life events and multiple attempt status may have a better sense of the parameters of unfolding crises, and thus may form more appropriate expectations regarding their patients' clinical course. As one example, even an extremely intense crisis may be relatively temporary, absent precipitant stressors, regardless of multiple attempt status. As another example, a particular crisis, even if mild or moderate in intensity, may nonetheless be protracted among multiple attempters experiencing negative events. We have extended this same framework to a youth sample, with similar results (Joiner, Rudd, Rouleau. & Wagner, in press).

In a similar vein, we examined the idea that suicide crises may have a "cathartic" element (Walker, Joiner, & Rudd, 2000). We found that attempters did not gain immediate symptom relief, at odds with an emotional-venting view of suicide "catharsis." At 1-month follow-up, however, attempters did display a slightly steeper rate of symptom improvement, partially consistent with the view that a gradual process, such as accrual of interpersonal support, is at work, rather than any sort of immediate "cathartic" effect. By 12-month follow-up, these symptom improvements had eroded among multiple attempters, consistent with the view that multiple attempters are at chronically elevated risk for suicidality, even despite sharp post-crisis symptom improvements.

Interpersonal Factors in Suicidality

I have established a line of research on interpersonal factors in depression, but insofar as it is not specific to suicidal symptoms, I will not highlight it (for reviews of it, see Joiner & Coyne, 1999; Joiner, Metalsky, Katz, & Beach, 1999), and will focus instead on two suicide-related contributions. First, I provided a brief review of the phenomenon of suicide clustering and "contagion," and reached some relatively interesting conclusions (Joiner, 1999). I suggested that two general types of suicide cluster have been discussed in the literature; roughly, these can be classified as "mass clusters" and "point clusters." Mass clusters are media-related, and I argued that the evidence for them is not very persuasive; point clusters are local phenomena, and these certainly appear to occur. Because contagion as an explanation for suicide clusters has not been conceptually well developed or empirically well supported, I devised an alternative explanation for why suicides sometimes cluster: People who are vulnerable to suicide may cluster (Le., assortatively relate) well before the occurrence of any overt suicidal stimulus, and, when impinged upon by severe negative events, including but not limited to the

suicidal behavior of one member of the cluster, all members of the cluster are at increased risk for suicidality (which risk may be offset by good social support).

A second contribution in the interpersonal area involves the concept of "help negation," the active refusal of help, including therapy, following an episode of suicidality. As mentioned earlier, multiple attempters are at risk for chronic suicidality, even despite the successful resolution of a suicidal crisis. My colleagues and I demonstrated that help negation is one process by which this may occur (Rudd, Joiner, & Rajab, 1995). Taking a broader perspective, I recently reviewed evidence regarding several other interpersonal processes that may sustain mood-related symptoms, including stress generation, excessive reassurance-seeking, and negative feedback-seeking (Joiner, in press).

Treatment of Suicidal Symptoms

In my personal view, David Lester's "crabby" Chapter 2, and especially his prizes for recent suicide science, omitted two "prize winners," both in the area of interventions: Marsha Linehan and David Rudd. David has allowed me to tag along as we refined and empirically tested a time-limited problem-solving treatment for suicidal symptoms (see especially Rudd & Joiner, in press; Rudd et al., 1996). The treatment is relatively straightforward--one of its merits--and emphasizes interpersonal skill development, distress tolerance and emotion-regulation, and adaptive coping. It appears to work adequately (Rudd et al., 1996), and has been packaged to be accessible to most clinicians in most outpatient settings (Rudd & Joiner, in press).

Pitfalls of the Research Program

Mine has been a reasonable program of research, but like the field in general, it suffers from a lack of an elaborated and heuristic theory. To see this, consider the amount of mileage gleaned from one quasi-theoretical idea; namely, that multiple attempters comprise a distinct group of people. This is no comprehensive theory, and yet it has served as an important heuristic for studies on risk assessment, parameters of suicidal crises, help negation, and "catharsis." If a relatively simple and lower-order heuristic like the multiple attempter concept can bear fruit, I suggest that a more textured and comprehensive theory may bear orchards.

My students, colleagues, and I are trying to redress the research program's theoretical gap by developing the concept of "perceived burdensomeness," partly from within an evolutionary-psychological framework. We have proposed that the perception that one is a burden on loved ones may represent a final common pathway to suicidality. We reasoned that if this were so, "perceived burdensomeness" should specifcally characterize those who complete suicide, even as compared to those who attempt suicide, whereas other dimensions (e.g., hopelessness) may not differentiate completers from attempters. Moreover, we predicted that "perceived burdensomeness" may be related to more lethal means of suicide among those who complete suicide. In two studies of suicide notes, we found some support for our predictions (Joiner et al., 2000; cf. Brown, Dahlen, Mills, Rick, & Biblarz, 1999). Time will tell if this research program rises above the pitfalls emphasized in this chapter; namely, can the concept of perceived

burdensomeness be developed into a relatively comprehensive theory, and will have it implications for more refined and effective interventions?

Notes

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DECADES OF SUICIDE RESEARCH: WHEREFROM AND WHERETO?

David Lester

In 1972, I published a comprehensive review of the scholarly literature on suicide from 1900 to 1970 (Lester, 1972)[1] I ended that book with a quote from Kahne (1966) about the state of suicidology research:

> The monotonous regularity with which the same types of data are reported and the same stereotyped conclusions inferred from information organized in a fashion whose methodological error has long been demonstrated is only too rarely broken by original ventures beyond the conventional. Indeed, most of the literature does not even qualify as research in the sense of any deliberate hypothesis testing or careful evaluation of the theoretical alternatives implicit in a specific set of events associated with a suicide or group of suicides. Polemics alternate with appeals to the self-evident nature of assumptions. Abbreviated reports do not even have a focal point of common reference. This apathetic caricature of scientific contribution is the most obvious single fact emerging from a reasonably conscientious review of the medical suicide literature. (p. 182)

This comment by Kahne agreed with my conclusion, and so I quoted it because, in the be inning of my career, I was too timid to make such a strong statement myself.[2]

I have continued to read and review *everything* written on suicide in the English language (Lester, 1983, 1992, 1999), and as I prepare the fourth (and final) volume, I feel that Kahne's conclusion thirty-two years ago still has merit and, indeed. may be more valid today than in the 1960s.

In this essay, I will take each of the major areas of suicidology research, review its contribution to our understanding of suicide, and make suggestions for the future.

SOCIOLOGICAL STUDIES OF SUICIDE

The classic sociological theory of suicide was proposed by Durkheim (1897). He proposed that two broad social characteristics resulted in suicide -- social integration and social regulation. High levels of social integration resulted in altruistic suicide, while high levels of social regulation resulted in fatalistic suicide. Low levels of social integration resulted in egoistic suicide, while low levels of social regulation resulted in anomic suicide. Durkheim's theory has proven counter-productive for sociological research into suicide. Although many sociologists have written articles and books interpreting the theory, two problems have emerged.

First, the theory has never been tested despite the many research studies which have appeared. Durkheim's theory as written is confused. Because societies can vary in both social integration and social regulation (let us assign three levels to each dimension -- low, medium and high), we can arrive at a 3-by-3 array of cells, each with an assigned level of social integration and social regulation. Thus, societies must be classified into such an array and their suicide rates examined. Only two studies have tried to do this (Rootman, 1971; Lester, 1989).[3]

More importantly, a society low in social integration and moderate in social regulation, for example, would have a high rate of *egoistic* suicide according to Durkheim's theory. Thus, only egoistic suicides should be included in the dependent variable -- not other types of suicide. No sociological test of Durkheim's theory has ever attempted to classify the completed suicides into Durkheim's typology, and so no study has tested the theory appropriately.

Second, Durkheim's theory, like many sociological and psychological theories, has attained the status of a "religion." When social science becomes a religion, the classic books as written become similar to the "Bible," and anyone who modifies the theory is viewed as a heretic. This process impedes scientific progress. One reviewer rejected an article of mine on Durkheim because I included homicide as a dependent variable, and Durkheim did not do this. Another reviewer rejected an article because I used a sample of primitive societies, and again Durkheim did not study these.4

Not only is modifying Durkheim's theory discouraged, the two major alternative theories proposed in recent years have been neglected. Henry and Short (1954) proposed a powerful alternative theory, as did Gibbs and Martin (1964). Both of these theories have been generally ignored by sociologists.

Sociologists should test Durkheim's theory in a methodologically sound manner, give more attention to the theories of Henry and Short and of Gibbs and Martin, and make efforts to propose alternative theories. For example, Lester (1992) suggested a critical mass theory, a social deviance theory, and a subcultural theory, and seven theories based on the major types of criminological theory. More creative thinking along these lines would be welcome. Furthermore, sociologists need to give more attention to nonfatal suicidal behavior (such as suicidal ideation and attempted suicide), as Wilkins (1967) suggested thirty years ago.

PHYSIOLOGICAL APPROACHES TO UNDERSTANDING SUICIDE

Genetics

There have been occasional attempts to demonstrate that suicide has a genetic basis. The statistical rarity of suicide has made this task difficult. One methodologcally sound approach to this issue employs twins, which necessitates finding a sufficient number of monozygotic twin pairs separated soon after birth and raised apart. In all of the published twin-studies on suicide to date, only monozygotic and dizygotic twin pairs raised together have been studied.

An alternative methodology is to compare adopted children whose biological parent completed suicide with adopted children whose parent did not, and no prospective study of this has been published.

Furthermore, even if such studies were to be conducted, the researcher would have to demonstrate that it is the tendency to complete suicide *per se* that is inherited rather than the tendency to suffer from an affective disorder. For example, in the Hemingway family, although there have been five suicides in the family so far (including Ernest Hemingway), it is very likely that the family members have inherited a predisposition for affective disorder rather than for suicide.

Brain Studies

There is a great deal of interest in the possibility that dysfunction in central nervous system neurotransmitters might underlie the appearance of suicide. Serotonin dysfunction, in particular, was thought to provide a neurophysiological basis for depression and perhaps suicide. However, serotonin dysfunction has been found in people with eating disorders, impulsive disorders (such as firesetting) and obsessive-compulsive disorders. Thus, most recently, serotonin has been thought to provide the basis for impulsive behavior, including impulsive suicide.

Ideally, studies of this hypothesis should study neurotransmitters in the brain, but much research is still done on the breakdown products of the neurotransmitters in the cerebrospinal fluid. A recent review of these studies, however, did find consistent evidence for the role of serotonin in suicidal behavior (Lester, 1995).

A perusal of the brain studies indicates that the samples sizes remain woefully small, much too small to provide reliable results or to control for the impact of extraneous variables on neurotransmitter concentrations (such as age, sex, postmortem handling of the brains, psychiatric diagnosis, prior medications, diet, etc.). Multiple regression requires large numbers of subjects. Furthermore, the brain has a large number of regions and structures, and most of the studies in this area study only a limited number of areas. It is time that financial support was provided for a methodologically sound study of large number of brains. Until the results of such studies are available, no useful or promising conclusions can be identified from this area of research.

The research has also been characterized by a failure to control for the severity of psychiatric disturbance and by multiple publication by researchers so that it is difficult to determine whether a paper reports data on new subjects or merely has increased the sample size of an earlier report.

PSYCHIATRIC RESEARCH

Psychiatric research into suicide is dominated by the diagnostic system, a system which has moved away from etiology and toward clusters of associated symptoms. The result is a series of studies on suicide in those with schizophrenia, bipolar affective disorder, borderline personality disorder, etc. It is by no means clear that the predictors of suicide differ in these groups. Indeed, the strongest predictor in most diagnostic groups is depression -- depressed schizophrenics are at greater risk for suicide than non-depressed schizophrenics.

Furthermore, psychiatric research is often methodologically unsound. Perhaps psychiatrists receive very little training in research methodology in their academic training. For example, the spate of studies in recent years reporting a link between sexual and physical abuse in childhood and adolescence and subsequent suicidal behavior has never established that the link is direct. It may be that experience of such abuse directly increases the risk of suicide; or it may be that experience of such abuse increases the level of psychiatric disturbance which in turn increases the risk of suicide. General research on the sequelae of childhood physical and sexual abuse reports an increase in all kinds of disorders, such as substance abuse and eating disorders, in addition to suicidal behavior.

Since the diagnostic system is not etiologically based psychiatric research is rarely theory-based. Thus, the results of the research do not confirm, disconfirm or suggest modifcations to theories of suicide. I think that psychiatry should abandon the diagnostic system it has developed and start exploring the causes of psychiatric disorders beyond simple neurophysiological possibilities.

PSYCHOLOGICAL STUDIES

The ground-breaking psychological research into suicide occurred in the 1960s and 1970s. Neuringer (e.g., Neuringer 1964) carried out a series of studies on the thinking style of suicidal individuals, and Beck (e.g., Beck, Kovacs & Weissman, 1975) illustrated the role of hopelessness. The 1980s and 1990s have exemplified Kahne's earlier critique of the field. The same variables are plugged in, several at a time, to see which are associated with suicidal behavior, variables such as depression, self-esteem, locus of control, emotional disturbance and recent stressors. The ways in which personality traits might interact with one another and with other factors (such as the interpersonal milieu and neurophysiological factors) has not been explored.

Academic psychologists like laboratory analogs. For example, aggression has been studied by experimental psychologists by allowing subjects the opportunity to administer electric shocks to other subjects. Research by experimental psychologists into suicide has been limited by the faillure to find a laboratory analog for suicidal behavior.

The research is limited also by the use of multiple regression. Since it is not sufficient to simply present the simple associations of each predictor variable with suicidal behavior, the entry of several variables in a multiple regression has become a common practice. This means that the dependent variable, in this case suicidal behavior, is assumed to be "caused" by a weighted sum of the predictor variables. Complicated hypotheses cannot be explored by this technique - hypotheses such as "in those with an external locus of control, depression predicts

suicidal behavior, while in those with an internal locus of control, recent stress predicts suicidal behavior."

Consider this formula from Einstein's theory of relativity (Buckwalter & Riban, 1986); the mass M of an object, where V is the observer's speed, C is the speed of light, and Mo is the rest mass of the object is given by the formula:

$$M=M_o/\mathrm{sqrt}(1-V^2/C^2)$$

Multiple regression cannot test this type of relationship between variables.'

Psychological theories of suicide need to become more complex than those hitherto proposed. Causal sequences should be formulated, along with formal theories, and these should be stated in such a way that the researchers are clear how the research must be planned and how the data should be analyzed.

Two final comments. The sex difference in suicidal behavior (in which men are more likely to engage in fatal suicidal behavior while women are more likely to engage in nonfatal suicidal behavior) has long been documented. No new explanations or more adequate explanations have been proposed for this sex difference since the 1970s. The 1980s and 1990s saw a tremendous increase in the focus on the methods used for suicide. Again. there has been almost no psychological studies of the factors affecting choice of method.

FAMILY STUDIES

In the 1960s, a number of studies appeared in which researchers studied family interactions and dynamics in families with and without suicidal members (e.g., Hattem, 1964). Since then, this time-consuming research has been abandoned in favor of a focus on more distal (rather than proximal) variables which are more easily studied (especially by means of self-report questionnaires) and which lead to publications much more quickly. The result is that clinical reports of suicidal patients provide the only insights into the family dynamics of suicide, insights which unfortunately are not complemented by research to test their validity and range of applicability.

PREVENTING SUICIDE

I worked at a suicide prevention center from 1969 to 1971. Almost thirty years later, such centers offer the same services in the same way, and in some ways are less innovative. In the 1960s, the suicide prevention center located at the University of Florida had radio-dispatched crisis teams available around the clock to visit people in crisis in the community. These teams also visited every suicide attempter in the hospital and made contact with the survivors of every completed suicide in the community. These services are no longer provided.

The only recent innovations come from abroad. Befrienders International, headquartered in London, England, has set up e-mail suicide prevention around the world (Wilson & Lester, 1998). In Australia, there is a "consumers" group involved in suicide prevention, and what makes this organization unique is the involvement of suicide attempters as well as survivors (those who have lost a loved-one from suicide).

One program to educate general practitioners about depression and suicide has been carried out and evaluated (in Gotland, Sweden) and found to be effective (Rutz, van Knorring & Walinder, 1989). However, this program seems to have been discontinued, and no new program has been reported.

WHO WERE THE INNOVATORS?

There is no Nobel Prize in suicidology. In the third edition of my review of the literature (Lester, 1992), I awarded my own prizes, which unfortunately for the winners brought no material gain. The criteria for a major contribution are (1) greatly increasing our knowledge in the field, (2) having relevance in subsequent decades, and (3) producing a substantial body of work.

In the 1800s, of course, Emile Durkheim's book on suicide was the major contribution, and it remains perhaps the most cited work in suicidology. Little appeared from 1900 to 1950 that is still cited, but Andrew Henry and James Short proposed their theory of suicide (and homicide) in 1954. This theory integrated both sociological and psychological concepts, and I have found it useful at both levels of analysis for explaining a wide variety of suicidal phenomena.[6]

The 1960s witnessed the brilliant contributions of Edwin Shneidman and Norman Farberow who broke new ground with every paper they published. In the 1960s also, Charles Neuringer produced a series of excellent studies on the thinking processes of suicidal people, especially on their rigid and dichotomous thinking.

In the 1970s, the sociologist David Phillips published a series of studies on imitation effects in suicide, studies followed up in the 1980s by Steven Stack. Also in the 1970s, Aaron Beck developed his hopelessness scale (originally called a pessimism scale) which has since been utilized in hundreds of studies.

In the 1980s, Antoon Leenaars followed up Shneidman and Farberow's work on suicide notes by using the notes to test theories of suicide, and Leenaars remains the major researcher into suicide notes. Steven Stack, in addition to his work on imitation, thoroughly illustrated and explored ecological studies and time-series studies of suicide. Stephen Platt identified the important role that unemployment played in suicide, as well as proposing a subcultural theory of suicide.[7] David Lester produced a series of studies on the impact of restricting access to lethal methods of suicide and sought to propose new theories of suicide.

It does not look as if there will be any awards in the 1990s. I am presently finishing the review of research into suicide in the 1990s, and no one has yet proposed a new theory or explored an area of research in ways that are innovative and which have produced a series of substantial contribution to the field.

WHITHER?

After this somewhat crabby review of the field, what guidelines can be suggested for the future? First, there are many major theories of human behavior and how to change it, primarily those included under the rubric of “theories of personality" and "systems of psychotherapy." These major systems could be explored in greater detail for any insights they may have on the genesis of suicide. Second, new theories should be explored for their possible application to suicide. Recent

developments in cognitive psychology and in social psychology, for example, should be explored for their implications for suicide.

This requires, therefore, that suicide researchers be grounded in theory. Theory provides causal explanations for behavior, explanations which may be amenable to empirical study. Empirical research into suicide needs to be theory-based so that the results have implications for those theories -- confirming them or not, and suggesting ways in which they need to be modified.

In addition, researchers need to be willing to be heretics. We are not involved in an enterprise of studying the history of suicidology. We are trying to break new ground. Past theories, no matter how revered, need to be studied, but then attacked and changed. We need to ask, not "What did Freud or Durkheim say?" but rather, remembering that they were geniuses, "What would they have said had they been writing today with the benefit of current knowledge?"

Where might these new insights come from? The present volume is an example of an attempt to stimulate such insights. The insights can come from any source. In recent years, I have read a book on chaos and written a brief note on the ideas it stimulated regarding suicide; I read books on communication theory and victimology and applied the ideas to suicide; several years ago, 1 proposed theories of suicide paralleling each of the major theories of criminal behavior; recently I worked with an economist to apply economic models to suicide (Lester & Yang, 1997). There are all kinds of opportunities for today's suicidologists, and I wish the contributors to the present volume good luck in their endeavors.

Notes

1. I apologize for using the personal pronoun "I" in this essay, but it seems odd to refer to myself in an impersonal way. Furthermore, this essay does reflect the personal, and perhaps idiosyncratic, views of the author, and thus the use of the personal pronoun is appropriate.
2. Indeed I was so impressed by Kahne's statement that I "wrote in" a vote for him for President of the American Association of Suicidology in an era when the ballot had only one candidate!
3. Few seemed to have read Rootman's article other than myself! Hence, I seem to be the only researcher who has tried to replicate his study.
4. Both articles were subsequently published elsewhere.
5. I was a theoretical physicist as an undergraduate in England.
6. Jack Gibbs and Walter Martin's theory proposed in 1964 has rarely been studied apart from a few recent papers by Gibbs himself. I think that this is because his definition of his explanatory concept of status integration left readers somewhat unclear and his operational measure left readers even more confused. If he had used the concept of role conflict, the theory might have attracted more attention.
7. I omitted Platt's name in the original list (Lester, 1992).

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THE HOPELESSNESS THEORY OF SUICIDALITY[1]

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THE PUZZLE OF SUICIDE

Suicide is perhaps the most paradoxical of behaviors. Over their phylogenetic and ontogenetic pasts, humans have developed many behaviors which aid in their survival. Yet, in suicide, a person intentionally destroys himself or herself. Moreover, despite its defiance of the laws of survival, suicide is not extremely rare. Indeed, the Surgeon General recently declared suicide a serious national threat. In the United States alone, at least 30,000 individuals commit suicide each year which translates into 1 suicide every 20 minutes (Andreasen & Black, 1991). Moreover, this figure probably is a gross underestimate because many deaths reported as accidents actually may be suicides. For example, it has been estimated that at least 15% of all fatal automobile accidents actually are suicides (Finch, Smith, & Pokorny, 1970). For each person who commits suicide, at least 10 more attempt to kill themselves (Andreasen & Black, 1991). Thus, each year over a quarter of a million people in the United States attempt suicide. As with completed suicides, this figure for attempted suicides probably is a gross underestimate. Currently, suicide is the eighth leading cause of death among American adults.

Of particular concern, suicide rates have risen dramatically among American adolescents over the past 3 decades, with estimated increases ranging from 142% (Allberg & Chu, 1990) to 312% (Fingerhut & Kleinman, 1988). Suicide is now the second leading cause of death among individuals between the ages of 15 and 24 in the United States (Bureau of the Census, 1994). According to a 1990 survey, 27% of American high school students thought about suicide, 16% developed a plan, and 8% made an attempt (cited in Rotheram-Borus et al., 1994). Similarly, suicidality is a serious problem on college campuses. Estimates of the percent of American college students exhibiting suicidal ideation over a 1-year period have ranged from 26% (Meehan et al., 1992) to 44% (Rudd, 1989), with approximately 2% making at attempt to kill themselves (Rudd, 1989).

Some intriguing epidemiological facts suggest that psychosocial factors contribute to suicide. First, large international variations exist in suicide rates among European countries with Southern European countries (e.g., Spain and Italy) having the lowest rates and Central European and Scandinavian countries (e.g., Hungary, Austria, and Denmark) the highest rates (Diekstra, 1996). Second, twice as many single people as married people kill themselves, and childless women are more likely to commit suicide than those with children (Hoyer & Lund, 1993). Third, being divorced or widowed increases suicide risk by 4 to 5 times (Davison & Neale, 1998). Fourth, suicide rates rise during economic depression years, remain stable during years of prosperity, and decrease during war years (Davison & Neale, 1998). Finally, as noted above, suicide has increased dramatically among adolescents in the United States over the past 3 decades. We suggest that the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) may be especially useful for understanding the psychosocial processes giving rise to suicidality, ranging from suicidal ideation to completed suicide.

A CASE STUDY

One of us has been seeing a client whose life history tragically illustrates the hopelessness theory of suicidality. Here is her story.

A.B. is a thirty year-old Asian woman who is participating in psychotherapy to relieve her severe, recurrent clinical depression and post-traumatic stress disorder (PTSD). A.B.'s maternal grandparents forced A.B.'s mother to abandon A.B. at birth because A.B.'s biological parents came from different ethnic backgrounds. The grandparents did not want a grandchild of mixed ethnicity. A.B.'s biological mother left her at the hospital, and a nurse from the hospital took A.B. home to raise as her own daughter. A.B. reported that her life went well with this nurse, whom she viewed as her real mother, until the nurse died when A.B. was eight years old.

Social Services then placed A.B. in an orphanage until she turned thirteen years old. A.B. described a great deal of emotional and physical abuse as well as neglect at this orphanage. She recounted that not only did she have few friends but also that the nuns beat her and gave her less food than the other children. For example, A.B. described an incident when other children tormented her until they all got in a fight together. The nuns blamed A.B. for this brawl and made her kneel outside in the glaring sun with her arms spread out without food for a day. Today, when A.B. tries to explain why she was treated this way, the only explanation she can offer is that she had the darkest skin color of all of the children at the orphanage. She said the maltreatment continued until the nuns realized that A.B. was intelligent and performed well in school. Then, A.B. started receiving more food, the nuns stopped hitting her, and they intervened when other children tried to abuse her.

After several years at the orphanage, an Asian woman expressed interest in adopting A.B. The nuns thought that this woman would be an ideal adoptive mother because of her ethnic similarity to A.B. A.B. said that she received many nice gifts from this woman before the adoption became official and she optimistically looked forward to leaving the orphanage. However, this optimism soon turned to pessimism after the adoption when her adoptive mother began regular emotional and physical abuse.

Nearly every day, the adoptive mother undermined what previously had been A.B.'s only refuge from the abuse at the orphanage, her sense of academic achievement and intelligence, by telling her, "You're stupid and have water for brains." Moreover, the adoptive mother severely abused A.B. whenever A,B. did not return home from school at a particular time to answer a phone call from her adoptive mother. One particularly abusive experience occurred when, after A.B. missed the phone call, her adoptive mother returned home, grabbed A.B.'s hair, and slammed her face into the sink. Blood splattered everywhere as the blow broke A.B.'s nose, teeth, and mouth. A.B. fell to the floor while her adoptive mother stood over her and yelled at her to mop up the mess. After several weeks in the hospital for reconstructive surgery, A.B. returned home, and the first thing her adoptive mother told her was, "Don't think you'll get special treatment now." After another missed phone call, the adoptive mother shackled A.B.'s ankles together with a small iron bar connected to fish hooks that pierced through the flesh in her ankles leaving permanent scars. On another occasion when she was fourteen, A.B. was pleasantly surprised when her adoptive mother bought her a nice dress to wear to a wedding. When A.B. returned home for the wedding reception, her adoptive mother told her to go in the kitchen and wash dishes. Fearing that she would be beaten if she stopped to change her clothes, A.B. went directly to the kitchen and started washing dishes. Furious that A.B. was washing

dishes wearing the nice dress she hadjust bought, the adoptive mother ripped the dress off of A.B. in front of all of the guests and ordered her to continue washing dishes in only her underwear as the guests milled around. Eventually, one of A.B.'s adoptive siblings brought her a robe to wear. A.B. endured this consistent, daily abuse for approximatelyfive years until she managed to escape from this home. By this point in her life, A. B. had developed very negative thinking patterns incorporating severe self-blame, anticipation of traumatic consequences, and thoughts of worthlessness and incompetence when she made a mistake or something did not work out.

Many years after escaping from her adoptive mother, A.B. 's biological mother contacted her to begin a relationship. A. B. and her biological mother spent two emotionally intensive week together as A.B. learned the reasons why her mother abandoned her at birth. A.B. 's biological mother decided to live with her and left for one week to collect her possessions. During this short break, A.B. s biological mother was killed in an accident. A.B.'s depression quickly worsened after her biological mother's death. A. B. thought constantly about how alone she was in the world, how she had lost everything she loved, and how she had been abandoned again. A. B. could not conceive of a positive future. Instead, she expectedonly more devastating losses and trauma. In short, A.B. was utterly hopeless and attempted to kill herselfwith a severe overdose of her antidepressant medication. After a 2-month coma, A.B. survived the suicide attempt.

THE HOPELESSNESS THEORY OF SUICIDALITY

According to the hopelessness theory (Abramson et al., 1989), the expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur and that there is nothing one can do to change this situation is a proximal sufficient cause of the symptoms of depression, specifically hopelessness depression. The common language term "hopelessness" captures the two core elements of this hypothesized proximal sufficient cause: Negative expectations about the occurrence of highly valued outcomes (a negative outcome expectancy) and expectations of helplessness about changing the likelihood of occurrence of these outcomes (a helplessness expectancy). Thus, Abramson et al. used the term hopelessness to refer to this proximal sufficient cause. Hopelessness, of course, is an expectation. Insofar as hopelessness theory recognizes that hopelessness is a sufficient but not necessary, cause of the symptoms of depression, this theory explicitly recognizes that depressive symptoms may have multiple causes (e.g., genetic factors). Hopelessness theory, then, presents an etiological account of one hypothesized subtype of depression—hopelessness depression.

Abramson et al. (1989) described the hypothesized symptoms of hopelessness depression (e.g., retarded initiation of voluntary responses, sadness). Drawing on work demonstrating a powerful link between hopelessness and suicide (e.g., Beck et al., 1990; Beck, Brown, & Steer, 1989; Beck et al., 1985; Kazdin et al., 1983; Minkoff et al., 1973; Petrie & Chamberlain, 1983), Abramson et al. speculated that suicidality, on a continuum from suicidal ideation to completed suicide, may be a core symptom of hopelessness depression. Thus, according to the proximal sufficient cause component of the theory, people who become hopeless should become suicidal as well as develop the other hypothesized symptoms of

hopelessness depression. This is precisely what happened to our client A.B. When her biological mother died in an accident, A.B. became profoundly hopeless and attempted to kill herself.

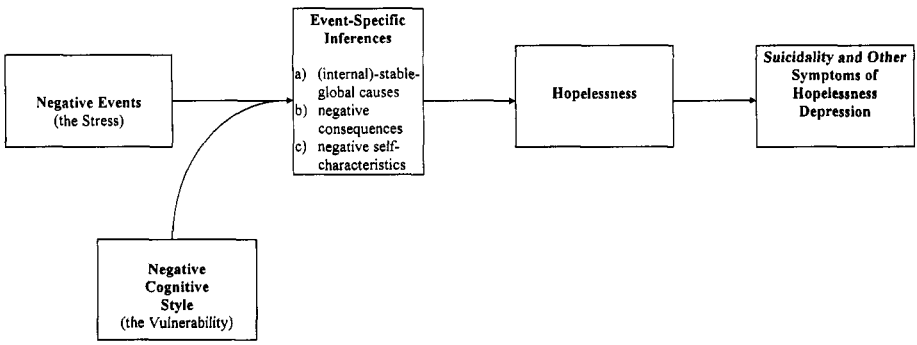

Figure 1. The hopelessness theory of suicidality.

How does a person become hopeless and, in turn, develop the symptoms of hopelessness depression, particularly suicidality? As can be seen in Figure 1, the hypothesized causal chain begins with the perceived occurrence of negative life events (or nonoccurrence of positive events). In the hopelessness theory, negative events serve as "occasion setters" for people to become hopeless. For A.B., the occasion-setting negative event was the death of her biological mother. Three kinds of inferences that people may make when confronted with negative life events contribute to the development of hopelessness and, in turn, suicidality (as well as the other hypothesized symptoms of hopelessness depression): Causal attributions, inferred consequences, and inferred characteristics about the self. In brief, relatively generalized hopelessness and, in turn, suicidality are likely to develop when negative life events are viewed as important, attributed to stable (Le., enduring) and global (i.e., likely to affect many outcomes) causes, viewed as likely to lead to other negative consequences or outcomes, and seen as implying that the person is flawed, unworthy or deficient. (When the causal attribution for a negative life event is internal, stable, and global, hopelessness will be accompanied by lowered self-esteem). In contrast, when negative life events are viewed as unimportant, attributed to unstable, specific causes, viewed as unlikely to lead to further negative outcomes, and seen as not implying that the person is flawed, unworthy, or deficient, relatively generalized hopelessness and, in turn, suicidality are unlikely to develop.

Consistent with her development of hopelessness, A.B. attributed her mother's death to a stable, global cause -- yet another abandonment. Moreover, A.B. viewed her mother's death as extremely important and certain to lead to devastating consequences. For example, A.B. interpreted her biological mother's death as signaling that she now was completely alone in the world and had lost everything that she loved. She expected only more devastating losses and traumas. It was not clear to us whether A.B. inferred that her biological mother's death implied that she, A.B., was flawed in some way. Our clinical understanding of this case was that A.B.'s inferred consequences of her mother's death, rather than her causal attributions for the death or inferences about her own self-worth given the death, were the most potent contributors to her development of hopelessness. As Abramson et al. (1989) suggested ,for a given negative life event, the three kinds of inferences (cause ,consequence, and self-characteristics) may not be equally important in contributing to whether a person becomes hopeless and, in turn, develops suicidality and the other symptoms of hopelessness depression.

It is important to recognize that although the death of A.B.'s biological mother certainly was a negative event, the inferences that A.B. made about the death do not follow inexorably from the fact of the death. It doesn't necessarily follow that A.B. will only suffer more devastating losses and trauma in the future. Indeed, A.B.'s life appeared to be on a positive trajectory prior to her mother's death. For example, A.B. not only was free of her abusive adoptive mother but had successfully made her way to another part of the country and was attending and succeeding in a highly competitive university. One could imagine a positive future for A.B. despite her mother's death, and a cognitive therapist likely would focus on disconfirming A.B.'s extremely negative expectations relatively early in a course of therapy (Beck et al., 1979; Hollon & Garber, 1980). Thus, similar to Beck's (1967, 1987) theory, the hopelessness theory emphasizes that although negative life events initiate the causal chain hypothesized to culminate in suicidality, the inferences that one makes about these events critically influence whether one travels down the chain.

Why did A.B. draw such catastrophic implications of her mother's death? In the hopelessness theory, individual differences in cognitive style influence the content of people's causal attributions and inferences about consequences and characteristics of the self given the occurrence of negative life events. Individuals who exhibit a general style to attribute negative events to stable, global causes, view these events as very important, infer that current negative events will lead to further negative consequences or outcomes, and infer that the occurrence of negative events means they are flawed, unworthy, or deficient should be more likely to make these depressogenic inferences about a given negative life event than individuals who do not exhibit this negative cognitive style. We use the phrase "cognitive vulnerability" to refer to this depressogenic inferential style. However, in the absence of negative life events, people exhibiting the cognitive vulnerability should be no more likely to develop hopelessness and, in turn, suicidality than people not exhibiting cognitive vulnerability. This aspect of hopelessness theory is a vulnerability-stress component: the negative cognitive styles are the vulnerability and negative life events are the stress. Cognitive vulnerability in a particular content domain (e.g., for interpersonal events) provides *specific vulnerability* when a person is confronted with negative events in that same domain (e.g., social rejection). This specific vulnerability hypothesis requires that there be a match

between the content areas of an individual's cognitive vulnerability and the negative life events he or she encounters for the cognitive vulnerability-stress interaction to predict the development of suicidality.

Over the course of therapy, much evidence suggested that A.B. exhibited marked cognitive vulnerability across a wide variety of domains. She, then, would be much more likely to make hopelessness-inducing inferences following the death of her biological mother than another individual not exhibiting cognitive vulnerability. We speculate (see section below on "Developmental Origins of Cognitive Vulnerability to Suicidality") that the horrific maltreatment A.B. experienced during development importantly contributed to the formation of her cognitive vulnerability to suicidality. Another individual, also given up for adoption by her biological mother at birth, but placed soon after in a loving home might have developed a much more positive cognitive style and, thus, have drawn very different inferences about the death of the biological mother after finally meeting her. The individual with the positive cognitive style may have mourned the loss of the biological mother but also have felt some closure, albeit bittersweet, about her past, and may have been ready to meet the future armed with the images of a biological mother who had loved her all these years from afar and adoptive parents who cherished and nurtured her.

Evidence for the Hopelessness Theory of Suicidality

As discussed above, according to the hopelessness theory (Abramson et al., 1989), suicidality, on a continuum from suicidal ideation to completed suicide, is a core symptom of hopelessness depression. Therefore, individuals exhibiting the hypothesized cognitive vulnerability featured in the hopelessness theory (i.e., a tendency to attribute negative events to stable, global causes, infer that negative consequences will follow from current negative events, and believe that the occurrence of negative events means that the self is flawed) should be at risk for suicidality, mediated by hopelessness.

Although work has only just begun to test whether the more distal negative cognitive styles provide risk for suicidality, a vast number of studies have demonstrated a powerful link between hopelessness and suicidality among adults. In one of the earliest studies, Beck, Kovacs, and Weissman (1975) found that hopelessness was a better indicator of current suicidal ideation among suicide attempters than depression. Moreover, in prospective studies, hopelessness predicted eventual suicide over a 10-year period among adult patients hospitalized with suicidal ideation (Beck et al., 1985; Beck, Brown, & Steer, 1989) and adult psychiatric outpatients (Beck et al., 1990). Finally, suicide expert Edwin Shneidman (1992) constructed a "suicidal scenario," a summary of the 6 elements usually present in the decision to take one's life, based on accounts of people who survived suicide attempts and research on those who died. One of these elements was, "An overwhelming desperate feeling of hopelessness -- a sense that nothing effective can be done." (pp. 51-52).

Among adolescents, the relationship between hopelessness and suicidality is less clear (for a review, see Weishaar, 1996). For example, paralleling findings with adults, Kazdin et al. (1983) found that suicidal intent was more consistently related to hopelessness than to depression among psychiatrically disturbed inpatient

children. In contrast, Cole (1989) reported that among high school students, hopelessness was unrelated to suicidal behaviors for boys and only modestly related for girls when depression was statistically controlled. Future work is needed to determine why the link between hopelessness and suicidality is less robust among children and adolescents than among adults,

In contrast to the large well-established body of work on hopelessness and suicidality, research testing whether negative cognitive styles provide vulnerability for suicidality, mediated by hopelessness, is still in its infancy. In a longitudinal test of the cognitive vulnerability-stress hypothesis, Priester and Clum (1992) reported that college students with a style to attribute negative events to stable causes exhibited greater hopelessness and suicidal ideation in response to a low exam grade than students who did not exhibit this attributional vulnerability. In a prospective test of the specific vulnerability hypothesis, Joiner and Rudd (1995) found that college students with a stable, global attributional style for negative interpersonal events showed increases in suicidality when they experienced interpersonal stressors. Consistent with domain specificity, a depressogenic attributional style for negative achievement events did not predict suicidality in response to interpersonal stressors. However, contrary to prediction, hopelessness did not mediate the relation between the depressogenic attributional style for interpersonal events and increases in suicidality.

The behavioral high-risk prospective design (Depue et al., 1981) utilized in our two-site Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Alloy & Abramson, 1999) enables a powerful test of the hopelessness theory of suicidality. Similarly to the genetic high-risk paradigm, the behavioral high-risk design involves studying individuals who currently do not have the disorder of interest but who are hypothesized to be at high risk for developing the disorder. In the CVD Project, university freshmen who were nondepressed and had no other current Axis I psychopathology at the outset of the study, but who we selected to beat high or low risk for hopelessness depression based on their cognitive styles, were followed prospectively every 6 weeks for approximately 2 and 112 years and then every 16 weeks for 3 more years with questionnaire self-report and structured interview assessments of negative life events, cognitions including hopelessness, symptoms including suicidality, and diagnosable episodes of psychopathology. In this chapter, we report results for the initial 2 and 112 year prospective follow-up period (Abramson et al., 1998).

Consistent with prediction, Abramson et al. (1998) reported that the high cognitive risk (HR) participants were more likely than the low cognitive risk (LR) participants to exhibit suicidality, measured by both structured diagnostic interview and questionnaire self-report, during the 2 and 1/2 year prospective follow-up period. Moreover, also consistent with prediction, hopelessness appeared to mediate the obtained relationship between cognitive vulnerability and suicidality. That these theoretically predicted effects were maintained even when prior history of suicidality was controlled is noteworthy. Controlling for prior history of suicidality in tests of the cognitive vulnerability hypothesis may be unduly conservative because prior history of suicidality may, itself, be a result of cognitive vulnerability (see also Alloy et al., 1999a; Meehl, 1971). Because Abramson et al. (1998) defined cognitive risk "generically" by using measures of cognitive vulnerability derived from both the hopelessness theory and Beck's (1987) theory, it is not possible to

determine whether the negative cognitive styles featured in the hopelessness theory, by themselves, predicted the development of suicidality.

Abramson et al.'s (1998) study design also permitted examination of the cognitive vulnerability hypothesis of suicidality in the context of other hypothesized risk factors for suicidality not explicitly specified in the hopelessness theory, including past suicidality (e.g., Beck, Steer, & Brown, 1993; Hawton, 1987), personal history of depressive disorders (e.g., Hawton, 1987; Lewinsohn, Rhode, & Seeley, 1993), borderline (Isometsa et al., 1996) and antisocial (Garvey & Spoden, 1980) personality dysfunctions, and parental history of depression (e.g., Brent et al., 1994; Wagner, 1997). Of interest, with the exception of anti-social personality dysfunction, HR participants were more likely than LR participants to exhibit all of these other risk factors. The fact that the theoretically predicted relationship between cognitive vulnerability and suicidality did not vanish when these other hypothesized risk factors were controlled suggests that they were not mediating the effects of cognitive vulnerability. Finally, Abramson et al. (1998) obtained strong support for hypotheses linking these other factors to suicidality, even when controlling for cognitive vulnerability. Thus, there appears to be a family of risk factors for suicidality that are related to one another but operate at least somewhat independently.

A limitation of Abramson et al.'s report is that they did not evaluate the role of negative life events in examining the relationship between cognitive vulnerability and suicidality. A core prediction of the hopelessness theory is that it is only in the presence of negative life events that cognitive vulnerability will increase the likelihood of suicidality (Joiner & Rudd, 1995). Insofar as we (Alloy & Abramson, 1999) measured negative life events during the prospective period, we will be able to perform a test of ths critical cognitive vulnerability-stress hypothesis of suicidality in the future.

At a general level, Abramson et al.'s (1998) results corroborated other work suggesting that suicidality is a serious problem on the college campus. Based on a metric derived from their diagnostic interview, 20% of Abramson et al.'s college student participants exhibited suicidality at least once during the 2 and 1/2 year period. Study participants reported a range of suicidality from suicidal ideation to attempted suicide. A typical example of mild suicidal ideation involved a participant who had thoughts of stepping out in front of a moving car. Other participants acted on their suicidal ideation in some way without actually making a suicide attempt. For example, one participant went to the top of a high rise dorm and threatened to jump off, but did not actually jump. Finally, one participants made an apparent suicide attempt, but was saved by the intervention of another person. In this case, the participant swallowed hydrogen peroxide, but was taken to the hospital by her boyfriend and recovered. No study participants died by suicide during the prospective follow-up period.

In sum, work on the hopelessness theory of suicidality is promising. Further tests of the cognitive vulnerability-stress component of the theory should be a high priority. In addition, the role of hopelessness in child and adolescent suicide needs to be more completely elucidated. Moreover, the relationship between the constructs featured in the hopelessness theory of suicidality and the "problem solving deficits" found to characterize suicidal individuals in a wide variety of studies (e.g., Bonner & Rich, 1988; D'Zurilla, Chang, Nottingham, & Faccini, 1998) needs to be clarified. Specifically, do cognitive vulnerability and

hopelessness contribute to poor problem solving which, in turn, contributes to the belief that suicide is the only solution to a life problem? This chain of events would be consistent with the logic of the hopelessness theory insofar as hopelessness is hypothesized to lead to decreases in voluntary responses (Abramson et al., 1989) which would be expected to compromise problem solving activity. Alternatively, the possibility that poor problem solving abilities would predispose people to hopelessness when confronted with difficult situations also is compelling. Perhaps a reciprocal relationship exists between hopelessness and problem solving deficits. Given that the hopelessness theory of suicidality evolved independently of the vast literature on problem solving deficits and suicidality, integration of these two theoretical domains will be important (e.g., D'Zurilla et al., 1998).

SUBINTENTIONAL DEATH AND SELF-DESTRUCTIVE BEHAVIORS

We typically think of suicide as an intentional act explicitly designed to terminate one's life such as shooting oneself in the head. However, self-destructive behaviors such as consuming large amounts of alcohol over many years also may be related to intentional suicide. Indeed, suicidologists regard such self-destructive behaviors as suicidal and term them "subintentional death" (Shneidman, 1973). Do similar processes underlie intentional suicide and subintentional death?

Recent work by Peterson (1995) suggests that cognitive vulnerability is related to a wide variety of self-destructive behaviors. Specifically, Peterson and colleagues have examined the relationship between attributional vulnerability and health-relevant behavior. Individuals exhibiting attributional vulnerability (i.e., the tendency to make internal, stable, global attributions for negative events) smoke, drink, and refrain from exercise more than individuals with positive attributional styles (Peterson, 1988). Moreover, individuals with attributional vulnerability often respond passively when they fall ill &in & Peterson, 1990). In contrast, individuals exhibiting positive attributional styles take active steps such as visiting a doctor in order to feel better (Peterson, Colvin, & Lin, 1992).

An important question is whether the apparently self-destructive behaviors of cognitively vulnerable individuals actually hasten their deaths. A first step in answering thls question is determining whether cognitive vulnerability is associated with poor health outcomes which, in turn, may predispose earlier death. To this end, Peterson, Seligman, and Vaillant (1988) examined the relationship between attributional vulnerability and health among men over a 35-year prospective interval using data from the Harvard Study of Adult Development begun in 1937. Overall, as expected, the physical health of the men worsened as they grew older. However, individual differences in healthiness among the men also increased over the years. Although all of the men exhibited very good physical health at the outset of the study given the stringent selection criteria (e.g., 30% of potential participants were excluded from the study at the outset for reasons of poor physical and/or psychological health), some became quite sickly as they grew older. Results indicated that men exhibiting attributional vulnerability at age 25 were less healthy later in life then their more positive attributional style counterparts, even when initial physical and emotional health were controlled statistically. In particular, attributional vulnerability was unrelated to health at ages 30-40, but after that a relationship emerged that was most robust at age 45.

To test the generality ofthe relationship between attributional vulnerability and poor health, Peterson (1988) examined the relationship between attributional vulnerability and physical illness in a 30-day prospective study among college students. Results indicated that students exhibiting attributional vulnerability reported more days of illness, chiefly colds and flu, than students with more positive attributional styles.

These initial findings of a relationship between attributional vulnerability and the development of illness and poor health are intriguing. Future work is necessary to determine whether the other components of cognitive vulnerability, the tendencies to infer negative consequences and negative implications about the self when negative events occur, also contribute to poor health. In addition, it will be important to ascertain whether poorer health outcomes attained by cognitively vulnerable individuals contribute to earlier death. Finally, it will be critical to determine whether the self-destructive behaviors exhibited by cognitively vulnerable individuals actually are contributing to these individuals' poorer health (and earlier death?) or whether some other mechanism is at work. Ifself-destructive behaviors do mediate the relationship between cognitive vulnerability and poorer health and, in turn, earlier death, it would seem that similar processes, at least in part, underlie suicidality as typically defined and subintentional death.

DEVELOPMENTAL ORIGINS OF COGNITIVE VULNERABILITY TO SUICIDALITY

If negative cognitive styles do confer vulnerability for suicidality, as the work reviewed above is beginning to suggest, then it is important to understand the antecedents of these cognitive styles. What are the developmental origins of cognitive vulnerability to suicidality? In the CVD Project, we directly studied the parents ofthe cognitively HR and LR participants with respect to parents' cognitive styles, parenting behaviors, psychopathology, and personality as well as the HR and LR participants' early childhood life events and neglect and maltreatment experiences. Below, we briefly review preliminary findings from the CVD Project on possible developmental precursors ofnegative and positive cognitive styles. We emphasize that the CVD Project findings presented in this section indeed are preliminary because analyses still are in progress. Moreover, many of our initial explorations of potential precursors of cognitive styles have relied on retrospective designs and, thus, should be construed as generating hypotheses for more definitive testing with future prospective designs.

Parental Psychopathology and Children's Cognitive Vulnerability to Suicidality

Prior research (e.g., Wagner, 1997) has demonstrated that children of depressed parents are at increased risk for suicidality. Parental depression may contribute to the development ofdepressogenic cognitive styles and, thus, cognitive vulnerability to suicidality in their offspring through a variety of mechanisms including genetic transmission, modeling, and negative parenting practices, among others. To explore the possible familial origins of negative cognitive styles, Abramson et

al.(1999) examined the association between CVD Project participants' cognitive risk status and their parents' depression based on the participants' reports of their parents' psychiatric history using the family history method as well as direct interview of the parents themselves. Both child and parent reports about parents' depression were consistent in showing greater lifetime depression in the mothers of HR than LR individuals. These findings are consistent with the hypothesis that mothers' depression may contribute to the development of cognitive vulnerability to suicidality in their offspring Future work is necessary to determine precisely how mothers' depression contributes to cognitive vulnerability to suicidality in their offspring.

Developmental Maltreatment and Cognitive Vulnerability to Suicidality

Rose and Abramson (1992) hypothesized that a developmental history d maltreatment and neglect may contribute to the origins of cognitive vulnerability to depression and suicidality. Noting that research on "depressive realism" suggests that depressives may not be as irrational as originally portrayed in Beck's cognitive distortion theory of depression (e.g., Alloy, Albright, Abramson, & Dykman, 1990), Rose and Abramson (1998) suggested that people's negative cognitive styles might be the internal representations of maltreatment or adverse environments they actually experienced rather than cognitive distortions. On this view, our client A.B.'s marked cognitive vulnerability would be her internal representation of the chronic and severe maltreatment she endured. Consistent with this hypothesis, we found that HR participants in our CVD Project reported more developmental maltreatment than did LR participants (Gibb, Alloy, & Abramson, 1999a). Moreover, cognitive vulnerability was linked more specifically to emotional, rather than sexual or physical, maltreatment during development. Thus, as Rose and Abramson (1992) suggested, emotional maltreatment may be a particularly virulent contributor to cognitive vulnerability to suicidality because, unlike physical or sexual maltreatment, the abuser, by definition, supplies negative cognitions to the victim. Consistent with this hypothesis, we(Alloy et al., 1999b) also found, based on CVD participants' reports of parental behavior, that both mothers and fathers of HR participants provided more depressogenic feedback about causes and consequences of negative life events that happened to their child(i.e., CVD participants) than did mothers and fathers of LR participants.

Given these results supporting Rose and Abramson's (1992) hypothesis about the origins of negative cognitive styles as well as work demonstrating a link between developmental maltreatment and suicidality (e.g., Browne & Finkelhor, 1986), we (Gibb, Alloy ,& Abramson, 1999b) have just begun preliminary analyses with CVD Project data of the role of cognitive vulnerability and hopelessness in mediating the link between developmental maltreatment and suicidality. Results indicated that hopelessness, but not cognitive vulnerability, mediated the link between reported maltreatment during development and suicidality during the prospective follow-up. Although these data cannot establish that the association between early maltreatment and subsequent hopelessness/suicidality is causal, they are consistent with the hypothesis that developmental maltreatment predisposes hopelessness and, in turn, suicidality. These results underscore the importance of future prospective tests of this hypothesis with children. Insofar as suicidality has

become a major problem for middle and older adolescents, we will conduct further analyses to more fully explore the relations among developmental maltreatment, cognitive vulnerability, hopelessness, and suicidality among our CVD participants.

CONCLUSION

We have reviewed promising evidence for the hopelessness theory of suicidality. Moreover, we have begun to explore the developmental origins of cognitive vulnerability to suicidality. Many important theoretical issues remain to be addressed such as further examination of the vulnerability-stress component of the theory. Moreover, prospective studies with young children are needed to more definitively explore the developmental origins of cognitive vulnerability to suicidality. A particularly intriguing question is how "plastic" is cognitive vulnerability to suicidality? How may this vulnerability change over the lifetime? Finally, the logic of the hopelessness theory suggests that some individuals may become so profoundly hopeless that they cannot muster the effort to kill themselves even though they desperately want to die. Will future research identify individuals who are too hopeless to commit suicide? If their hopelessness does not remit, what happens to such individuals?

Given the apparent paradox of suicide, it is crucial to understand the psychosocial processes culminating in this outcome. The work reported in this chapter suggests that the hopelessness theory of suicidality may contribute to such understanding. In turn, theoretical understanding of the processes underlying suicidality has considerable significance for alleviating and perhaps even preventing the tragedy of suicidality, such as experienced by A.B.

Notes

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ESCAPING THE SELF CONSUMES REGULATORY RESOURCES: A SELF-REGULATORY MODEL OF SUICIDE

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Human life is often regarded as a precious opportunity, a divine gift, a sacred obligation, or a lucky and beautiful source of joy. Consistent with this positive outlook, most human beings - like most animals - cling to life tenaciously and fight to preserve and prolong it to the utmost. Yet a small slice of humanity seems to hold a very different attitude, to the extent of willingly and actively trying to end their own lives. Why?

Many theories have been put forward to account for suicide, including Freud's theory of inward aggression (Freud, 1916; cf. Farmer, 1987), sociological theories regarding social integration (Durkheim, 1897/1963), and biological theories on the role of hormones (Lester, 1988) and neurochemical processes (e.g., low serotonin, see Golomb, 1998). Baumeister (1990b) proposed a social psychologcal account of suicide, in which he argued that suicide attempts are the result of a desire to alleviate aversive self-awareness. According to this view, reducing self-awareness eases the negative affect and self-blame that stem from unfavorable self-comparisons. However, a further consequence of reducing self-awareness is the removal of inhibitions that normally constrain suicidal behaviors (among other things). Thus, suicide attempts may result from escalating efforts to lessen painful self-awareness.

Emotion has long been recognized as an important factor in suicide (e.g., Kovacs, Beck, & Weissman, 1975). Although the exact nature of the relationship between negative affect and suicide has been difficult to identify, it is clear that

negative affect or at least anhedonia is involved (see Baumeister, 1990b; Fawcett, Busch, Jacobs, Kravitz, & Fogg, 1997). The role of attention is also decisive; in fact, attending to the discrepancy between current achievements or conditions and personal standards is often what sets off the negative affect and distress (see Carver & Scheier, 1981; Duval & Wicklund, 1972). Thus, attention and affect are crucial variables in Baumeister's suicide model, as these variables combine to create a state of aversive self-awareness from which the unhappy person tries to escape.

If people could manage to regulate their attentional processes or emotional states, they might be able to alleviate this aversive state with means less drastic than suicide. Unfortunately, however, the very attempt to regulate attention and emotion may deplete some resources that could otherwise be used to exit the suicide spiral. The purpose of this chapter is to combine escape theory with a resource model of self-regulation to clarify the causal processes that lead to suicide. Recent works on self-regulation have begun to incorporate resource models (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister & Heatherton, 1996; Baumeister, Heatherton, & Tice, 1994; Vohs & Heatherton, 1999). The central idea is that attempts to change or otherwise regulate the self's thoughts, emotions, impulses, behaviors, and performances consume some common resource that is then depleted afterward. This state of ego depletion entails an impairment in volition: the depleted self is less able to regulate itself, is more passive, and less able to exert volition in any other sphere (such as making choices or taking responsibility). When people attempt to escape from the self, their initial efforts may focus on trying to alter their emotional states or reduce the high awareness of personal failures and inadequacies. These attempts to regulate attention and emotion may deplete the limited resource, leaving one more vulnerable to suicide.

ESCAPE MODEL

Escape theory focuses on the social psychological factors that motivate suicide, emphasizing the role of unfavorable self-comparisons. Baumeister (1990b) delineated a stepwise model of escape. The process starts with some event that produces or makes salient a discrepancy between one's goals or expectations and one's actual current state. Falling short of important personal standards triggers feelings of self-blame and creates doubts about the attainment of future goals, resulting in internal, global, and stable attributions for negative events. Attributing failure to the self heightens self-awareness, thereby making salient the discrepancy between current states and personal goals. Furthermore, self-blame and heightened self-awareness are unpleasant states that generate intense negative affect. Heightened self-awareness in conjunction with self-directed negative affect is an acutely unpleasant state from which people want to escape.

To reduce negative affect and aversive self-attention, people engage in a process of cognitive deconstruction, which involves narrowing attentional focus to relatively concrete, meaningless, nonevaluative stimuli and thereby cutting off the high levels of meaningful interpretation that give rise to self-evaluation and emotion (Baumeister, 1990a; Vallacher & Wegner, 1987). Cognitive deconstruction is marked by an orientation to the present, an awareness of physical sensations and concrete stimuli (to the neglect of higher-order, complex, and meaningful thoughts), and an emphasis on proximal goals. There are both affective and attentional

consequences to cognitive deconstruction. Attention is shifted to awareness of concrete perceptions, and it recognizes the self only in terms of bodily sensation and physical movement. Affect is minimized because meaningful analysis of the self's goals and projects are prevented.

The behavioral outcomes of cognitive deconstruction include disinhibition, passivity, flat or absent affect, and irrational and illogical thought (Baumeister, 1990b; Carver & Scheier, 1981; Vallacher & Wegner, 1987). Given that higher-order cognitions are rejected in this state, inhibitions - including those that guard against self-destructive behavior - are also absent. In this disinhibited condition, the individual is free to entertain thoughts of suicide.

When successful in maintaining cognitive deconstruction, the individual is detached, passive, and unaware of the self in a meaningful manner. However, when both a lower-level and a higher-level identity are available, there is a tendency for the higher-level identity to become the operative level. Thus, a deconstructed state is difficult to maintain and does not last long (Vallacher & Wegner, 1987). This cycle of aversive self-awareness leading to cognitive deconstruction, which eventually leads back to aversive self-awareness, does not continue inevitably. Ultimately, individuals exit the cycle in one of two ways: they accept their personal failings and ascribe higher-order meaning to the painful experience (e.g., Taylor, 1983; see also Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998) - or they attempt a more lasting escape from self, which may involve suicide.

SELF-REGULATORY RESOURCE MODEL

Self-regulation involves setting goals, altering the self to achieve them, monitoring progress toward them, and sustaining efforts to continue the process until the goals are reached. Self-regulation often requires overriding a natural, habitual, or learned response by altering behavior, thoughts, or emotions. This process involves interrupting a response by changing or modifying it, substituting another response in its place, or blocking an additional response from occurring (Baumeister, 1998; Baumeister et al., 1994). Self-regulation is involved in activities as varied as rising out of bed in the morning, persevering on a distasteful task, inhibiting a joyful smile or angry remark, suppressing unwanted thoughts, and quitting smoking.

A recent conceptualization views self-regulation as a limited resource that controls impulses and desires (Baumeister & Heatherton, 1996; Heatherton & Baumeister, 1996). According to this model, self-regulatory resources can be temporarily depleted or fatigued by self-regulatory demands, such as when people try to resist temptation (Vohs & Heatherton, 1999). Empirical studies (e.g., Glass, Singer, & Friedman, 1969; Gross & Levenson, 1997) as well as theoretical postulates (e.g., Freud, 1923/1961; Mischel, 1996) have suggested that resource models appropriately represent self-regulatory mechanisms. Direct evidence for a resource model of self-regulation is beginning to accumulate. Research by Baumeister, Bratslavsky, Muraven, and Tice (1998), Muraven, Tice, and Baumeister (1998), and Vohs and Heatherton (1999) has demonstrated that self-regulatory endeavors deplete self-regulatory resources. In these studies, participants were asked to engage in an act of self-regulation (e.g., mental control or regulation of emotional expression). Subsequently, participants' self-regulatory capacity on an separate task (e.g., physical stamina) was assessed. The results of these studies

indicate that the second act of self-regulation is often impaired as a result of the initial act, suggesting that both acts require some common resource that was depleted by the initial act. These results run contrary to other possible models of self-regulation. For example, an information-processing, skill, or schematic model might predict that the initial act of self-regulation would prime the regulatory schema and hence improve (instead of impairing) performance on the second act. The implication is that all acts of self-regulation depend on a shared resource that operates like an energy or strength. In practical terms, the ability of the self to regulate itself is severely limited (see also Baumeister, in press; Muraven & Baumeister, in press).

INTEGRATING SELF-REGULATORY RESOURCES INTO ESCAPE THEORY

The escape model of suicide posits that the suicide spiral begins with the perception of not meeting important standards - that is, a self-regulatory failure. If the failure is attributed to the self, the individual will likely experience shame, guilt, and doubts about the capacity to meet future standards. A state of self-doubt and negative &ci is similar to the conceptualization of a threat response in the coping literature. Such a response follows from a perception that one does not possess the necessary resources to cope with environmental demands (Lazarus & Folkman, 1984; Tomaka, Blascovich, Kibler, & Emst, 1997). Threat appraisals are associated with negative affect, perceived inefficacy, and disorganized physiological reactions that can be viewed as a signal of approaching self-regulatory demands. Thus, perceived self-regulatory failure and perceptions of impending failure begin the suicidal cycle.

Emotions come to the forefront at this point in the spiral. Belief that one cannot reach self-standards is distressing (e.g., Higgins, 1987). Subsequently, the individual may engage in affect regulation, a common response to feelings of distress (Tice & Baumeister, 1993). Whether in the form of suppressing depressive thoughts (e.g., Wenzlaff, Wegner, & Roper, 1988) or dwelling on setbacks (Nolen-Hoeksema, 1998), attempts to control one's affective state are generally unsuccessful. Moreover, research has demonstrated that controlling emotional responses depletes self-regulatory resources (Muraven et al., 1998; Vohs & Heatherton, 1999). Therefore attempts to regulate emotional distress, which lead to decreased self-regulatory resources, may hinder the capacity for subsequent acts of self-control.

After failing to manage negative affect, attention regulation is attempted as an indirect method of reducing aversive self-awareness. The goal of regulating attention is to achieve a state of cognitive deconstruction, wherein attention is focused on low levels of awareness. But as mentioned, a deconstructed state is difficult to maintain; hence, regulatory resources are required to sustain attention at the lowest possible level.

As outlined above, suicidal individuals may limit their ability to withdraw successfully from the escape cycle by expending great amounts of self-regulatory resources to control affect and attentional states. Initially, the individual enters the cycle by believing that a recent behavior does not meet relevant standards. If this event leads to internal, stable, and global attributions, and raises doubts about the ability to achieve future personal goals, one's capacity for successful self-regulation is in question. According to the present model, these processes deplete self-

regulatory resources. More importantly, however, perceptions of self-regulatory failure create a heightened demand on self-regulatory resources by necessitating affect and attention regulation. First, one tries to pacify intense feelings of negative affect directly, by controlling one's emotional state. When this fails (which it generally does; see Wegner, 1994), the person embarks on cognitive deconstruction. At each step, self-regulatory resources become further depleted, leaving the person less and less able to manage negative affect and aversive self-awareness effectively. Ultimately, this cycle of attentional and emotional regulation ends, either by allowing for the presence of setbacks and personal imperfections or, for a small number of people, by escaping the self through suicide.

Self-regulatory resource depletion may occur either suddenly or gradually. If a catastrophic event elicits an overwhelming sense of negative affect and self-deprecating attributions, self-regulatory resources may be so overwhelmed that the person immediately starts craving a total escape from self. Conversely, regulatory resources may erode gradually with multiple attempts at self-regulatory control, thereby becoming more depleted each time, and so the suicidal intention takes firm more gradually.

Supportive Evidence

Space prevents us from attempting a comprehensive search of the suicide research literature for supporting evidence here, but several important findings and patterns deserve mention. We shall focus on the fact that two consequences of cognitive deconstruction-disinhibition and passivity-are empirically linked to self-regulatory resource depletion (Baumeister et al., 1998; Muraven et al., 1998; Vohs & Heatherton, 1999). First we review features of disinhibition and passivity in light of the self-regulatory depletion model. Subsequently, we review supportive evidence from suicide models and neuroscience that links self-regulatory impairment to suicide.

Disinhibition is a classic sign of self-regulatory failure. Research on self-regulatory resources by Vohs and Heatherton (1999) has demonstrated that attempts at self-regulation are followed by disinhibition, presumably due to depleted self-regulatory resources. In these studies, chronic dieters were asked to engage in activities that varied in their need for self-regulation, such as watching a movie while seated close to or far from a bowl of chocolate candies. Later, these dieters were asked to "taste and rate" ice creams as part of a perceptual task. Dieters who were previously exposed to situations that were highly depleting ate a greater amount of ice cream having been disinhibited by the previous ego-depleting task. A broad review of research on self-regulation failure revealed multiple findings indicating that self-regulatory exertions and the ensuing depletion of the self's resources lead to disinhibition (Baumeister, Heatherton, & Tice, 1994).

With regard to suicide, disinhibition involves the removal of inhibitions about self-destruction (Baumeister, 1990b; see also Heatherton & Baumeister, 1991). Baumeister reviewed ample evidence that suicidal people are prone to impulse control problems and disinhibition, especially in the time preceding a suicide attempt. For example, researchers have found that suicidal people have high risk-taking tendencies immediately prior to suicidal attempts, that suicidal people have an impulsive personality type (e.g., Cantor, 1976). and that suicidal people

commit murder more frequently than comparable demographic groups Hendin, 1982), all of which are indications of disinhibition. Thus, converging evidence from research in suicide science and social psychology suggests that the disinhibition that results from cognitive deconstruction may be due, in part, to a depletion of self-regulatory resources.

Passivity is also relevant. When the self's resources are depleted, people become more passive. Baumeister et al. (1998) found that an initial act of self-regulation (which presumably depletes the self's resources) made people more likely to take the passive option in a choice situation. Passivity may also contribute to the patterns in which people give up more rapidly at a difficult or strenuous task when they have expended resources in previous self-regulation. For example, people who were required by experimental manipulations to resist the temptation to eat delicious chocolates and cookies (and had to make themselves eat radishes instead) gave up more rapidly than control participants on a subsequent puzzle (Baumeister et al., 1998). Likewise, initial efforts to regulate emotional states while watching an upsetting video made people give up faster subsequently on a physical stamina (handgrip) task (Muraven et al., 1998). All these findings suggest that people become passive when their self-regulatory resources are depleted.

Passivity has also been linked to suicide (Baumeister, 1990b). Findings have depicted suicidal people as avoiding responsibility for personal actions (Gerber, Nehemkis, Farberow, & Williams, 1981), adopting an external locus of control (Gerber et al., 1981), using active rather than passive coping and problem-solving strategies (e.g., Linehan, Camper, Stiles, & Strosahl, 1987), and having a general sense of hopelessness (Maris, 1985). Henken (1976) found that suicide notes ironically used more passive-voice grammar than notes of people who faced unwanted deaths, and more than other documents in general. Passivity is not the same as inactivity, though. In fact, suicidal people may engage in idle or self-distracting, meaningless activity, but they tend not to engage in active planning and meaningful, considered activity (see Baumeister, 1990b).

Additional support for a link between self-regulatory resource depletion and suicide comes from research in suicide science. Several researchers have identified clusters of symptoms that correspond to problems with self-regulation. For instance, Orbach (1997) detailed three types of suicidal behaviors, each of which includes emotional or impulse regulation. The depressive-perfectionistic cluster involves reconciling high expectations for the self with feelings of hopelessness and despair. This cluster is similar to factors related to binge eating (Vohs, Bardone, Joiner, Abramson, & Heatherton, in press), another escapist behavior linked to self-regulatory resource depletion (Vohs & Heatherton, 1999). The impulsive cluster centers around a lack of self-control, especially when people are highly aroused, with an inclination to engage in disinhibited behaviors such as aggression. The disintegrating construct is characterized by fears of losing control and stability, which are self-regulatory concerns. Similarly, Johns and Holden (1997) analyzed predictors of suicide and found two orthogonal factors, action orientation and negative cognitions. The action orientation factor is comprised of behavioral regulation items, such as internal perturbations. The negative cognitions factor despite its name, involves mainly emotional issues, such as amotivation, depression, and hopelessness. That self-regulatory factors have appeared in models of suicide further supports an association between the two constructs.

Last, a link between self-regulatory behavior and suicide has emerged from research on the neurobiology of suicide. There is compelling evidence that serotonin is related to self-regulation: low brain serotonin is strongly related to violent and repeated suicide attempts (Golomb, 1998; see Mann et al., 1989, for a review) and serotonin levels in the central nervous system correspond to general impulse control problems (Higley & Linnoila, 1997; Linnoila, Virkkunen Roy, & Potter, 1990). In addition, significantly more cholecystokinin (CCK) receptors have been found in the brains of suicides relative to controls (Harro, Marcusson. & Oreland, 1992). Previous research on CCK receptors have linked their presence to self-regulation deficiencies, such that "high density of CCK receptors in cortical regions might therefore be a basic biological correlate of deficits in adaptation with environment" (p. 61). Hence, neurological evidence supports the proposed model of suicide and self-regulatory resources by revealing links between suicide and insufficient self-regulatory capacities.

CONCLUSIONS

The proposed model argues that self-regulatory resource depletion underlies central aspects of the escape model of suicide, specifically attentional processes and emotional regulation. In response to misfortunes that cast the self in an unacceptably bad light, the person first tries to regulate negative affect. After affect regulation fails, the person next tries to regulate attention by cultivating a focus on meaningless, concrete, nonevaluative stimuli. The resulting state of cognitive deconstruction alleviates self-awareness of personal weaknesses but also removes inhibitions against suicide. But these efforts to regulate emotions and attention and to sustain the deconstructed state lead to a depletion of self-regulatory resources, rendering it difficult for the person to exit the suicide spiral. Our model is supported by research on the effects of cognitive deconstruction, passivity and disinhibition, as well as by studies relating suicide factors to self-regulation and those relating suicide and impulse control problems to neurological mechanisms. We believe that examining the self-regulatory aspects of escapist behaviors, such as suicide, will allow researchers and practitioners to better identify at-risk patients and allow for improved treatment of their symptoms. We advocate aiding at-risk individuals, such as those with impulse control problems or self-regulation difficulties, to replenish self-regulatory resources by engaging in self-regulatory activities in which they will be successful. Successful experiences with self-regulation may enable the person to cope successfully with negative events that otherwise could begin a self-destructive cycle.

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TOWARD AN INTEGRATED THEORY OF SUICIDAL BEHAVIORS: MERGING THE HOPELESSNESS, SELF-DISCREPANCY, AND ESCAPE THEORIES

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Although there has been an explosion of research on suicide in the past twenty-five years (Silverman, 1997), fewer investigators have ventured into the domain of theory-building. Perhaps daunted by the complexity of suicide and the seeming heterogeneity of the suicidal experience, many researchers have been reluctant to articulate a theory of suicide. In 1981, Maris stated that "theory-building is a complicated and risky business … it is not surprising that most suicidologists have not published a theory of suicide." He then went on to state, " This is a waste of fine minds, however, since one well-developed and closely argued idea is probably worth hundreds of sterile paradigmatic studies" (p. 306). Indeed, a carefully articulated theory would give researchers a framework by which to guide further investigations into the etiology and phenomenology of suicide. We could then determine whether (and for whom) the model holds empirically and delineate subtypes to which a certain proportion of suicides conform.

Although some theories of suicide have been put forth over the years (e.g.

Durkheim, 1897/1951; Menninger, 1938; Baechler, 1975/1979; Shneidman, 1985), Maris (1981) has noted that, "Those few theories of suicide that have been proffered tend not to be theories at all, but rather lists of factors believed somehow to be related to suicide" (p. 306). We suggest that any good theory of suicide should discuss etiology and outline a causal chain culminating in suicidality. While the theories described above have been useful in characterizing such features of the suicidal individual as age, gender, and race, and in identifying the kinds of events and circumstances which are likely to precede suicidal crises and motivate individuals to engage in the suicidal act, few of them have attempted to outline potential causal pathways by which individuals are likely to become suicidal. This chapter examines a few budding process-oriented theories of suicide. The theories examined, which are primarily psychological in nature, are based on empirical data supporting a link between suicidality and hopelessness, depression, negative life events, and negative self-concept (Beck, Brown, Berchick, Stewart, & Steer, 1990; Beck, Brown, & Steer, 1989; Black & Winokur, 1986; Beautrais et al., 1996; Shaffer et al., 1996; Rudd, 1990; Bonner & Rich, 1988; Vella, Persic, & Lester, 1996; Overholser, Adams, Lehnert, & Brinkman, 1995; Beck & Stewart, 1988). An attempt to reconcile the theories is then made by 1) examining the empirical evidence in support of each theory; 2) examining the possibility that each of the theories may be predictive of different suicide "subtypes"; and 3) examining the possibility that the three theories can be merged into one.

THREE THEORIES OF SUICIDE

I. Hopelessness Theory

According to the hopelessness theory (Abramson, Metalsky, & Alloy, 1989), the expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur and that there is nothing one can do to change this situation is a proximal sufficient cause of the symptoms of depression, specifically hopelessness depression. The common language term "hopelessness" captures the two core elements of this hypothesized proximal sufficient cause: Negative expectations about the occurrence of highly valued outcomes (a negative outcome expectancy) and expectations of helplessness about changing the likelihood of occurrence of these outcomes (a helplessness expectancy). Thus, Abramson et al. used the term hopelessness to refer to this proximal sufficient cause. Insofar as hopelessness theory recognizes that hopelessness is a sufficient but not necessary, cause of the symptoms of depression, this theory explicitly recognizes that depressive symptoms may have multiple causes (e.g., genetic factors). Hopelessness theory, then, presents an etiological account of one hypothesized subtype of depression—hopelessness depression.

Abramson et al. (1989) described the hypothesized symptoms of hopelessness depression (e.g., retarded initiation of voluntary responses, sadness). Drawing on work demonstrating a powerful link between hopelessness and suicide (e.g., Beck et al., 1990; Beck et al., 1989; Beck et al., 1985; Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983; Minkoff, Bergman, Beck, & Beck, 1973; Petrie & Chamberlain, 1983), Abramson et al. speculated that suicidality, on a continuum from suicidal ideation to completed suicide, may be a core symptom of

hopelessness depression.

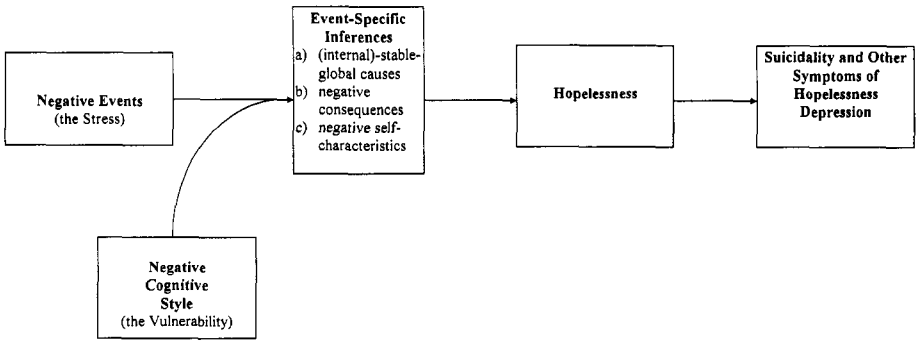

Figure 1. The hopelessness theory of suicidality.

How does a person become hopeless and, in turn, develop the symptoms of hopelessness depression, particularly suicidality? As can be seen in Figure 1, the hypothesized causal chain begins with the perceived occurrence of negative life events (or nonoccurrence of positive events). In the hopelessness theory, negative events serve as "occasion setters" for people to become hopeless. Three kinds of inferences that people may make when confronted with negative life events contribute to the development of hopelessness and, in turn, suicidality (as well as the other hypothesized symptoms of hopelessness depression): Causal attributions, inferred consequences, and inferred characteristics about the self. In brief, relatively generalized hopelessness and, in turn, suicidality are likely to develop when negative life events are viewed as important, attributed to stable (i.e., enduring) and global (i.e., likely to affect many outcomes) causes, viewed as likely to lead to other negative consequences or outcomes, and seen as implying that the person is flawed unworthy or deficient. (When the causal attribution for a negative life event is internal, stable, and global, hopelessness will be accompanied by lowered self-esteem). In contrast, when negative life events are viewed as unimportant, attributed to unstable, specific causes, viewed as unlikely to lead to further negative outcomes, and seen as not implying that the person is flawed, unworthy, or deficient, relatively generalized hopelessness and, in turn, suicidality are unlikely to develop.

For example, suppose a man has a terrible fight with his girlfriend According to hopelessness theory, if the man believes that the fight is very important, that his core unlovability caused the fight, that this fight will lead to his girlfriend breaking up with him, and that the very occurrence of this fight proves

that he is worthless, he is likely to become hopeless and suicidal. Alternatively, believing that the fight isn't really that important, that it was caused by his girlfriend's temporary bad mood, that it may actually bring him closer to his girlfriend, and that having such a fight doesn't imply anything bad about him should protect the man from hopelessness and suicidality.

In the hopelessness theory, individual differences in cognitive style influence the content of people's causal attributions and inferences about consequences and characteristics of the self given the occurrence of negative life events. Individuals who exhibit a general style to attribute negative events to stable, global causes, view these events as very important, infer that current negative events will lead to futher negative consequences or outcomes, and infer that the occurrence of negative events means they are flawed, unworthy, or deficient should be more likely to make these depressogenic inferences about a given negative life event than individuals who do not exhibit this cognitive style. We use the phrase "cognitive vulnerability" to refer to a depressogenic cognitive style. However, in the absence of negative life events, people exhibiting the cognitive vulnerability should be no more likely to develop hopelessness and, in turn, suicidality than people not exhibiting cognitive vulnerability. This aspect of hopelessness theory is a vulnerability-stress component: the negative cognitive styles are the vulnerability and negative life events are the stress. Cognitive vulnerability in a particular content domain (e. g., for interpersonal events) provides *specific vulnerability* when a person is confronted with negative events in that same domain (e.g., social rejection). This specific vulnerability hypothesis requires that there be a match between the content areas of an individual's cognitive vulnerability and the negative life events he or she encounters for the cognitive vulnerability-stress interaction to predict the development of suicidality.

II. Self-Discrepancy Theory

Self-discrepancy theory Higgins, 1987) is a theory of the relations between self and affect. The theory outlines the developmental pathways by which a person goes on to become either anxious or depressed, and has only begun to be elaborated to explain suicidality. Specifically, the theory postulates the existence of several *self-domains:* the ideal, ought, and actual selves. The actual self refers to one's self-concept, whereas the ideal and ought selves can best be described as self-evaluative standards or guides to which the actual self can be compared. The ideal self is a measure of those personal attributes an individual wishes to possess whereas the ought self captures those personal attributes a person believes she should or ought to possess. Self-discrepancy theory states that individuals are motivated to achieve a state in which there is consistency between their self-concept and these self-evaluative standards. The theory goes on to state that individuals who possess discrepancies between their actual and ideal selves are relatively more prone to developing depression while those who possess discrepancies between their actual and ought selves are relatively more prone to developing anxiety.

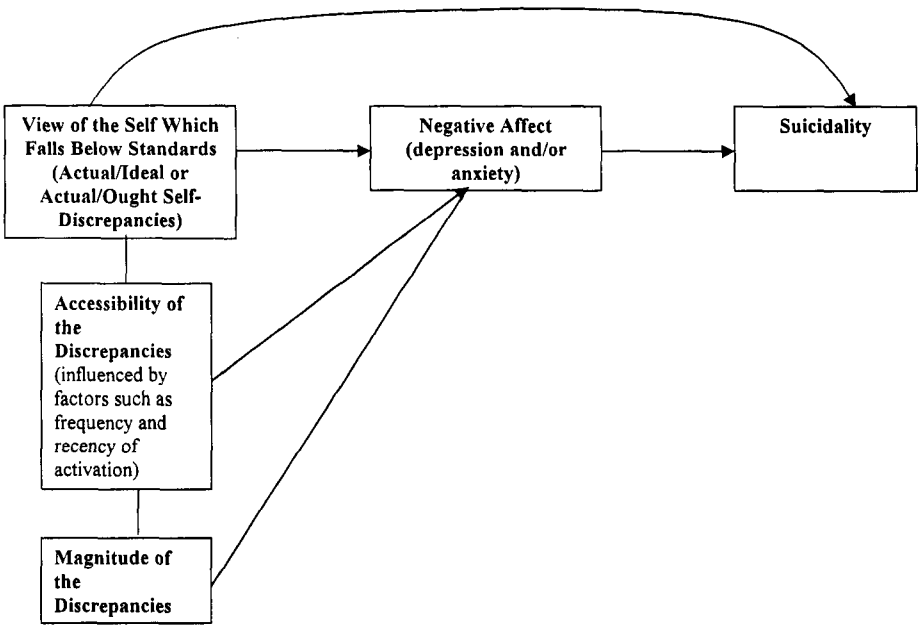

Figure 2. The self-discrepancy theory of suicidality.

The postulates of self-discrepancy theory are developmental. According to the theory, the development of actual/ideal or actual/ought discrepancies is influenced by individuals' interactions with their caretakers during childhood. Caretakers are likely to hold both ideal and ought standards for their children. If a child fails to fulfill an ideal standard (e.g. that the child will go on to play baseball in high school or will be a star musician), a parent or caretaker is likely to respond with a lack of reward (or a lack of a positive outcome), rather than with punishment. Both traditional and contemporary theories of psychopathology have described depression as a consequence of psychological situations involving the absence of positive outcomes (Alloy, Kelly, Mineka & Clements, 1990; Beck & Clark, 1988). Thus, failures to fulfill ideal standards (and hence, withholding of reward) are likely to become associated with experiences of depression. Over time, such action-outcome contingencies are likely to become internalized as actual/ideal discrepancies and associated depression.

In addition, parents and caretakers are likely to hold ought standards for their children involving certain rules or sanctions by which a child is expected to abide. If a child violates such a rule or sanction (e.g. violating a rule that the child should not eat cookies before dinner or should not talk back to her parents), the parent or caretaker will be relatively more likely to respond by punishing the child, rather than by withholding reward. Anxiety has often been associated with psychological situations involving the presence of negative outcomes and threat (Alloy et al., 1990; Beck & Clark, 1988). Thus, failures to fulfill ought standards (and hence, punishment) are likely to become associated with experiences of anxiety. Such experiences are then likely to become internalized as actual/ought discrepancies and associated anxiety.

Additional work on self-discrepancy theory has demonstrated that self-discrepancies which are both more *accessible* and *greater in magnitude* are more likely to result in emotional distress (Higgins, Bond, Klein, and Strauman, 1986). Accessibility of a self discrepant belief can be influenced by such factors as frequency and recency of activation. Thus, self discrepancies are more likely to influence affect when they are "activated" or "primed" by memories or environmental cues (Straw & Higgins, 1987; Strauman, 1989).

Why might self-discrepancy theory be useful in developing a causal model of suicidality?

For two reasons, self-discrepancy heory may be useful in developing a causal model of suicidality. First, although there is little empirical work examining the relationship between self-discrepancy and suicide, there have been studies examining the relationship of the self-concept to suicidality. Although negative self-concept and self-discrepancy are not synonymous constructs, work supporting a relationship between negative self-concept and suicidality does support the broader idea that negative evaluation of the self is associated with suicidality. What is the empirical relationship between self-concept and suicidality?

Negative self-concept has emerged as a factor predictive of suicidality, sometimes even after other predictors of suicide have been statistically controlled. For example, Beck (1987) has conducted important longitudinal work illustrating the importance of the self-concept in vulnerability to suicidality. In a group of outpatients who ultimately killed themselves, negative self-concept measured at baseline contributed to suicide risk, even after depression and hopelessness had been controlled (Beck & Stewart, 1988). Overholser et al. (1995) found that in a sample of adolescent inpatients, low self-esteem was related both to higher levels of current suicidal ideation, and to a history of prior suicide attempts. Among groups of inpatients, outpatients, and undergraduates, low self-esteem also has been shown to be associated with suicidal ideation after such variables as depression and hopelessness are statistically controlled (Overholser et al., 1995; Beck & Stewart, 1988). Indeed, suicide might be considered a consequence of negative self-evaluation in its most extreme form — the *ultimate* consequence of negative evaluation of the self.

Second, self-discrepancy theory provides a way of conceptualizing one pathway by which individuals might come to experience states of negative affect which are known to be extremely important in risk for suicide (Black & Winokur, 1986; Beutrais et al., 1996; Shaffer et al., 1996). Specifically, the theory states that individuals who experience critical action-outcome contingencies during childhood will be likely to develop actual/ideal and/or actual/ought discrepancies. When such discrepancies are primed, these individuals will then be more likely to experience states of negative affect, such as depression and anxiety (Strauman & Higgins, 1987; Strauman, 1989), which, in turn, are associated with suicidality. In addition, self-discrepancies may lead to suicidality independently of depression or anxiety (see Figure 2).

III. Escape Theory

In his general escape theory, Baumeister proposes a causal chain that can culminate in self-defeating, trade-off behaviors, where some degree of harm or risk is accepted as a necessary accompaniment to achieving some other goal (Baumeister and Sher, 1988). The central hypothesis of the general escape theory is that self-destructive behaviors can be explained in terms of motivation to escape from aversive self-awareness and negative affect. Baumeister argues that escape theory can explain even the most dramatic of escapes: suicide (Baumeister, 1990).

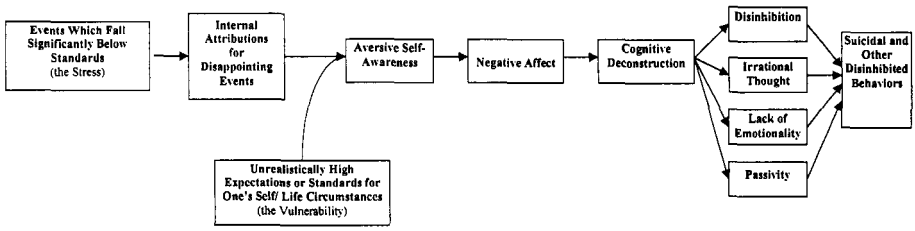

Figure 3. The escape theory of suicidality.

Baumeister's (1990) causal chain culminating in a suicide attempt begins with a negative experience, a discrete "calamity" or acute (rather than chronic) stressor (see Figure 3). The "calamity" involves the occurrence of *events which fall significantly below standards.* Thus, there exists a discrepancy between what an individual wants or expects and what actually occurs. According to Baumeister, this failure results from unrealistically high expectations or standards, an especially severe recent problem or setback, or both. He specifies that it is less the occurrence of something bad, and more the contrast between high expectations and negative outcomes, that propels individuals down the causal chain toward suicide. That is, "suicide results from favorable long-term circumstances but unfavorable short-term ones ... suicide happens when life has been good to someone and then, abruptly, takes a downward turn" (Baumeister, 1991, p. 89).

Baumeister notes that when setbacks or discrepancies occur, individuals can either blame external factors and absolve themselves of responsibility, or blame themselves and take on responsibility for the failure. Since those who blame external factors do not see themselves as responsible for their failures, they

presumably do not feel negatively about themselves and have no motivation to dissociate from the self. It is those who make *internal attributions* for their failure (i.e., who blame themselves and see themselves as deficient) who have escapist motivations and desire to abandon meaningful thought about the flawed self.

If internal attributions are made for failures, Baumeister suggests that *aversive self-awareness* necessarily follows. According to Baumeister, "the essence of self-awareness is the comparison of self with standards." (Baumeister, 1990, p.98) If, in making comparisons, an individual finds that she has failed to meet expectations or standards, and if she makes internal attributions about the failure, she will see herself as inadequate and incompetent, which is very aversive to a self that strives for self-esteem. This aversive self-awareness is closely linked to the fourth step in the general escape theory, *negative affect.* According to Baumeister, negative affective states such as depression, anxiety, and anger arise from the unfavorable comparisons, or aversive self-awareness. This aversive self-awareness and the ensuing negative affect are so unpleasantly salient and detrimental to self-esteem that a great impetus exists to blot them from thought as quickly as possible. In the general escape theory, this pursuit of immediate relief takes precedence over long-term goals and despite short and long-term costs.

Baumeister posits that the aversive self-awareness and negative affect are the proximal motivating causes of escape through *cognitive deconstruction* or ''mental narrowing." Cognitive deconstruction involves shrinking the world to the immediate temporal and spatial present. In a state of cognitive deconstruction the focus is on the present, and not the past or future; movements and sensations, and not broader thoughts and emotions; proximal goals, and not distal ones. According to Baumeister, the essence of this state is the avoidance of the meaningful, higher-level thought that is necessary for comparisons between self and standards which can foster and maintain aversive self-awareness and negative affect. Thus, the cognitively deconstructed state provides a haven in which one can escape the otherwise extremely salient negative thoughts and feelings about the self.

At the next point in the causal chain are the consequences of the escape from meaningful thought through cognitive deconstruction: *disinhibition, irrational thought, lack of emotionality,* and *passivity.* In the deconstructed state, void of meaningful thought, emotion, and evaluative powers, irrational ideas that would normally be rejected seem plausible or even appealing. The reason an individual decides to engage or not to engage in some behavior is often based on the implications of these actions for themselves and for others. Since the deconstructed cognitive state is a rejection of meaningful thought, inhibitions and internal barriers against behaviors are reduced. Thus, disinhibited behaviors (i.e. suicidal or other self-destructive behaviors) that one might not engage in during levels of meaningful self-awareness because of their apparent self defeating nature can be acted out in the deconstructed state.

Unfortunately for the person who seeks escape through cognitive deconstruction, such an escape state is unstable and difficult to sustain. One possibility is that an individual can slip out of the cognitively deconstructed state back into the meaningful thought from which they were trying to escape. This slip back into meaningful awareness may occur through contact with objects or events which conjure up memories of negative self-awareness and negative affect. Another possibility is that the individual will emerge fresh from the break from meaningful thought, able to reinterpret the life situation in a positive fashion and to move

forward. Accordign to Baumeister, those whose troubling thoughts and feelings are neither adequately shut out by cognitive deconstruction nor addressed successfully through re-interpretation will find appeal in suicide as an offer of oblivion and freedom from suffering. The lack ofinhibition and rational thought which compose the cognitively deconstructed state increase the likelihood that an individual will resort to a counter-normative, seemingly irrational behavior such as a suicide attempt.

RECONCILING THE THEORIES

What is the relationship among the hopelessness, self-discrepancy, and escape theories ofsuicidality? Having described each of these three theories in detail, we will now attempt to reconcile them by first examining the empirical evidence to determine whether one or more of the theories can be "ruled out" as a theory of suicidality. Second, we will consider whether each of the theories may be predictive ofdifferentsuicide "subtypes." Finally, we will examine the similarities and differencesamong the theories, and consider if and how the three theories might be merged into one.

Reconciling the Theories I: Can One or More of the Theories Be Ruled Out?

Does empirical work support the validity (or invalidity) of the hopelessness, self-discrepancy, and escape theories ofsuicidality?

Evidence for the Hopelessness Theory of Suicide

As discussed above, according to Abramson et al. (1989), individuals exhibiting the hypothesized cognitive vulnerability featured in the hopelessness theory (i.e., a tendency to attribute negative events to stable, global causes, infer that negative consequences will follow from current negative events, and believe that the occurrence of negative events means that the self is flawed) should be at risk fa suicidality. mediated by hopelessness.

Although work has only just begun to test whether the more distal negative cognitive styles provide risk for suicidality, a vast number of studies have demonstrated a powerful link between hopelessness and suicidality among adults (see Weishaar, 1996, for a review). In one ofthe earliest studies, Beck, Kovacs, and Weissman (1975) found that hopelessness was a better indicator of current suicidal ideation among suicide attempters than depression. Moreover, in prospective studies, hopelessness predicted eventual suicide over a IO-year period among adult patients hospitalized with suicidal ideation (Beck et al., 1985; Beck et al., 1989) and adult psychiatric outpatients (Beck et al., 1990).

Among adolescents, the relationship between hopelessness and suicidality is less clear. For example, paralleling findings with adults, Kazdin et al. (1983) found that suicidal intent was more consistently related to hopelessness than to depression among psychiatrically disturbed inpatient children. In contrast, Cole (1989) reported that among high school students, hopelessness was unrelated to

suicidal behaviors for boys and only modestly related for girls when depression was statistically controlled. Future work is needed to determine why the link between hopelessness and suicidality is less robust among children and adolescents than among adults.

In contrast to the large well-established body of work on hopelessness and suicidality, research testing whether negative cognitive styles provide vulnerability for suicidality, mediated by hopelessness, is still in its infancy. In a longitudinal test of the cognitive vulnerability-stress hypothesis, Priester and Clum (1992) reported that college students with a style to attribute negative events to stable causes exhibited greater hopelessness and suicidal ideation in response to a low exam grade than students who did not exhibit this attributional vulnerability. In a prospective test of the specific vulnerability hypothesis, Joiner and Rudd (1995) found that college students with a stable, global attributional style for negative interpersonal events showed increases in suicidality when they experienced interpersonal stressors. Consistent with the specific vulnerability hypothesis, a depressogenic attributional style for negative achievement events did not predict suicidality in response to interpersonal stressors. However, contrary to prediction, hopelessness did not mediate the relation between the depressogenic attributional style for interpersonal events and increases in suicidality.

Using a behavioral high-risk two-site prospective design, Abramson Alloy, Hogan, Whitehouse, Cornette, Akhavan, and Chiara (1998) tested the cognitive vulnerability hypothesis of suicidality. Consistent with prediction, the high cognitive risk (HR) participants were more likely than the low cognitive risk (LR) participants to exhibit suicidality, measured by both structured diagnostic interview and questionnaire self-report, during the 2 and 1/2 year prospective follow-up period. Moreover. consistent with prediction, hopelessness appeared to mediate the obtained relationship between cognitive vulnerability and suicidality. Because Abramson et al. defined cognitive risk "generically" by using measures of cognitive vulnerability derived from both the hopelessness theory and Beck's (1987) theory, it is not possible to determine whether the negative cognitive styles featured in the hopelessness theory, by themselves, predicted the development of suicidality.

Evidence for the Self-Discrepancy Theory of Suicide

Although work on the self-discrepancy theory of suicide is in its infancy, there does exist a fairly large body of data addressing the link between specific types of self-discrepancy and related emotional syndromes such as depression and anxiety (Higgins, 1987; Strauman, 1989, Strauman & Higgins, 1987; see Strauman & Higgins, 1993 for a review). Strauman (1989), for example, has demonstrated that depressed individuals possess relatively greater discrepancies between their actual and ideal self-states than between their actual and ought self-states. Conversely, anxious subjects have been found to possess relatively greater discrepancies between their actual and ought self-states than between their actual and ideal selves. In another set of studies, a priming technique was used to determine whether specific emotional syndromes could be induced by "activating" particular types of self-discrepancy (Strauman & Higgins, 1987; Strauman, 1989). Strauman and Higgins (1987) demonstrated that priming all participants with their own self-discrepant attributes (by auditorily presenting them with the attributes for which discrepancies

existed) induced momentary syndromes of dejection and agitation, for actual/ideal and actual/ought discrepancies, respectively. In a related study of clinically depressed and socially phobic individuals, Strauman (1989) replicated this finding. In addition, he demonstrated that depressed individuals showed the greatest increases in depression in response to ideal discrepant priming, whereas socially anxious individuals showed the greatest increases in agitation in response to ought-discrepant priming.

Thus, although empirical work supports a relationship among self-discrepancies, anxiety, and depression, there has been relatively little work examining the relationship of self-discrepancy to suicidality. In the only direct test of self-discrepancy theory as a model for suicidal behavior, both actual/ideal and actual/ought discrepancies were found to be significantly associated with suicidal ideation (Cornette, Strauman, and Abramson, 1999). In addition, the interaction of actual/ ideal discrepancy with depression was associated with suicidal ideation after the main effects of depression and actual/ ideal discrepancy had been controlled for statistically. This finding may imply that actuaul/ideal discrepancies relate to suicidality only for those individuals in whom such discrepancies have already culminated in depressive states.

Evidence for the Escape Theory of Suicide

The evidence for the escape theory of suicide is limited, mainly due to the few empirical studies that have attempted to test the theory. Unfortunately, none of these studies has had high fidelity to Baumeister's (1990) presentation of the theory. For example, Dean and Range (1996) hypothesized a path in which individuals who are perfectionistic, highly stressed, depressed, anxious, hopeless, and have fewer reasons for living will exhibit suicidal behaviors. They found significant paths from negative life stress to socially-prescribed perfectionism, socially-prescribed perfectionism to both depression and anxiety, anxiety and depression to hopelessness, and reasons for living to suicidal behaviors. This study is of limited value in a discussion of the escape theory of suicide since the specific causal pathway proposed by Baumeister (1990) was not tested. Another limitation is that the causality inherent in Baumeister's model cannot be tested since the measures of the relevant constructs were administered concurrently.

Reich, Newson, and Zautra (1996) tested the escape theory of suicide in a sample of older adults who experienced downturns in their physical health. These researchers proposed a model in which health declines led to low self-esteem and fatalism, which in turn led to confused thinking and helplessness, which then led to suicidal ideation. This model was a good fit to the data. All paths were significant, except for the path from helplessness to suicidal ideation. However, this study, like the previous one, did not possess high fidelity to Baumeister's original theory. Indeed, as the investigators indicated, the mapping of the constructs examined in the study and the constructs featured in escape theory is not entirely compelling. For example, the use of confused thinking as an indicator of cognitive deconstruction does not seem theoretically appropriate. In addition, the cross-sectional nature of this study precluded a test of the causality inherent in Baumeister's model.

Conclusions

In sum, work on the escape, hopelessness, and self-discrepancy theories of suicidality is promising. Although more research will be necessary to determine whether each of these theories stands up to empirical scrutiny, there is no reason at this point to believe that any of the theories is fundamentally wrong or invalid.

Reconciling the Theories II: Suicide Subtypes

While future research may prove one or more of the aforementioned theories to be fundamentally wrong, another possibility is that each of the theories is valid for a different subtype of suicidality. Over the years, a number of suicide classification systems have been put forth. Menninger (1938), for example, was responsible for one of the earliest suicide classification systems. He identified subtypes based on three motivations for suicide: 1) revenge, 2) depression/hopelessness, and 3) guilt.

Shneidman (1968) originally argued for three types of suicide: 1) egotic, 2) dyadic, and 3) ageneratic. According to Shneidman, suicides were characterized either by "tunnel vision" (egotic suicides), or by unfulfilled interpersonal needs or wishes (dyadic and ageneratic suicides).

Baechler (197511979) hypothesized that suicides fell into four broad categories: 1) escapist, 2) aggressive, 3) oblative, and 4) ludic. According to Maris (1992), escapist suicides are motivated to escape "pain, loss, shame, physical illness, aging, failure, fatigue, or the like" (pp. 71-72), while aggressive suicides are often motivated by interpersonal problems or conflict, anger, revenge, or manipulation. Oblative suicides are motivated by a desire to behave altruistically and ludic suicides are typically motivated by a desire to "live life to its fullest, even if it means killing oneself or reducing one's normal life expectancy" (Maris, 1992; p. 72).

Finally, Durkheim (189711951) identified four basic subtypes based on the environmental conditions surrounding suicide: 1) egoistic, 2) altruistic, 3) anomic, and 4) fatalistic. He identified suicides occurring due to a lack of social integration as egoistic, while altruistic suicides were characterized by insufficient individuation and by "finding the basis for existence beyond earthly life" (eg religious martyrs, Kamikaze pilots, etc.; Maris, 1992; p. 70). According to Durkheim, anomic and fatalistic suicides were associated with situations involving deregulation (e.g. stock market crashes or high divorce rates), and hyperregulation (e.g. in such contexts as prisons or concentration camps), respectively.

Subtypes Consistent with Escape Theory

As noted by Baumeister (1990), escape theory is highly consistent with Baechler's "escapist variety" of suicide and might be considered an elaboration upon Baechler's theory. According to Maris (1992), escape-type suicides account for approximately 75% of all suicides. Two of the escape "subtypes" espoused by Baechler seem most consistent with Baumeister's escape theory: flight (to avoid an intolerable situation) and grief (to deal with a loss), given Baumeister's emphases

on "escape" and "decline from a previously more positive situation," respectively.

Shneidman's egotic subtype is also similar to escape theory. Specifically, the cognitive rigidity and tunnel vision presumed to occur in egotic suicides is very similar to the notion of cognitive deconstruction in escape theory.

Finally, escape theory is also consistent with the sociological perspective on suicide espoused by Durkheim (1897/1951). According to Baumeister (1990), an abrupt decline from previously more positive life circumstances is likely to lead to the subsequent negative affect, hopelessness, and negative self-awareness which are necessary for escapist motivations to take place. Durkheim's (18971 1951) anomic subtype is similarly characterized by social conditions involving abrupt social change such as economic crises, sudden social changes, widowhood, and divorce--acute declines from a previously more positive situation from which an individual may seek to escape.

Hopelessness and self-discrepancy theories seem less clearly associated with existing subtypes of suicide, perhaps because the existing subtypes are not based on process. For example, these theories might be associated with subtypes which emphasized the chronicity of negative life circumstances in vulnerability to suicide. Although subtypes which precisely match the hopelessness or self-discrepancy theories of suicide have not been specified, it is important to note that these theories also may be associated with Baechler's "escapist" subtype and Durkheim's "anomic" subtype to the extent that individuals may be motivated to escape feelings of hopelessness, a situation perceived as hopeless, or cognitions that the actual self falls short of the ideal and/or ought self. In addition, hopelessness theory may be associated with Durkheim's fatalistic subtype to the extent that individuals may experience hopelessness in the context of such highly-regulated circumstances.

Self-Destructive Behaviors as Escape

In addition to the value of the hopelessness, self-discrepancy, and escape theories for explaining suicidality, each of these theories also may be held up to scrutiny as a theory of self-destructive behaviors that fall short of suicide (e.g. self-mutilation). One of the facets of escape theory which distinguishes it from hopelessness and self-discrepancy theory is the emphasis on active coping strategies, maladaptive as they may be in the long run, which follow the experience of aversive self-awareness and negative affect. Baumeister's description of cognitive destruction followed by response disinhibition, irrationality, and lack of emotionality seems particularly useful in explaining the behaviors of self-destructive or self-mutilating individuals. According to escape theory, reduction of inhibitions is one of the sequalae of the cognitively deconstructed state. in which non-normative, self-destructive behaviors become more prevalent. Escape theory states that individuals typically refrain from engaging in such behaviors because they are considered taboo, are perceived as harmful to the individual in the long run, violate social prohibitions, etc. In short, Baumeister suggested that such behaviors are, at least in part, under cognitive control. However, such cognitive control is greatly weakened in the deconstructed state resulting in "disinhibition" of non-normative self-destructive behaviors. In fact, Baumeister has explicitly applied his escape theory to a number of "self-destructive" behaviors. including alcoholism, sexual masochism, and binge-eating

(e.g. Baumeister. 1991; Heatherton& Baumeister, 1991). Thus, escape theory may best explain acts of self-destruction.

To date, self-destructive behaviors falling short of actual suicide have not been formally incorporated into the hopelessness and self-discrepancy theories. However, recent work by Peterson (1995) suggests that a link may exist between cognitive vulnerability and a lifestyle that compromises physical health. Moreover, building on the logic of escape theory, individuals may engage in self-destructive behaviors such as alcoholism or binge-eating to escape from cognitions involving hopelessness or a self falling short of standards.

Borderline Personality Disorder: A "Prototype" for Escape-Type Suicidality

Borderline personality disorder comprises a number of the elements of the escape-type suicide profile identified by Baumeister (1991). First, the life of the borderline is often chaotic, characterized by poor interpersonal attachments and/or abuse. Thus, it is easy to imagine that the borderline individual might experience abrupt downturns in life circumstances, which could lead to aversive self-awareness and negative affect when circumstances are compared to standards.

A heightened sense of negative self-awareness and subsequent efforts to blot this aversive self-awareness from consciousness are the central motivating forces for suicidal behavior, according to escape theory. Affective instability and an unstable self-image are two of the hallmark characteristics of borderline personality disorder (MA, 1994). One might imagine that the unstable self-image of the borderline individual might reflect the oscillating back and forth between states of greater and lesser self-awareness which results from greater or lesser ability to blot the aversive self-image from awareness (Heard & Linehan, 1993; Westen & Cohen, 1993). Negative affect may wax and wane as negative self-awareness becomes more or less salient.

Yet another reason why escape theory might be a good model for borderline personality disorder is that these individuals often manifest self-destructive. self-mutilating, and suicidal behaviors. According to escape theory, inhibitions are reduced as the individual enters into a cognitively deconstructed state, and non-normative, self-destructive behaviors such as excessive spending, promiscuous and unprotected sex, substance abuse, reckless driving, binge eating, and suicide become more prevalent. All of these maladaptive behaviors are associated with borderline personality disorder (MA, 1994). Such tendencies to engage in self-destructive or suicidal behaviors are likely to recur as the individual waxes and wanes between more or less cognitively deconstructed states.

Why might individuals with borderline personality disorder engage in self-destructive behaviors such as cutting? Escape theory suggests three possibilities. First, when an individual slips into the deconstructed state. irrational thought, disinhibited behaviors, and a lack of emotionality are likely to ensue. Baumeister describes the cognitively deconstructed state as one devoid of meaningful thought and evaluation. Thus, an individual who typically perceives self-mutilating behaviors such as cutting oneself to be undesirable or who possesses inhibitions against self-mutilating impulses might be far more likely to act on such impulses in the cognitively deconstructed state. Thus, one possibility is that parasuicidal behavior is *facilitated by the cognitively deconstructed state.*

A second possibility is that engaging in self-mutilating behaviors is one of the means by which an individual can attempt to block out meaningful thought and painful emotion and *escape into the deconstructed state.* Linehan (1993) stated that overdosing, cutting, and burning oneself seem to have "important affect-regulating properties" (p. 60). She goes on to state "The exact mechanism here is unclear, but it is common for borderline individuals to report substantial relief from anxiety and a variety of other intense negative affective states following cutting themselves (Leinbenluft, Gardner, & Cowdry, 1987)" (p. 60). We propose that escape theory provides one explanation for the mechanism at work. Baumeister (1991) has suggested that most escapes from aversive self-awareness and negative emotion focus attention intensely on the physical aspect of the self (i.e., the body) as a means of taking attention away from the more meaningful, abstract aspects of self (e.g. perceived worth of self). Similarly, the escape from negative emotion and aversive self-awareness described in escape theory involves shrinking the world to the immediate temporal and spatial present. The focus is on physical feelings and sensations in the here and now. Because behaviors such as cutting or burning involve such a focus on physical feelings and sensations, they may provide swift and powerful entry into the deconstructed state and thereby allow one to escape aversive self-awareness and painful thoughts. And, as described above, once in the deconstructed state, inhibitions are decreased and thus, further parasuicidal behaviors may be facilitated. Yet a third possibility is that self-mutilating behaviors represent an attempt to *escape from the cognitively deconstructed state.* Individuals diagnosed with borderline personality disorder frequently describe experiencing emotional “numbness” (Linehan, 1993) which may motivate them to engage in self-mutilating behaviors. These feelings of "numbness" might be likened to the lack of emotionality presumed to occur in the cognitively deconstructed state. Thus, it is possible that the borderline individual moves into a cognitively deconstructed, “numb" state in an effort to avoid negative self-awareness and negative affect. The individual may subsequently find the deconstructed state unstimulating and aversive, however, and may attempt to end the discomfort by engaging in parasuicidal behaviors which break the person out of this state. Indeed, individuals diagnosed with borderline personality disorder sometimes describe attempting to "feel" via parasuicidal behaviors. Escape theory so well characterizes the self-destructive, parasuicidal, and suicidal behaviors which frequently occur in borderline personality disorder-- borderline personality disorder might be considered a "prototype" for escape-type suicidality.

While escape-type suicides seem most clearly associated with Baechler's escape subtype and Durkheim's anomic subtype, there do not exist subtypes in our current classification systems which truly capture hopelessness and self-discrepancy-type suicides. One explanation may be that our existing classification system does not distinguish well among these various subtypes of suicide because it is not based on process. Yet another possibility is that escape, self-discrepancy, and hopelessness-type suicides are all associated with a single suicide subtype.

Reconciling the Theories III: Merging the Theories

In order to develop a model which incorporates elements of all three theories, we first compare the similarities and differences among the theories. Taking these

similarities and differences into account, we then speculate about which components of the theories might be incorporated into an integrated model.

Relationships Among the Theories

A Sub-standard View of the Self

One similarity between escape theory and self-discrepancy theory is that both theories emphasize the importance of a sub-standard view of the self in vulnerability to emotional distress. Specifically, both theories emphasize that a discrepancy between one's view of the self and one's ideal standards for the self can lead to negative affect. Relatedly, hopelessness theory underscores the contribution of inferred negative characteristics about the self to the formation of hopelessness and, in turn, suicidality. However, unlike the escape and the self-discrepancy theories, hopelessness theory also describes pathways to suicidality that do not involve a negative view of the self (e.g. external, stable, global attributions for a severe negative life event and inferred negative consequences). For example, a prisoner in a death-camp may become hopeless and suicidal despite holding a positive view of the self.

Accessibility of the Discrepancy Between Self/Circumstances and Standards

Both escape theory and self-discrepancy invoke the notion of accessibility (Bruner, 1957; Higgins, 1989). Self-discrepancy theory postulates that the accessibility of a self-discrepancy influences the extent to which it will influence one's emotional state. Specifically, Higgins and colleagues noted that self-discrepancies which are more "chronically accessible" will be more likely to influence affect (Higgins, Bond, Klein, and Strauman, 1986).

How does accessibility apply to escape and self-discrepancy theories? Activation theorists (Bargh, 1984; Bruner, 1957; Higgins & King, 1981) have noted that both motivational (e.g. needs states) and non-motivational (e.g. frequency and recency of activation) forces influence the "accessibility" of a construct. In both escape and self-discrepancy theory, negative self-awareness may come about because discrepancies between self and standards may be highly chronically accessible (perhaps due to non-motivational forces such as the frequency or recency of activation of these self-discrepancy constructs). In escape theory, Baumeister describes an individual motivated to escape aversive self-awareness by "turning off meaningful thought about the self. In doing so, an individual may effectively reduce the accessibility of negative self-relevant cognitions, a process which may provide entry into the cognitively deconstructed state.

The oscillating back and forth between states of lesser or greater self-awareness presumed to be associated with the cognitively deconstructed state also might be conceptualized in terms of accessibility (Higgins, Bond, Klein, and Strauman, 1986; Higgins, 1990; Bruner, 1957). Specifically, Baumeister (1990) notes that "sustaining a deconstructed state may be difficult. Awareness may therefore oscillate between levels.When the mind wanders away from the present moment, or when something reminds one of past or future events, meaninful

thought may resume, and the troublesome constructs may reappear in awareness" (p. 92). Aversive self-awareness might therefore be more or less accessible depending upon how effectively a person is able to cognitively deconstruct. Although a person may be motivated to escape aversive self-awareness, non-motivational forces (e.g. reminders which influence frequency and recency of activation) may then cause the person to slip out of the deconstructed state.

The concept of accessibility can also be applied to the chronically positive life circumstances described in escape theory. According to escape theory, suicide is more likely to occur in individuals for whom life circumstances have been chronically more positive. Presumably, these chronically positive environmental circumstances have become internalized as "standards" for the way one's self/circumstances should be. Because of the chronic accessibility of these standards, they are more likely to influence affect (and suicidality), as Higgns suggests. Thus, the influence of chronically positive circumstances on the suicide-prone individual can be explained by accessibility theory. Hopelessness theory does not currently incorporate a construct akin to accessibility, although Abramson et al. (1989) have suggested this as a future direction for the theory.

Emphasis on Hopelessness

Both escape theory and hopelessness theory discuss hopelessness. In Abramson et al.'s (1989) theory, hopelessness plays a central role, as it is hypothesized to be the proximal sufficient cause of suicidality. Escape theory identifies hopelessness as one of the elements of cognitive deconstruction: a constricted time perspective. While hopelessness has *traditionally* been defined as the inability to anticipate a *positive* future (e.g. Abramson et al., 1989), the constricted time perspective in escape theory is described as an inability to anticipate *any* future. Baumeister notes that the inability to anticipate a positive future (as hopelessness is traditionally defined) may lead an individual to withdraw into a cognitively deconstructed state, which precludes the anticipation of any future. While the original self-discrepancy theory (Higgings, 1990) did not address hopelessness, more recent work on self-discrepancy theory has incorporated a concept similar to hopelessness (Higgins, Vookles, and Tykocinski, 1992; Strauman & Higgins, 1993).

Emphasis on the Role of Life Events

Both hopelessness theory and escape theory are vulnerability-stress models in which the occurrence of negative life events is an important first step in the causal cham leading to suicidality. Hopelessness theory outlines a vulnerability-stress component in which in the absence of negative life events, people exhibiting the cognitive vulnerability should be no more likely to develop hopelessness and, in turn, suicidality than people not exhibiting cognitive vulnerability. Similarly, escape theory necessitates that current life circumstances fall below standards in order for aversive self-awareness and negative affect to occur. The emphasis on life events in these two theories stands in contrast to the emphasis on the discrepancy between one's perceived "actual self" and "ideal" and "ought" standards in self-discrepancy theory.

Emphasis on the Attribution/Inferential Process

Both hopelessness theory and escape theory focus on the role of attributions for negative life events. While hopelessness theory describes the role of internal, stable, and global attributions, escape theory discusses internal attributions only. Both theories emphasize that without the presence of such maladaptive attributions, negative life events alone may have little influence on subsequent affect and perceptions of the self-- i.e. there exists a vulnerability-stress component in both theories—both maladaptive attributions (the vulnerability) and negative life events (the stress) are important for an individual to begin moving down the suicidality causal chain. In contrast, self-discrepancy focuses on perceived characteristics of the self and hence makes no reference to an attributional process for negative life events.

Emphasis on the Importance of Inferred Negative Characteristics About the Self Following the Occurrence of Negative Life Events

Although hopelessness theory and escape theory differ in their emphasis on the importance of internal attributions for negative life events, both theories highlight the importance of inferred negative characteristics about the self, given the occurrence of a negative life event. While hopelessness theory discusses this aspect of the inferential process very explicitly, escape theory alludes to negative self-inferences in its discussion of aversive self-awareness following the occurrence of life circumstances which fall below standards. In escape theory the self is perceived negatively following the occurrence of one or more life circumstances which fall below standards. Hopelessness theory simply states that negative self-inferences can be made following the occurrence of any negative life event. In both cases, these negative inferences about the self follow the occurrence of a negative experience and contribute to the occurrence of negative affect. Again, self-discrepancy is silent with respect to inferred negative characteristics about the self given the occurrence of some event since the theory does not incorporate life events.

Elaboration of the Pathway from Negative Affect to the Suicide Attempt

One aspect of escape theory which distinguishes it from the other two is that the former goes beyond hopelessness, negative affect and negative self-awareness to hypothesize how an individual might attempt to cope with such states. Escape theory therefore goes further in describing the thought processes and behaviors of the suicidal individual at a point more proximal and closer in time to the suicide attempt. Hopelessness theory, for example, states that one of the symptoms of hopelessness depression (the endpoint in the causal chain) is suicidality. Yet the theory does not specify the mechanism by which the individual exhibiting hopelessness depression actually comes to engage in a suicidal act. Similarly, self-discrepancy theory makes no claims about how a person experiencing one or another type of self-discrepancy (actual/ideal or actual/ought) or psychological distress (i.e. depression or anxiety) would come to engage in suicidal behaviors. Thus, one strength of escape theory is the extent to which it elaborates upon the processes which occur further down the causal chain *after* an individual comes to experience

negative affect. It specifies that the individual finds aversive self-awareness and negative affect uncomfortable, and thus makes attempts to escape this unpleasant state. If these attempts to escape are insufficient, an individual may resort to suicidal behaviors, in part due to the disinhibition and irrational thought which result from the cognitively deconstructed state.

Elaboration of the Developmental Pathway to Negative Affect

Yet, escape theory might be considered insufficiently elaborate in the extent to which it specifies the events and processes which give rise to the negative affect. Escape theory simply states that one's self/circumstances fall below standards, the individual makes internal attributions for these events, and negative self-awareness and affect result. In contrast, self-discrepancy theory provides a developmental pathway by which individuals may come to develop self-discrepancies. Self-discrepancy theory also invokes the concepts of accessibility and magnitude of activation and states that discrepancies will be more likely to lead to negative emotional outcomes when they are both higher in magnitude and more highly accessible.

Hopelessness theory also more thoroughly elaborates the pathway to negative affect and hopelessness. Specifically, it expands upon the internal attributions/inferences discussed in escape theory to include stable and global attributions and inferred negative consequences of a negative life event. Moreover, hopelessness theory distinguishes between a negative inferential style (i.e. cognitive vulnerability) and the negative inferences for a specific negative life event to which this style contributes. Finally, similar to self-discrepancy theory, researchers he begun to delineate some of the developmental precursors of the constructs featured in hopelessness theory. For example, Rose and Abramson (1996) found that a developmental history of maltreatment was associated with maladaptive cognitive styles in adulthood. Emotional maltreatment, in particular, was related to negative cognitive styles even after all other forms of abuse were controlled statistically. These authors have suggested that emotional abuse may be particularly likely to foster the development of negative cognitive styles because emotional abuse, by definition, involves supplying negative self-referential cognitions to a child.

Emphasis on Internal Attributions for Negative Life Events

Although all three theories emphasize the idea of a sub-standard self to some degree, hopelessness theory and escape theory differ in their emphasis on internal attributions for events which occur. While escape theory views internal attributions as critical for the development of negative self-awareness and negative affect, hopelessness theory has down played the importance of internal attributions relative to the emphasis on stable, global attributions for negative life events. In particular, hopelessness theory dictates that if an attribution for some negative event is internal but also unstable and specific (e.g. lack of effort), the self will not be viewed as sub-standard. The decision to downplay the role of internal attributions was based on studies which showed that internal attributions per se are not maladaptive, and in some cases, may be very adaptive (eg Crocker et al., 1988; Dweck & Licht,

1980). The notion of internal attributions, or self-blame is somewhat implicit in self-discrepancy theory, given that the discrepancies are among self-attributes.

Emphasis on the Chronicity of Negative Life Circumstances

Another difference which exists among the theories is the differing emphasis on chronic negative life circumstances versus a sudden decline from previously more favorable circumstances in the causation of suicidality. Specifically, escape theory states that a decline from previously more favorable circumstances (in combination with internal attributions for these events) is particularly likely to lead to aversive self-awareness, cognitive deconstruction, and subsequent suicidality. In contrast, proponents of hopelessness theory might argue that those individuals who've experienced chronic negative life circumstances would be at greatest risk for suicidality, based on the premise that individuals who've experienced a series of negative life events will be more likely to develop stable, global attributional styles for such events (see Dykman & Abramson, 1990; Metalsky & Abramson, 1981). When negative events then recur, such individuals would be more likely to make stable, global attributions for these events, which will lead to hopelessness and subsequent suicidality. Hopelessness theory would predict that those with a more positive life history would be less likely to have developed a maladaptive attributional style and consequently will be less prone to developing hopelessness and subsequent suicidality when life circumstances suddenly take a tum for the worse. Similarly, self-discrepancy theory dictates that individuals who've experienced a series of negative event-outcome contingencies in childhood are more likely to develop actual/ideal and actual/ought discrepancies, and thus will be more prone to developing aversive self-awareness, negative affect and subsequent suicidality than individuals who have experienced a sudden decline in the quality of their life circumstances. Individuals who've experienced many negative events may also possess self-discrepancies which are more highly accessible, due to the frequency of activation of these discrepancies.

Conclusions

Thus, while the three theories share a number of similarities, they also possess differences which preclude a simple integration. In particular, escape theory emphasizes a decline from previously more positive circumstances in predicting suicide, whereas hopelessness and escape theories make just the opposite prediction. Another of the differences among the theories which would be difficult to reconcile is the emphasis on internal attributions in escape theory. While escape theory necessitates that an internal attribution be made, hopelessness theory downplays the importance of such attributions. Still, recent work on self-discrepancy, hopelessness, and escape theory suggest that as the theories are evolving, they are becoming increasingly similar.

Self-Discrepancy as Hopelessness

In recent years, self-discrepancy theorists have explored a number of other self-domains in addition to the ideal and ought selves. For example, investigators have proposed the existence of a "future" self (Higgins et al., 1992; Strauman & Higgins, 1993). An actual/ideal/future (AIF) discrepancy is a discrepancy between one's self-concept and one's ideals which a person believes will remain stable in the future (Higgins et al., 1992). The AIF discrepancy might therefore be considered a form of hopelessness which is specific to one's self-attributes. Recent data suggest that this construct, which is akin to hopelessness, is related to suicidality. Specifically, the interaction of actual/ideal/future discrepancy with depression was associated with suicidal ideation after the main effects of depression, hopelessness, anxiety, and actual/ideal/future discrepancy had been accounted for (Comette et al., 1999).

Self-Discrepancy as a Decline from Previously More Positive Circumstances

The actual/ideal/past discrepancy (Strauman, Higgins, and Carter, 1999; Strauman & Higgins, 1993) is consistent with Baumeister's notion of a decline from a previously more positive sense of self Baumeister states: " ... the status quo is often an important standard, and so shortfalls may occur if the self compares unfavorably with its own past level of quality..." (p. 91). An actual/ideal/past discrepancy is a situation in which an individual perceives a current discrepancy between his/her actual and ideal attributes which did not exist in the past. Strauman and colleagues have termed this type of discrepancy "loss of congruency". They hypothesize that this state should be associated with intense dejection, unhappiness, and hopelessness. This hypothesis is based on work by Carver and Scheier (1990), who suggest that an individual's perception of *lack of progress* is associated with negative affect. Strauman and colleagues suggest that such discrepancies between actual and ideal states are likely to lead to states of negative affect and hopelessness, a hypothesis which is consistent with escape theory.

The Role of Accessibility in Hopelessness Theory

Although hopelessness theory does not currently incorporate a construct akin to accessibility, Abramson et al. (1989) have suggested this as a future direction for the theory. Indeed, Alloy et al. (1999) recently proposed and demonstrated that rumination (Nolen-Hoeksema, 1991) is an important moderator of cognitive vulnerability to depression. This work is consistent with Nolen-Hoeksema's hypothesis that rumination may prolong depressive symptoms because it increases the continued accessibility of negative cognitions.

TOWARD AN INTEGRATED THEORY OF SUICIDE

Taking into account the similarities and differences among these three theories as well as recent work which points toward increasing similarity among the theories, we begin to propose an integrated theory of suicide. As discussed previously,

escape theory most fully elaborates the pathway from negative affect to the suicide attempt. Thus, an integrated theory of suicidality would likely incorporate those elements of escape theory's causal chain from the experience of negative affect to the execution of the suicidal act. Hopelessness and self-discrepancy theories, however, more fully elaborate the causal chain leading to negative affect. Thus, these elements of the hopelessness and self-discrepancy theories (e.g. development experiences such as maltreatment or particular types of parenting styles) would likely be incorporated into an integrated theory.

While the influence on internal attributions for negative life events is emphasized in escape theory, hopelessness theory de-emphasizes the importance of internal attributions. The importance of internal attributions would also be de-emphasized in an integrated theory, based on evidence suggesting that internal attributions for negative events may actually be adaptive in some circumstances (e.g. Crocker et al., 1988; Dweck & Licht, 1980). Indeed, the logic of hopelessness theory suggests that it is an internal, stable, global attribution (rather than an internal attribution per se) for a negative event that is likely to lead to the aversive self-awareness featured in escape theory.

Finally, the three theories differ in their emphasis on the chronicity of negative events (as opposed to an abrupt change in previously more positive life circumstances). Further research will help determine whether chronicity of negative life circumstances is an important variable in suicide risk, and if so, whether more or less chronic negative events are more strongly associated with suicide. Future tests of the various components of the hopelessness, self-discrepancy, and escape theories should allow researchers to determine which elements of each can be included in a more comprehensive, integrated theory. The development of such a theory would eliminate redundancy among the theories and, in capitalizing on the strengths of the three theories, would allow researchers to more definitively describe the suicidal experience from beginning to end.

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SHAME, GUILT, AND SUICIDE[1]

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In the early afternoon of May 16, 1998, Admiral Jeremy M. Boorda left his office at the Pentagon and headed for his home at the Washington Navy Yard. Once there, he pulled out a .38-caliber pistol, placed the muzzle against his chest, and pulled the trigger, in effect ending what had been, by all accounts, an exemplary life and distinguished career with the United States Navy. Adm. Boorda's suicide came just hours before he was to be questioned by Newsweek magazine about the legitimacy of two of his many military medals: two bronze 'V' pins, awarded for valor in combat. Adm. Boorda's suicide stunned his family and friends and sent shock waves through the U.S. Navy. Why had he committed suicide? In one suicide note, officials said, "he wrote about how he cared about the core values of the Navy - honor, courage, and commitment - and about how he would be viewed," suggesting that one possible reason behind Adm. Boorda's suicide was an overwhelming sense of shame at having brought disgrace and dishonor upon himself and the U.S. Navy, which he loved so much. Is it possible that this strong, dedicated and battle-hardened Navy Admiral was shamed to death? Can feelings of shame lead to suicide?

The connection between shame and suicide can be seen as far back as twelfth century Japanese society (Pinguet, 1993). The act of *seppuku* (also referred to as *harakiri),* meaning incision of the abdomen, was a highly ritualized, traditional form of suicide among samurai warriors faced with great shame and/or a loss of face.

Negative affective states have often been cited as prominent factors among people considering suicide. Early research in suicidology focused on sociological influences and resulted in a typology that emphasized an individual's degree of social integration as the main etiological factor in suicide (Durkheim, 1966). More

recent research has focused on biological and psychological aspects of suicide, especially the connection between suicide and depression. Only recently has attention been given to other negative emotions, self-conscious emotions, such as feelings of shame and guilt.

This chapter will discuss the role of shame and guilt in suicide. A growing body of research indicates that shame and guilt are distinct emotions with very different implications for psychological adjustment and social behavior. It is our belief that feelings of shame are more likely to result in suicidality than feelings of guilt. After a brief discussion of the definitional and phenomenological differences between shame and guilt, we will summarize theoretical and empirical perspectives on the role of shame in suicidality. We will close with a consideration of clinical implications for suicide prevention and treatment.

SHAME AND GUILT ARE DISTINCT EMOTIONS: DEFINITIONS AND PHENOMENOLOGY

The terms shame and guilt are often used synonymously, however, a wealth of theoretical and empirical literature indicates that they are two distinct emotions with qualitatively different phenomenological experiences (Lindsay-Hartz, 1984; Tangney, 1992, 1993, 1995a; Tangney, Miller, Flicker & Barlow, 1996; Wicker, Payne & Morgan, 1983).

Lewis (1971) focused on the role of the self in distinguishing shame and guilt. Guilt involves the self's negative evaluation of a specific behavior whereas shame involves the self's negative evaluation of the whole self. This difference in focus on behavior vs. self results in very different cognitive, motivational, and affective features associated with shame and guilt experiences.

Guilt is an emotional state associated with a focus on a specific behavior involving the perception of having done something "bad" or "wrong." Because the focus is on specific and presumably remediable behavior, guilt is unpleasant and/or uncomfortable, but not typically overwhelming or paralyzing. What's at issue is a misguided, ill-conceived specific behavior rather than a worthless, defective self. Thus, guilt over a specific behavior may be more readily overcome by correcting the behavior and making amends. And in fact, research has consistently shown that the motivation and behavior associated with guilt is often directed toward reparation.

Shame, on the other hand, is a much more painful, global, and crippling experience because the self as a whole, not just a behavior, is painfully scrutinized and denigrated. As a result, the shamed person's self is viewed as worthless and defective. People report feeling diminished, powerless, and exposed. Although shame doesn't necessarily involve actual public exposure (Tangney, Miller, Flicker, & Barlow, 1996), people in the midst of a shame experience are often consumed with thoughts about others' negative evaluations. In contrast to guilt's press to amend, shame typically invokes a desire to withdraw or escape from others.

THE PROMINENCE OF SHAME VS GUILT IN SUICIDAL THOUGHT AND BEHAVIOR THEORY AND INDIRECT EVIDENCE

To what degree are feelings of shame and guilt implicated in suicidal thoughts and behaviors? To date, shame and guilt have been little more than a footnote in the vast literature on suicide. When suicidologists mention shame and guilt, they typically use these terms non-specifically and interchangeably (e.g., Hassan, 1995). But there's good reason to expect that feelings of shame may be more prominent than feelings of guilt among individuals contemplating suicide.

The Phenomenology of Shame

First, consider the phenomenology of shame. Feelings of shame are more painful and overwhelming than feelings of guilt. A shamed person becomes mired in self-loathing and disparagement. And because the shamed person perceives the problem as extending to the entire self, efforts at remediation seem futile. The situation seems dire and hopeless. Moreover, shame typically involves imagery of a disapproving audience; the self and its flaws are exposed for all to see. Thus, feelings of shame often provoke a desire to escape, to hide the self from further disgrace and condemnation. For some shamed individuals, suicide may represent the ultimate escape.

Shame and Depression

Second, there appears to be a special link between depression and shame-proneness, but not guilt-proneness. Most people have the capacity to experience both shame and guilt in response to the failures and transgressions of day-to-day life. However, some people are more prone to experience shame (about the self) in response to such negative events, whereas others are more prone to feel guilt (about specific behaviors). In other words, there are individual differences in proneness to shame vs. proneness to guilt. Research has consistently shown a link between shame-proneness and depression among both children (Tangney, Wagner, Burggraf, Gramzow, & Fletcher, 1991) and adults (Harder & Lewis, 1987; Harder, Cutler & Rockart, 1992; Harder, 1995; Hoblitzelle, 1987; Tangney, Wagner, & Gramzow, 1992; Tangney, 1995a). For example, in several large studies of college students (Tangney, Wagner & Gramzow, 1992; Tangney, 1993) indices of depression were positively and significantly related to tendencies to experience shame. In contrast, measures of depression were negligibly related to proneness to "shame-free" guilt.

Clinicians have long noted that depression is one of the strongest contributing factors to suicide. And so the question of "depressogenic" factors is important. Lewis (1987) and Hoblitzelle (1987) have noted some conceptual parallels between shame and attributional style. In fact, the cognitive components of shame and guilt can be reconceptualized in attributional terms. To the extent that guilt involves a focus on some specific behavior, the guilt experience is likely to involve internal, specific, and fairly unstable attributions. Shame, on the other hand, involves a focus on the global self that is presumably relatively enduring. Thus, the shame experience is likely to involve internal, stable and global

attributions (or in Janoff-Bulman's [1979] terms, characterological self-blame). There is now an extensive empirical literature linking depression to a tendency to make internal, stable and global attributions for negative events (for a review, see Robins, 1988).

Does a consideration of shame-proneness contribute to our understanding of depression, above and beyond that accounted for by attributional style? In several independent studies (Tangney, Wagner & Gramzow, 1992; Tangney, 1993), we conducted a series of hierarchical regression analyses predicting Beck and SCL-90 depression scores. Attributional style variables were forced in first, to provide the most conservative test of the incremental importance of shame-proneness and guilt-proneness. In each case, the change in R^2 was substantial - ranging from 8-15%, essentially doubling the variance accounted for by attributional style. Again, it was shame, not guilt, that accounted for the lion's share of variance in depression.

Psychoanalytic writers, too, have noted the link between shame and depression. Morrison (1996) suggests that depression can be a materialization or defense against shame, and that the synergistic effect of these comorbid states results in withdrawal, concealment, and potential self-destruction. Self-psychologists regard shame as a product of the self-structure and how it forms and maintains self-selfobject relations (Shreve and Kunkel, 1991). Kohut (1978) suggests that shame-proneness is the result of signifcant defects in the self that prevent a sense d cohesiveness and self-esteem from developing. Thus, shame-prone individuals tend to perceive even mild criticism as devastating and often turn to substance abuse, delinquency, or suicide to escape the pain and the continued perceived deterioration of the sense of self. Suicidal behavior, therefore, is viewed from this perspective as a way to cope with the perceived psychological loss inherent in shame and the resulting destruction to an individual's integrity and cohesiveness of the self.

Shame and Sociological Theories of Suicide

Finally, the importance of shame in suicidal thought and behavior is evident in sociological perspectives on suicide. Sociologists played an early and influential role in the study of suicide (Durkheim, 1966). There exist at least three major typologies of suicide each differing in its degree of emphasis on sociological and/or psychological factors associated with suicidal behavior. However, the connection between feelings of shame and suicide is acknowledged or can be inferred within each typology.

The earliest and best-known typology of suicide came from Durkheim's (1966) groundbreaking work titled: *Suicide: A Study in Sociology.* Durkheim viewed suicide as a sociological phenomenon that was not related to demographic or psychological factors. He suggested that suicide was a function of one's degree of social integration and the resulting degree of control that society held over that individual. He posited four types of suicide based on this hypothesis: altruistic, egoistic, anomic, and fatalistic. The altruistic and fatalistic types of suicide were the result of excessive societal integration or regulation, whereas the egoistic and anomic types resulted from a lack of societal integration or control over the individual. Feelings of shame as a contributor to suicide can be inferred in anomic suicide which was said to result from a sudden and unexpected change (typically a negative change) in social position with which the individual was unable to cope.

An example ofthis type of suicide might be the corporate executive who commits suicide after experiencing a significant and sustained downward shift in social and financial status after being laid off/fired from a job as a result of poor economic conditions. Although not clearly stated in Durkheim's typology, feelings of shame are often associated with such a financial and social downfall.

Consistent with Durkheim's (1966) theory of social integration, Scheff (1997) has emphasized shame's disruptive influence on social bonds, and he views suicide as a tragic conclusion to shame-related disturbances in the attachment system. An individual who experiences dysfunctional bonds may then develop both deep humiliation resulting from the failure to maintain appropriate bonds, and experiences of "no sense of social place" (Mokros, 1995). In support of this perspective, current research has consistently linked to shame-proneness to poor social and relationship adjustment (Lansky, 1987; Tangney, et al., 1991; Tangney, 1995b). In contrast, there is ample evidence that feelings of guilt serve "relationship-enhancing" functions (Baumeister, Stillwell & Heatherton, 1994; Tangney, 1995b), correlated with interpersonal empathy, constructive strategies for managing anger, and strong interpersonal skills (Tangney, 1991, 1995b; Tangney, et al, 1996).

A second major typology was by put forth by Shneidman (1968) who viewed suicide as a function of social and psychological factors. He proposed three types of suicide: egotic, dyadic, and ageneratic. Feelings of shame as a precipitant of suicide were most common in dyadic suicides. Dyadic suicides were thought to arise from interpersonal events that triggered deep-seated, unfulfilled wishes and needs concerning spouses, parents, and/or significant others, which sparked strong negative reactions such as rage, rejection, shame, and guilt.

A third typology was proposed by Jean Baechler (1979) who believed that suicide was a rational solution to specific life circumstances and existential dilemmas. Suicide was thought to be the result of personality traits that shape an individual's approach to problem-solving and leads them toward situations or positions in life that have an increased risk of suicide. According to Baechler, there are four types of suicide: escapist, aggressive, oblative, and ludic. The role of feelings of shame in Baechler's typology can be seen in escapist's suicides, which were thought to result from an individual's desire to escape or flee from an unbearable situation. Baechlor suggested this ''unbearable" situation stemmed hm an event that resulted in an individual suffering from a combination of painful and negative emotions such as hopelessness, shame, guilt, and worthlessness. The motivation behind this type of suicide - namely the desire to escape or withdraw from an intolerable situation - is a frequent motivation associated with shame, as well (Tangney, et. al, 1996).

In sum, diverse theories converge in suggesting a special link between feelings of shame and suicidal thought and behavior. Working from distinct perspectives, psychologists and sociologists have long noted or implied the significance of shame in the dynamics of suicidality.

Emerging Empirical Studies of Shame and Suicide

Although several distinct theories suggest that shame-based issues may contribute to suicidal thoughts and behaviors, there have been very few studies to support

these theories empirically. One potential reason for this lack of empirical work may be the difficulty investigating shame for an individual who has effectively completed a suicide. However, a recent study by Lester (1998) did examine the relationship of guilt and shame to suicidal thoughts and suicidal attempts.

In a study of college students, Lester (1998) reported that neither shame nor guilt scores were related to total scores on the Beck Depression Inventory (indicating current levels of depression). However, among men, shame scores were correlated with current suicidality (item #9 of the BDI) and past thoughts and threats (but not attempts) of suicide. No such relationships were observed for guilt. Lester concluded that feelings of shame were more strongly associated with suicidality than were feelings of guilt, particularly among men.

For this chapter, we conducted a similar set of analyses on several existing data sets from our lab. To directly examine the implications of shame and guilt fix suicidal ideation, using theoretically consistent measures of proneness to shame and guilt, we drew on data from two independent studies of college undergraduates. These were larger investigations of the personality and adjustment correlates of proneness to shame and guilt. In all, 254 and 230 students participated in Studies 1 and 2, respectively. In each sample, approximately 70% of the participants were female, and the majority were white.

Participants in each study anonymously completed a number of questionnaires including the Beck Depression Inventory (BDI; Beck, 1972) and the Symptom Checklist 90 (SCL-90; Derogatis, Lipman & Covi, 1973). Of special interest were two specific items concerning suicidal ideation, item #16 from the SCL-90 (" Thoughts of ending your life" rated on a 5-point scale from " not at all" to "extremely") and item #9 from the BDI (rated on a 4-point scale, from 0 " I don't have any thoughts of killing myself" to 3 "I would kill myself if I had a chance"). Although these were "nonclinical" samples, there was substantial variance in BDI depression scores, with 9.4% and 8.6% scoring in the "severely depressed" range and 12.4% and 10.2% scoring in the "moderately depressed" range, in Studies 1 and 2 respectively. Less variance was evident in the suicidal ideation items. On each item, the large majority of respondents indicated no suicidal ideation - 86% in both studies on SCL-90 #16, and 78% and 75 on BDI #9, in Studies 1 and 2, respectively. Thus, compared to clinical samples with substantially more variane in suicidal thoughts and behaviors, these studies of undergraduates are apt to yield conservative estimates of the links between suicidal ideation and shame and guilt.

To assess proneness to shame and proneness to guilt, participants in each study completed the Test of Self-Conscious Affect (TOSCA; Tangney, Wagner & Gramzow, 1989). The TOSCA is a scenario-based paper-and-pencil measure that presents respondents with a range of situations that they are likely to encounter in day-to-day life. Each scenario is followed by responses that capture phenomenological aspects of shame, guilt, and other theoretically relevant experiences (e.g., externalization, pride). Respondents are asked to imagine themselves in each situation and then rate their likelihood of reacting in each of the manners indicated. For example, participants are asked to imagine "You make a big mistake on an important project at work. People were depending on you and your boss criticizes you." People then rate their likelihood of reacting with a shame response ("You would feel like you wanted to hide"), a guilt response ("You would think "I should have recognized the problem and done a better job.") and so forth. Across the various scenarios, the responses capture affective, cognitive and

motivational features associated with shame and guilt, respectively, as described in the theoretical, phenomenological, and empirical literature. It is important to note that these are not forced choice measures. Respondents are asked to rate, on a 5-point scale, each of the responses. This allows for the possibility that some respondents may experience shame. guilt, both, or neither emotion in connection with a given situation. Tangney (1996) and Tangney et al. (1996) present a summary of research supporting the reliability and validity of the TOSCA. Participants in Study 2 also completed the Self-Conscious Affect and Attribution Inventory (SCAAI: Tangney. Burggraf, Hamme & Domingos, 1988), the forerunner to the TOSCA, consisting of an entirely different set of 13 scenarios appropriate for college students (see Tangney, 1990 for information on reliability and validity).

As shown in Table 1, results across the three studies were quite consistent. The most striking findings centered on shame. In all studies, a dispositional tendency to experience shame across a range of situations was reliably linked to suicidal ideation as well as to overall depression scores.

Table 1. Shame-Proneness, Guilt-Proneness and Suicidal Ideation

	Bivariate Correlations		**Part Correlations**	
	Shame	Guilt	Shame Residuals	Guilt Residuals
Thoughts of ending life (SCL-90 #16)	.16**	-.07	.22***	-.17**
	.09	.00	.11	-.07
	.06	-.11	.12*	-.15*
Thoughts of Killing Self (BDI #9)	.11*	-.04	.15**	-.11*
	.18**	.13*	.12*	.03
	.14*	.04	.14*	-.02
Depression (BDI)	.28***	.02	.32***	-.15**
	.47***	.24***	.41***	-.07
	.51***	.19**	.47***	-.05

Note: Results appear in descending order for Study 1 TOSCA (n=253-254), Study 2 SCAAI (222-225) and Study 2 TOSCA (227-230). *p< .05 **p<.01 ***p<.001, one-tailed.

The findings regarding guilt were markedly different from those involving shame. Considering first the bivariate correlations, proneness to guilt about specific behaviors was largely unrelated to suicidal thoughts and only moderately correlated with depression - and only in Study 2. Subsequent part correlational analyses indicated that these findings were entirely due to the influence of shame.

Not surprisingly, shame-proneness and guilt-proneness are themselves positively correlated - generally about .42-.48 among college students and adults. This covariation no doubt reflects the facts that shame and guilt share a number of common features (e.g., both are dysphoric affects, both involve internal attributions of one sort or another) and that these emotions can co-occur with respect to the same situation. In addition to bivariate correlations. we generally conduct part

correlations, where we factor out shame from guilt and vice versa, to refine our analysis. These part correlations isolate the unique variance in shame and guilt so that we can examine, for example, individual differences in a tendency to experience guilt about specific behaviors, uncomplicated by feelings of shame about the self. As seen in Table 1, people who are prone to "shame-free guilt show no vulnerability to depression and, if anything, are *less* inclined toward suicidal thoughts and behaviors than their peers.

Finally, a few studies investigating precipitants or causes of suicide have identified feelings of shame as trigger of suicide. Hassan (1995) reviewed the coroner's case files of 176 cases of suicide that occurred in South Australia in 1982. He found that enough information existed in 137 cases to render an opinion as to the precipitating trigger of the suicide. Precipitants fell into one of eleven categories: physical illness, mental illness, physical and mental illness, unhappy love, family/marital problems, shame and guilt, grief and burden on others, drug and alcohol abuse, financial/unemployment problems, a sense of failure in life, and loneliness. The category of "shame and guilt" was defined as a failure to meet obligations or social expectations that result in a sense of disgrace. Imprisonment and serious social embarrassment were the most common events that resulted in shame/guilt. Shame/guilt was found to be the main precipitant in seven percent of the suicides, the majority involving middle-age men and older women.

However, shame may be embedded in the *leading* cause of suicide identified by Hassan (1995) among individuals under the age of 60. According to Hassan, the most common cause of suicide was "a sense of failure in life." Hassan defined this category as a history of many things "going wrong" that were associated with a sense of failure and giving up on life. Many of the examples given (i.e., a combination of factors such as loss of employment, loss of face, failure to meet family obligations, and failure in a business or profession) are commonly associated with significant feelings of shame or guilt. Similar results were observed in an earlier study of 400 completed suicides in Singapore (Hassan, 1981). Thus, reading between the lines of Hassan's reports, one might conclude that feelings of shame and guilt are of central importance in understanding suicidal behavior.

CLINICAL IMPLICATIONS

While there appear to be both theoretical and empirical bases for considering shame as a predictor of suicide, these bases are only helpful if we can apply them directly to helping the suicidal client. As indicated throughout this chapter, shame is an emotion that frequently remains unacknowledged or unexpressed. Therefore, the clinician must pay careful attention to examine for underlying shame that may be masked in such emotions as depression, anger, or rage. Morrison (1996) suggests that reassurance is limited in its usefulness for suicidal clients experiencing intense shame, and that a direct, problem-solving approach is preferable, with specific focus on alternative plans, goals, lifestyles, and friendships. Therefore, tangible changes that the clients can implement immediately appear to be much more helpful than lending them reassurance that their pain will eventually diminish. Additionally, it can be helpful to draw attention to the clients' strengths and assets, and remind them of their past and present personal successes.

For clients who are experiencing intense anger (particularly when

vacillating between shame and rage), aid in acknowledging that anger may help alleviate the self-blame that is so prominent with prolonged experiences of shame. Additionally, helping clients concede their anger may decrease the likelihood of turning that anger inward through a suicidal gesture. Finally, once a client is no longer acutely suicidal, exploring the sources of his or her shame, as well as related low self-esteem and self-doubt, may be helpful in aiding the individual to overcome chronic tendencies toward shame and self-blame.

To this end, cognitive-behavioral approaches to treating suicidal clients experiencing shame might include helping the client identify distortions in thinking, particularly in regard to the global and intense self-blame associated with shame. Implementing this approach might include educating the client on the concept of generalization, and helping the client to distinguish between judgments made regarding behavior and judgments concerning the self.

Some Further Clinical Implications: Experiences of Shame and Guilt Among "Survivors" of Suicide

Official statistics from 1995 estimate that each completed suicide intimately affects at least six other people. It is estimated that there are 4.3 million survivors of suicide in the U.S. alone, a number that grows by 186,000 every year (Anderson, Kochanek, & Murphy, 1997).

The connection between feelings of shame and guilt and suicide can also be seen in the reactions of friends and family members connected with an individual who completed a suicide. " Is there anything that I could have done?' is a question commonly asked by people close to someone who committed a suicide. These individuals are often left with overwhelming guilt C'I should have seen it coming") and unanswerable questions ("Why did she do it?'). Self-blame is also common when these individuals begin to believe that it was something they did or said that caused their friend or family member to choose to end his/her life.

When faced with the suicide of a loved one, the ensuing distress that these individuals experience may be worsened by the shame associated with having someone close to them commit a suicide. In general, there is a good deal of stigma attached to suicide in our culture. In fact, in some religions suicide is viewed as a mortal sin, resulting in eternal damnation - thus compounding the grief of surviving family members. Moreover, the shame and the stigma associated with suicide may lead others to withdraw from surviving family members. Under such circumstances, especially, people may be uncomfortable, not knowing what exactly to say to console grieving loved ones. And searching for an explanation, they too may wonder what kind of parent (spouse, child, sibling) would allow such a tragedy to occur. As a result, surviving loved ones may feel abandoned, isolated and without social support. Their shame is often heightened as they wonder if others are assuming they must be bad, poor parents (spouses, children, and siblings). And the cycle continues. Feeling shamed and condemned, survivors may push away potentially supportive others -- and in reaction to their shame and withdrawal, others may be inclined to retreat further. As therapists, it is important to recognize and address the guilt and shame experienced by these survivors.

Sensitivity to issues of shame and guilt may be particularly important with children survivors. Owing to their cognitive developmental level, children are

especially inclined to misattribute a family member's suicide to internal, stable, and global factors. That is, children often believe that the suicide occurred because "they were being bad" and that they could have prevented it if they had only been good (Small & Small, 1981). Moreover, such a misplaced sense of responsibility may be intensified by the reactions of others. Children may receive subtle or direct messages that they were responsible for their parent's suicide. For example, peers - uncomfortable with the issue of death and with the notion of suicide in particular - may reinforce a sense of blame by withdrawing from or taunting (with insinuations or with direct indictments) the grieving child.

Finally, another group of individuals who are often overlooked in the aftermath of a suicide are the treating therapists. Estimates of the percentage of therapists who will lose a patient to suicide range from 15-51% (Brown, 1987; Chemtob et. al., 1988; Kahne, 1968; Litman, 1965). The increased risk of suicide among many patients with mental illness has led more than one therapist to the conclusion that there are two types of therapists - those who have lost a patient to suicide and those who will. Studies of therapists' reaction to patient suicide have been noticeably scant despite recent studies suggesting that therapists experience significant emotional distress, loss of self-confidence, and professional role disruption after the suicide of a patient (Chemtob, et al., 1988; Jones, 1987). Chemtob et al. (1988) found that shortly after patients' suicides, psychiatrists reported stress levels that were comparable to those of individuals seeking therapy after the death of a parent. Research has shown that therapists experience many of the same emotional reactions as other survivors of suicide - feelings of guilt and responsibility (Kleespies, Smith, & Becker, 1990; Valente, 1994), anger, shame, shock, denial, anxiety, embarrassment (Meade, 1998), loss of self-esteem (Chemtob et al., 1988), pain, depression, and isolation (Goldstein & Buongiorno, 1984). In addition, therapists may experience reactions that are unique to their professional role such as questioning one's professional competence (Brown, 1987), fear d treating or refusal to treat suicidal patients (Goldstein & Buongiorno, 1984), fear of relatives' reaction and negligence suits (Brown, 1987), confusion regarding if, how, and when to interact with the family of the deceased, and whether to attend the funeral (Valente, 1994). Research has shown that many of these reactions can be long-lasting and may significantly impact professional development (Brown, 1987).

Especially difficult for therapist survivors is a sense of isolation, both real and imagined, that often results after a patient suicide. Other therapists may begin to question the survivor therapist's professional competence or may feel anxious and unable to handle the plethora of emotional reactions experienced by their colleague. The withdrawal of professional colleagues only compounds the profound sense of isolation often felt by therapist survivors, and may leave therapists feeling shamed and cast-out. Several studies have shown that social and collegial support may be the most important factor for therapists negotiating the emotional minefield of patient suicide (Goldstein & Buongiorno, 1984; Kolodny, Binder, Bronstein, & Friend, 1979; Stelmachers, 1989; Valente, 1994).

SUMMARY AND CONCLUSIONS

In this chapter, we've discussed the potential role of shame and guilt in both the causes and consequences of suicide. Theory and emerging empirical research

indicates that feelings of shame are more prominent than guilt in the dynamics leading up to suicidal thoughts and behaviors. Nonetheless, experiences of shame often go unnoticed by both client and therapist in the therapeutic session (Lewis, 1971). Treatment of suicidal clients may be enhanced to the extent that therapists and other mental health professionals develop a "third ear" for subtle markers of hidden shame experiences. The importance of considering shame and guilt in connection with suicide extends to the "survivors" of suicide, as well. Although often overlooked, friends and family members are also vulnerable to experiences d shame and/or guilt in the aftermath of a loved one's suicide. Therapists, too, often experience similar emotional reactions that may be exacerbated by concerns Unique to their professional role as treatment providers.

Notes

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MOOD REGULATION AND SUICIDAL BEHAVIOR

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What is suicide but an effort to stop the unbearable flow of negative affects?
Henry Murray (quoted by Shneidman, 1996, 1998)

The study of mood regulation, like many phenomena in psychology, would appear to have a long history and a short past. Ancient European philosophers like Aristotle and Epictetus speculated about why different people reacted with different emotions to similar events, and the implications of these differences for controlling or regulating feeling states (see, for example, the discussions by Beck, Rush, Shaw, & Emery, 1979; Ellis, 1962; and Lazarus, 1991). We see similar examples in Asian traditions, such as Buddhism and Hinduism, which developed tenets and practices designed to understand frustration and liberate oneself from suffering among other things (Watts, 1957). More recently, Freud (e.g., 1923) and other early psychoanalytic theorists were concerned with how ego functions developed to satisfy or sublimate the emotional desires and impulses of the id. However, "mood regulation" and related terms, including affect regulation, emotion regulation, and emotion-focused coping, have crept into the empirical psychological literature only recently. Similarly, as the quote from Henry Murray suggests, it has long been recognized that mood regulation is one important process related to suicidal behavior[2], but only recently has this association received systematic attention. In this chapter, I will summarize what is known about mood regulation and related processes and how mood regulation is related to suicidal behavior. I will close by presenting a tentative model for understanding stable individual differences in mood regulation processes and their link to suicidal behavior. My hope is that this tentative model will provide direction for suicide prevention and intervention as well as an agenda for further research on mood regulation and suicide.

MOOD REGULATION AND RELATED PROCESSES

Scientists have developed several terms for what a layperson might call "feelings." Affect, emotion, and mood each have been used to refer to distinct but overlapping aspects of subjective experience (cf. Russell & Feldman Barrett, 1999). Based on recent conceptual and empirical advances, I will use the following definitions. *Affect* refers to basic dimensions that can be used to describe subjective experience: pleasantness and activation (Russell, 1980; Larsen & Diener, 1992; Thayer, 1989). *Emotion* refers to a specific discrete category of subjective experience, often with a characteristic pattern of physiological activation, facial expression, cognitive concomitants or causes, and motivational value; emotions can occur in blends (Izard, 1972). The distinction between affect and emotion can be illustrated by considering two pairs of hypothetical individuals, In our first pair, one person is feeling predominantly angry, and the other, predominantly sad--two distinct emotions. It is possible for them to experience these distinct emotions as equally (un)pleasant and activated, yet we would expect important differences: For example, the former would probably display narrowed eyes and a clenched jaw, while the latter would appear with eyes downcast, a frown, and perhaps shoulders slumped; the former's thoughts would likely focus on themes of injustice and transgression, while the latter's would be probably be characterized by themes of loss and pessimism. Alternatively, consider two individuals both experiencing anger, where one is furious (high unpleasantness and high activation) and the other is annoyed (moderate unpleasantness and moderate activation). Finally, *mood* refers to the person's subjective experience of the blend of activated emotions on a single positive-negative dimension (cf. Davidson, 1994; Izard, 1972; Tellegen, Watson, & Clark, 1999).

These definitions imply that *mood regulation* is the process of trying to feel better. It is a more general term than affect regulation (efforts to alter the pleasantness or activation of emotional experience) and emotion regulation (efforts to change emotional states). Typically, people try to feel better by increasing the pleasantness of affector creating a comfortable level of affective activation, or by shifting to a more positive blend of emotions. In other words, the term mood regulation has utility in that it subsumes the other two and it captures an important aspect of the phenomenology of emotional life. Therefore, I will refer to mood regulation throughout this chapter even when describing phenomena that could also be accurately described as affect regulation or emotion regulation.

A word also needs to be said regarding emotion-focused coping (Lazarus & Folkman, 1980, 1984). Emotion-focused coping refers to a possible function of a response to a stressor. The same response could simultaneously help solve a problem or regulate a subjective experience. Few coping responses, as typically defined and measured in studies of adaptation to life problems, are exclusively emotion-focused or problem-focused, and the focus of a response can vary from person to person and, within persons, from occasion to occasion. The emphasis in most coping research is on the responses, which can be emotion-focused partially, completely, or not at all; the emphasis here is on the process of regulation of mood, which can include what are referred to elsewhere as emotion-focused coping responses.

Classifying Mood Regulation Strategies

Several authors (e.g., Parkinson & Totterdell, 1999) have noted an important challenge for anyone interested in cataloging or categorizing mood regulation strategies: Almost any response to a negative mood could, under some circumstances or as used by some individuals, function to help a person feel better. In addition, classification systems can depend on the conceptual model of mood being used, the method used to measure mood regulation behavior, and the statistical or mathematical techniques employed to generate the classification scheme. However, recent independent attempts to classify such responses, each using slightly differentmethodological approaches, have identified broad but useful dimensions ofmood regulation strategies that can serve as a basis for a classification framework.

Morris and Reilly (1987) proposed a conceptual framework which relied heavily on a previous attempt to classify more general coping responses (Pearlin & Schooler, 1978). One distinction they made concerned whether a response was primarily directed toward managing or changing a mood versus the perceived cause ofthe mood, echoing the emotion-focused versus problem-focused distinction in the coping literature. Another distinction they suggested was between primarily cognitive strategies, such as re-evaluating a mood, and direct action on the mood or its perceived causes. Finally, they suggested that affiliative strategies, such as seeking emotional support, constituted a distinct category.

More recent empirical efforts have extended this broad outline considerably. Thayer, Neuman, and McClain (1994) used Thayer's (1989) theory of mood as encompassing two dimensions, energy and tension, as a starting point. They sought to classify ways people reported trying to increase energy and reduce tension in terms oftheir frequency of use and their perceived effectiveness. They identified six classes of strategy which were, in order of perceived effectiveness: Active mood management, such as relaxation and exercise; seeking pleasurable activities and distraction, such as engaging in a hobby or humor; withdrawal/avoidance, such as being alone or avoiding the perceived causes ofthe mood; support, ventilation, and gratification, such as talking to someone, eating, or smoking; passive mood management, such as watching TV, eating, or resting; and direct tension reduction via use of drugs, alcohol, and sex. These categories are based primarily on their co-occurrence, because the authors factoranalyzed respondents' reports ofwhat behavior they used, which explains why some categories include strategies that appear to be quite different(e.g., talking to someone and smoking).

Parkinson and colleagues (Parkinson & Totterdell, 1999; Parkinson, Totterdell, Briner, & Reynolds, 1996) have conducted a series of studies that have led them toward a model which is primarily defined by two dimensions, cognitive versus behavioral and diversion versus engagement. Within the dimension of diversion, they identlfy a sub-dimension ofdisengagement from or avoidance of the mood versus distraction, in which the person is aware of the negative mood but directs thoughts or actions positively toward either pleasure/relaxation or a demanding challenge. These results are based on a hierarchical cluster analysis and thus depend on perceived similarity of the responses rather than on their co-occurrence. This scheme, especially in its broad dimensions, again recalls work on coping responses (e.g., Roth & Cohen, 1986).

In summary, two primary dimensions of mood regulation appear to be whether the response is primarily cognitive or behavioral and whether it is directed toward changing the mood in some direct way that acknowledges or even emphasizes the mood (e.g., catharticventing) or an indirect way through avoidance, substitution, or distraction. It remains to be seen if an interpersonal (or affiliative) versus intrapersonal (taking action more or less independently, thinking more positive thoughts) dimension will be important. It appears that no study thus far has attempted to systematically sample responses that vary only along this dimension. For example, many of the pleasant distractions studied by Parkinson and Totterdell (1999), such as "treated myself," could be either affiliative or solitary responses. Given the importance of both the perception of isolation (e.g., Bonner, 1992) and mood dysregulation in suicidal behavior, this might prove to be an important distinction.

Effectiveness of Mood Regulation Strategies

Identifying the effectiveness of mood regulation strategies might prove an even more difficult challenge than classifying them. Two important and overlapping issues are how to conceptualize and measure effectiveness, including its time frame (e.g., short- versus long-term) and whether a response that leads to better feelings but has adaptive costs, such as drug use or hostile action, should be considered effective. Further complications arise when we consider that there are probably situational and individual difference variables that influence effectiveness. Nonetheless, some research has begun to identify associations between specific mood regulation strategies and improved mood.

An enormous number of studies, beyond the scope of the present chapter, have examined relations between coping responses and broad mood-related outcomes of stressful events. At least one study has addressed associations between daily coping and daily changes in mood, which is very relevant to the question of effective mood regulation. Stone, Kennedy-Moore, and Neale (1995) conducted a daily diary study in which married adult men reported on their positive and negative affect (PA and NA) at the end of each day, the day's "most bothersome event or issue" (p. 343), and how they tried to "feel better or handle the problem" (p. 343). Coping was measured with an open-ended question, responses to which were coded into eight coping modes (Stone & Neale, 1984). The men's wives provided reports of their husbands' daily PA and NA. Analyses of change from previous day's mood, controlling for individual differences and self-rated undesirability of the bothersome event, indicated that reductions in self-reported NA were associated with use of distraction and acceptance. Acceptance was also associated with reductions in spouse-reported NA. Self- and spouse-reported PA were increased by distraction, acceptance, and relaxation. Interestingly, the following coping modes were associated with increases in NA: direct action (self-report only); catharsis (self- and spouse-report); and seeking social supports (self- and spouse-report). Seeking social supports was also associated with decreases in self-reported PA. In other words, distraction and acceptance seemed very effective over a one-day time span, in that they reduced NA and increased PA. In contrast, seeking social support (typically a highly recommended coping/mood regulation strategy) seemed to produce counter-productive increases in NA and decreases in PA.

This puzzling finding must be understood in terms of several measurement issues involved. First, the definition of effectiveness is critical; it is conceivable that a strategy like seeking social support initially worsens mood because it requires the individual to dwell on and express a negative mood. However, it is possible that such a strategy is associated with mood improvement over a longer time span (cf. Hunt, 1998). A second measurement issue concerns social support; seeking social support does not guarantee receiving it. Without an independent assessment of quality of received social support, it is premature to reject social support seeking as a mood regulation strategy on the basis of these findings, especially in light of findings that support the initial increase-eventual decrease pattern of negative mood for individuals sharing traumatic memories with a supportive listener (or even a journal; Pennebaker, Hughes, & O'Heeron, 1987).

Another line of research related to the coping literature has been pursued by Nolen-Hoeksema and her colleagues, who have studied two narrowly defined responses to depressed mood, rumination (dwelling on the mood, its causes, its implications for the self, and similar consequences) versus distraction (engaging in activities that increase the possibility of positive reinforcement). In experimental research, participants who are either induced to feel depressed (e.g., Morrow & Nolen-Hoeksema, 1990; Thakral, 1999) or are preselected as dysphoric (e.g., Nolen-Hoeksema & Morrow, 1993) are required to read a series of statements that are either ruminative ("Think about the way you feel inside") or distractive ("Think about the smile on the Mona Lisa"). In field studies (e.g., Nolen-Hoeksema, Parker, & Larson, 1994), individuals describe their coping responses when dysphoric on a measure that specifically samples ruminative and distractive responses. In almost all studies, rumination (as defined here) is associated with more intense or longer lasting depressed moods than is distraction.

As mentioned above, Thayer et al. (1994) asked respondents to rate how effective they perceived their mood regulation responses to be; they also asked a sample of psychotherapists to rate the same responses. The psychotherapists' expert ratings converged quite well with the naive ratings of the respondents, with one exception: Psychotherapists rated support/ventilation/gratification as more effective than they rated withdrawal/avoidance. There was clear agreement that attempts to influence one's mood directly or indirectly, via pleasurable activities and distractions, were most effective, and that the category labeled direct tension reduction, which encompassed attempts to reduce tension in unhealthy ways, was least effective.

Thayer and his colleagues also identified exercise as the single most effective strategy, and in more recent work have explored this more systematically (Hsiao & Thayer, 1998). The effectiveness of exercise seems to stem from its ability to increase energy (or PA) and decrease tension (or NA) simultaneously; even when strenuous exercise saps energy in the short-term, it is associated with eventual increases in energy.

Côté and Larsen (1997) used a time-sampling approach to address specifically the effectiveness of different mood regulation strategies. College student participants reported twice daily, for 28 days, their mood and which of 12 strategies they had specifically used to try to get out of a bad mood. A notable feature of this study was that an attempt was made to distinguish short- and long-term effectiveness, defined here as increases in self-reported pleasantness of affect (Russell, Weiss, & Mendelsohn, 1989). Short-term effectiveness of a mood regulation strategy was

defined in terms of change from the preceding assessment to that at the time the strategy was reported, averaged over all occasions the strategy was used; long-term effectiveness was defined in terms of mood change from the preceding assessment to the assessment following the strategy's use. Respondents reported using a wide variety of strategies; the most frequently used strategy, distraction, was used on only 26% of occasions. There was striking contrast in terms of strategies' short- and long-term effectiveness. The strategies which produced short-term increases in pleasantness, in decreasing order of effectiveness, were venting, drinking alcohol, socializing, taking problem-directed action, resolving to try harder, and cognitive reappraisal. In contrast, the strategies that were effective in the relative long-term were: resolving to try harder, downward social comparison, and distraction. Within persons, the frequency with which strategies were used was unrelated to their effectiveness either short- or long-term. While it is surprising that people would not tend to use mood regulation strategies that work for them, a broader sampling of strategies or a different definition of long-term effectiveness might have produced different results. Although this study sampled relatively few mood regulation strategies, and defined long-term effectiveness only in terms of a 12-hour lag, it usefully illustrates the importance of one's definition of effectiveness.

In summary, there is some consensus in the empirical literature regarding effective and ineffective mood regulation strategies, but also a great deal of variability in findings, stemming from the different mood regulation strategies sampled and the different definitions of effectiveness used across studies. It appears that strategies which create the possibility of pleasant experiences tend to be effective; they might only be effective in the short-term if they merely distract the person from problems that will persist or recur. Cognitive strategies such as acceptance and re-appraisal also appear to be effective, consistent with cognitive theories of emotional disorders (e.g., Barlow, 1988; Beck et al., 1978) and the literature on coping, especially coping with relatively uncontrollable stressors (Aldwin, 1994).

Individual Differences in Mood Regulation

One reason why it is difficult to identify generally effective mood regulation strategies is that there are likely important individual differences in selection of mood regulation strategies and how skillfully they are implemented. Researchers have begun to identify some of the variables which contribute to these individual differences.

Temperament and Personality Traits

Developmental psychologists have recognized for some time that individual differences in activity level, emotionality, and soothability appear at a very young age (e.g., Rothbart, 1981). It appears that some infants and children react to noxious or upsetting stimuli more strongly than most and may require more effort from adults to reduce their distress. These early differences appear to provide a basis for development of adult personality traits, such as Trait NA or Neuroticism (Clark, Watson, & Mineka, 1994). Affective intensity (AI; Larsen & Diener, 1985) is

another dimension of adult personality that appears to be distinct from trait NA and PA and refers to the intensity with which people experience their emotions: Individuals high in AI experience intense highs and lows in their emotional lives. In other words, individuals can be temperamentally prone to experience more frequent, more intense, or more durable negative moods. Such individuals may be at risk to experience negative mood regulation difficulties, although not all such individuals will fail to develop an effective repertoire of mood regulation behaviors. Such children might require more support or structure in their environment, relative to less reactive children, to facilitate the healthy development of mood regulation skills. Conversely, when such children fail to experience the necessary circumstances which facilitate the development of mood regulation skills, or worse, are exposed to neglectful or abusive conditions, they appear to be at especially high risk to develop mood regulation difficulties and clinically signifcant problems related to these deficits--including mood disorders and suicidal behavior (cf. Linehan, 1993).

Skills and expectancies

While heritable traits might limit the set of possible developmental trajectories for mood regulation, it is presumed that mood regulation behaviors are socially learned, with powerful contingencies provided by changes in mood. Individuals in distress employ the behaviors that have worked for them before in similar situations or that they have observed to work for others. One reason the short-term versus long-term effectiveness question is important is that problems can arise when one develops a repertoire reliant on strategies effective in the short-term and not the long-term. Recent work on emotion-related skills (Goleman, 1996; Salovey, Hsee, & Mayer, 1993; Salovey & Mayer, 1993) shows that some individuals regularly employ more effective (long-term) means of regulating their moods, and that such individuals also tend to be more knowledgeable about their feelings in general, more aware of specific feelings as they experience them, more effective problem-solvers, better at delay of gratification, and more socially skilled in general. The benefits in terms of social skills are presumed to arise because such individuals are adept at regulating their emotional lives in such a way that their moods can enrich, rather than disrupt, their interactions with others,

At least one study has attempted to assess directly individuals' mood regulation repertoires or styles. Westen and colleagues (Westen, Muderrisoglu, Fowler, Shedler, & Koren, 1997; Westen & Shedler, 1994) developed an observational measure of mood experience and regulation, using Q-sort methodology in which an observer (e.g., psychotherapist or interviewer) organizes a standard set of adjectives and phrases into piles such as "very descriptive" and "not at all descriptive" to generate a profile of the target individual (Block, 1978). The mood regulation items were intended to sample behaviors and cognitions traditionally viewed as coping behaviors, such as remaining goaldirected when upset, as well as those presumed to reflect defensive processes from a psychodynamic perspective, such as blaming others or acting needy when upset. Factor analysis of these items as sorted in a psychiatric outpatient sample yielded three dimensions, one reflecting an active, reality-focused approach to mood regulation and the other two reflecting defensive blame of others and denial or

avoidance of distress, respectively. The reality-focused dimension was strongly positively correlated with several therapist-reported indices of adaptive behavior, such as the Global Assessment of Functioning scale, whereas the externalizing dimension tended to be negatively correlated with the same scales and the avoidant dimension tended to be modestly positively correlated. In other words, among psychiatric outpatients, those who were perceived by their psychotherapists as displaying a mature, active approach to regulating mood were also perceived as better functioning, while those viewed as displaying blaming responses when upset were perceived as having more difficulties in general.

Expectancies play an important part in the development and effective use of mood regulation strategies. Catanzaro and Mearns (1999) recently reviewed several studies which show that when individuals expect a behavior to lead to a certain mood-related outcome, such as feeling better, the expectancy tends to be self-confirming. For example, individuals who are led to expect to enjoy themselves in an experiment report more enjoyment and exhibit more signs of mirthfulness than those who were not--even if they are forced to sit in an uncomfortable position under harsh, glaring lights (Catanzaro, 1989; Klaaren, Hodges, & Wilson, 1994). Similar self-confirming effects have been found for nicotine withdrawal symptoms (Tate, Stanton, Green Schmitz, Le, & Marshall, 1994), premenstrual tension (Fradkin & Firestone, 1986; Olasov & Jackson, 1987), and mood-related alcohol effects (Greenwood, 1990). Thus, when individuals in a negative mood perform a behavior, if they believe it will help them feel better, that behavior is likely to help them regulate their negative mood. To some degree, this effect is independent of the average effectiveness of the strategy in the population at large.

In fact, individuals appear to develop relatively stable general beliefs about their ability to regulate negative mood states. Franko, Powers, Zuroff, and Moskowitz (1985) found that children as young as 6 years old had well-developed beliefs about how to make themselves feel better when they were sad or angry. These beliefs, conceptualized as generalized expectancies for the success of mood regulation strategies, were hypothesized to predict coping efforts and their outcomes. Building on this work, Catanzaro and Mearns (1990) developed the Generalized Expectancies for Negative Mood Regulation (NMR) Scale to measure beliefs in one's ability to terminate or alleviate a negative mood state. The prototypical high scorer on the NMR Scale believes, "If I try to feel better, I will feel better." Scores on this scale are highly internally consistent and temporally stable in a variety of populations (Brashares & Catanzaro, 1994; Catanzaro, Horaney, & Creasey, 1995; Catanzaro & Laurent, 1996). NMR Scale scores are negatively associated with measures of emotional distress and with change in emotional distress over time (Catamam, Wasch, Kirsch, & Mearns, in press; Mearns, 1991). While they are also associated with more active coping attempts and fewer avoidant responses to problems, the relationship between NMR expectancies and distress is largely direct and unmediated: Believing that one can regulate negative moods, in itself, helps one to feel better (See Catanzaro & Mearns, 1999, for a review). Further, these beliefs have been shown to predict less disruption of examination performance by anxiety (Catanzaro, 1996) and more positive cognitions after laboratory inductions of negative mood (Smith & Petty, 1995), findings consistent with the notion that individuals with stronger NMR expectancies are more effective at withstanding or resisting the effects of negative mood.

Summary

Individual differencies in mood experience and regulation have been well-documented. While temperament traits clearly influence mood experience, social learning processes probably are more directly linked to the development of mood regulation skills and beliefs. Temperament probably also provides some limits to the social learning trajectories available to a person. For example, individuals who are disposed to experience more intense or durable negative moods may need to learn a wider variety of mood regulation strategies, or may come to believe that their mood regulation abilities are only moderately effective. In the absence of experiences that support the development of a versatile repertoire of mood regulation strategies and confidence in them, such individuals would appear to be at considerable risk for life problems resulting from their mood regulation difficulties On the other hand, those who might be temperamentally at risk can reduce their risk via social learning of effective mood regulation strategies and confidence in them. In fact, recent studies show that NMR expectancies are associated with coping and depression independent of trait Affective Intensity (Catanzaro, 1997; Flett, Blankstein, & Obertinsky, 1996) and that strong NMR expectancies can mitigate the relationship between trait NA and current feelings of sadness (Catanzaro, 1999).

The Mood Regulation Process

In an attempt to organize the disparate findings about mood regulation behaviors, some authors have proposed models of the process involved when individuals change their mood. One such beginning framework was suggested by Parkinson et al. (1996), building on work in the coping literature (e.g., Lazarus & Folkman, 1984) and others studying mood and its regulation (Mayer & Gaschke, 1988; Salovey & Mayer, 1993; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Swinkels & Giuliano, 1995; Thayer, 1998). Parkinson et al. propose a four-stage model of negative mood regulation that includes monitoring (registering a mood and discriminating it from a baseline state), appraisal (evaluating a mood in context), regulation (acting to change the mood if desired) and reappraisal (evaluating whether continued or different mood regulation efforts are needed).

This apparently simple model seems quite useful. In particular, it provides a framework for specifying how contextual and individual differencies can operate in mood regulation, and where problems or deficits in mood regulation can arise that could lead to clinically significant problems like suicidal behavior. For example, contextual cues can signal whether an unpleasant feeling state is appraised as undesirable and thus requires regulation. Significant losses and severe threats naturally prompt unpleasant feelings which are often considered socially appropriate or even desirable, so they are not necessarily appraised as negative and therefore are not targets of mood regulation efforts. The person's context can also determine, at least temporarily, what strategies are available. For example, people can desire social support but realize that they must wait for individuals in their social support networks to become available.

Individual differences in temperament would seem to influence the monitoring stage, whereas social learning (including learning about one's own temperamental

tendencies) would seem to be most important in the appraisal, regulation, and reappraisal stages. As an example of how social learning can influence the appraisal (or reappraisal) stage, consider work by Teasdale and associates on "depression about depression" (e.g., Teasdale, 1985). This research showed that depressed individuals often appraise their depressive symptoms in ways that can exacerbate them, contributing to an increasingly negative cycle. One example of depression about depression is when individuals experience early morning awakening and restlessly lie awake thinking about how terrible they feel and that they are likely to have a horrible day. More important, Teasdale showed that one mechanism of effective cognitive therapy for depression is reducing these depressogenic thoughts about such symptoms.

At the regulation stage, problems can arise when an individual learns over-reliance on strategies that might be effective in the short term, and thus are rewarded, but maladaptive in the long run (cf. Westen, 1994). For example, when individuals drink alcohol as a coping mechanism, they tend to drink more and are at much higher risk for alcohol-related problems (Cooper, Russell, & George, 1988; Cooper, Frone, Russell, & Mudar, 1995; Evans & Dunn, 1995; Laurent, Catanzaro, & Callan, 1997). Alternatively, individuals may fail to develop sufficiently strong beliefs to execute effective mood regulation attempts; such failures will only serve to weaken further the individual's confidence and might contribute to an over-reliance on avoidant coping and other maladaptive tension-reduction strategies (Catanzaro& Mearns, 1999).

Summary

When people want to change a bad mood, they employ a wide variety of strategies with varylng degrees of effectiveness. Although the diversity of mood regulation strategies and idiosyncrasies in their effectiveness render attempts to catalog them difficult researchers are beginning to understand what the process of mood regulation entails and how circumstances and personality can contribute to effective and ineffective mood regulation. In turn, ineffective or maladaptive mood regulation appears to increase risk of suicidal behavior.

MOOD REGULATION AND SUICIDAL BEHAVIOR

If, as Henry Murray suggested, suicide is "an effort to stop the unbearable flow of negative affects," then suicidal behavior could be considered entirely a problem of negative mood regulation. While such an approach is probably too limiting, it is well-accepted that many individuals exhibiting suicidal behavior are also exhibiting difficulties regulating strongly negative moods (e.g., Williams & Pollock, 1993; MacLeod, Williams, & Linehan, 1992). For example, a series of studies showed that "the situation was unbearable and I knew I had to do something but I didn't know what to do," and "I wanted to get relief from a terrible state of mind were given as common reasons for overdose (Bancroft, Hawton, Simkin, Kingston, Cumming, & Whitwell. 1979; Bancroft, Skirmshire, Casson. Harvard-Watts, & Reynolds, 1976; Williams, 1986). In this section, I will examine aspects of suicidal behavior that are linked to or reflect mood regulation difficulties and

suggest a framework for studying and intervening in life-threatening mood regulation difficulties.

Predictors and Correlates of Suicidal Behavior Linked to Mood Regulation

Shneidman's (1985, 1992) well-known list of commonalities of suicide provide a useful description of the psychological state of the individual who is ready, willing, and able to act on suicidal wishes. It also provides some clues for aspects of suicidal behavior linked to mood regulation. Table 1 contains selected commonalities identified by Shneidman which refer to problems that have been related to mood regulation difficulties.

Table 1. Selected commonalities for suicide related to mood regulation (from Shneidman, 1992).

Commonality	*Link to Mood Regulation*
Common stimulus = unendurable pain	Emotional pain that is perceived as impossible to regulate can be appraised as unendurable.
Common stressor = frustration of psychological needs.	By definition, frustration of highly valued needs will elicit intense negative mood and stimulate a potential crisis for the person with mood regulation difficulties
Common purpose = seek solution.	The suicidal or parasuicidal act may be viewed by the person as a mood regulation attempt.
Common cognitive style = constriction.	The biasing of cognition by negative mood is more evident among individuals

	with mood regulationdeficits.
Common consistency = lifelong coping patterns.	Mood regulation deficits are associated with dispositional avoidant coping tendencies.

Consider three examples from Table 1. The first commonality listed is, The common stimulus for suicide is unendurable pain. Research on the meta-experience ofmood (e.g., Mayer & Gaschke, 1988) indicates that moods can be appraised on multiple levels. Two people might experience negative moods that are roughly equivalent on the immediate level of experience, but one of these people might furtherevaluate such a mood as a horrible occurrence (cf. Teasdale's [1985] work on depression about depression). Such catastrophic meta-appraisals are likely to be associated with less effective mood regulation attempts, and they can set off a cycle of increasingly negative mood that might eventually be appraised as unendurable. Another commonality refers to cognitive constriction. Because mood regulation deficits are associated with stronger effects of negative mood on cognition (Catanzaro, 1996; Smith & Petty, 1995), it is possible that difficulties imagining options other than suicide arise not simply because of negative moods but because individuals are having difficulty regulating those negative moods. Finally, reliance on maladaptive, avoidant coping as a general tendency (the last commonality in Table 1) is associated with both suicide risk (e.g., Yufit & Bongar, 1992) and with weaker NMR expectancies (Catanzaro & Mearns, 1999).

A number of correlates of suicide, parasuicide, and suicidal ideation are also associated with difficulties in at least one aspect of the mood regulation process. These correlates include being diagnosed with a personality disorder, perceiving few reasons for living, engaging in alcohol abuse, exhibiting a general deficit in problem-solving skills, holding positive mood-related outcome expectancies for self-injurious behavior, and developing hopelessness.

All DSM-IV personality disorder diagnoses include, either implicitly or explicitly, deficits in mood regulation, ranging from the shallow experience or blunted expression apparent in Schizoid Personality Disorder to the chaotically intense experience of individuals diagnosed with Borderline Personality Disorder (Westen et al., 1997). Theoretically, it has been posited that the maladaptive behavior patterns that lead to personality disorder diagnoses develop in part to regulate moods and emotions that the person has not learned to regulate in more adaptive ways (Linehan, 1993; Westen, 1994). Statistically, presence of a personality disorder diagnosis is associated with increased risk of suicidal behavior, and in some syndromes, suicidal behavior (ranging from ideation to a history of parasuicide) is a diagnostic criterion.

The Reasons for Living Inventory (RLI; Linehan, Goodstein, Nielsen, & Chiles, 1983) assesses an important negative predictor of suicidal behavior: Individuals who identify more reasons for living are less likely to be currently suicidal or suicidal in the future. The Survival and Coping Beliefs subscale of the

RLI may be the strongest correlate of suicidal history or behavior of all its subscales (e.g., Strosahl, Chiles, & Linehan, 1992). This subscale includes items referring to beliefs about adjusting to or coping with problems and feeling better in the future. Thus, holding the belief that one can and will feel better in the future reduces suicide risk.

Intoxication, particularly with alcohol, seems to potentiate suicidal behavior in those at risk, and a career of substance abuse is known is to be a correlate of suicide risk (e.g., Lester, 1992). Excessive, problem-related alcohol use is associated with beliefs that drinking will improve mood and with use of alcohol with the explicit intention of regulating mood (e.g., Cooper, Frone, Russell, & Mudar, 1995). Reliance on this particularly maladaptive mood regulation strategy, which likely occurs in part because more adaptive strategies are perceived to be ineffective or unavailable, thus adds to risk of suicidal behavior.

Problem-solving deficits are associated with suicidal behavior (e.g., Dixon, Heppner, & Rudd, 1994; Kehrer & Linehan, 1996; Linehan, Camper, Chiles, Strosahl, & Shearin, 1987; Priester & Clum, 1993), and mood regulation is probably related to problem solving in three ways. First, problem solving is disrupted by negative mood (e.g., Strack, Blaney, Ganellen, & Cope, 1985). Second, mood regulation deficits can be considered an important aspect of more general problem-solving skills (e.g., Salovey & Mayer, 1993). Third, suicide is viewed by the suicidal individual as a solution for one's problems, which can include difficult-to-regulate moods (cf. Linehan et al., 1987).

It seems clear that a significant portion of individuals with histories of parasuicide have come to believe that hurting themselves (whether they intend to die or not) will result in a reduction in distress (Suyemoto, 1998). For individuals experiencing intensely negative moods that seem (to them) to resist all other attempts at mood regulation, the expectancy that a self-destructive act will help them feel better must make such behavior an attractive option. The potentially powerful self-confirming effects of mood-related expectancies (Catanzaro & Mearns, 1999; Kirsch, 1985) can create a particularly dangerous positive feedback loop: Individuals with deficits in more adaptive mood regulation strategies engage in self-injurious behavior with the goal of feeling better and believing that they will. The consequent reduction in negative affect, however temporary, becomes a powerful reinforcement of the self-injurious behavior and re-confirms the dangerous expectancy that self-destructive behavior results in feeling better (cf. Linehan, 1993, Westen, 1994).

Finally, hopelessness is well-recognized as a powerful proximal cause of suicidal behavior (Abramson, Metalsky, & Alloy, 1989; Alloy et al., 1999; Beck et al., 1978). It seems possible that one route to hopelessness can be via a strong belief that one is incapable of regulating negative moods. Individuals experiencing significant distress who have such weak NMR expectancies may come to believe that they are confronted with only two terrible choice: a lifetime of unending distress, or ending their lives. Emotional distress that is believed to be unending may become meta-appraised as unendurable. Under such circumstances, the cessation of consciousness sought through suicide would make it --as Henry Murray suggested--the mood regulation strategy of last resort.

In sum, several correlates of suicidal behavior are also associated with mood regulation deficits. Some of these correlates have not yet been specifically documented, but they can be inferred from combining knowledge of actuarial

associations, theory-driven research, and clinical observation. For example, personality disorder diagnosis is actuarially associated with suicide risk; research shows that individuals with such diagnoses exhibit mood-regulation deficits; clinical observation tells us that suicidal behavior is often an attempt to regulate mood. In the next section, I turn to studies that explicitly examined relations between measures of aspects of mood regulation processes and suicidal behaviors.

Studies of Mood Regulation and Suicidal Behavior

Zlotnick, Donaldson, Spirito, and Pearlstein (1997) compared hospitalized adolescent suicide ideators and attempters on an interview-based measure of mood regulation which assessed self-perceptions of abilities such as controlling anger and calming down. While both groups reported some mood regulation difficulties, significantly higher levels of difficulty were reported by the attempters than by the ideators. In the subgroup of suicide attempters, mood dysregulation was strongly correlated with self-reports of the number of different types of self-mutilative acts that were, according to respondents, explicitly not suicidal in intent (e.g., burning or cutting self). Thus, controlling for hospitalization status, this study showed that degree of mood regulation deficits is associated with degree of suicidality.

Westen et al. (1997) examined relations of their Q-sort measure of mood regulation styles in psychiatric outpatients with clinician reports of presence or absence of personality disorder diagnosis, suicidal history, and history of psychiatric hospitalizations. Results were again consistent with the notion that reliance on ineffective mood regulation strategies is associated with suicidal behavior. Therapist perception of mood regulation tendencies toward active, reality-based responses were associated with an absence of all three indices, whereas tendencies to react to negative moods with blame of others, denial of negative feelings, rationalization, and similar ineffective responses were associated with the presence of a personality disorder and a history of suicide attempt. However, therapist perceptions of avoidance of thinking about or talking about distress were associated with an absence of a past suicide attempt, suggesting that only those ineffective mood regulation responses that might be characterized as a form of acting out as opposed to withdrawal might be associated with suicidal behavior.

In recent years, Linehan and colleagues (e.g., Linehan, 1993; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991) have developed Dialectical Behavior Therapy (DBT), a cognitive-behavioral treatment approach to borderline personality disorder and parasuicidal behavior that explicitly targets (among other things) mood regulation skills. Several studies have provided support for the efficacy of DBT in reducing parasuicidal behavior (e.g., Barley et al. 1993; Linehan et al., 1991; Linehan, Heard, & Armstrong, 1992). Thus, there is evidence that enhancing mood regulation expectancies and skills reduces suicidal behavior.

Consistent with Henry Murray's conjecture and the suggestive evidence that several risk factors for suicidal behavior reflect difficulties in mood regulation, recent evidence shows that mood regulation deficits are associated with degree of suicidality and a history of suicide attempts. Enhancing mood regulation expectancies and skills reduces parasuicide. More research is needed to explicate the aspects of mood regulation processes specifically linked to different aspects of suicide risk and suicidal behavior.

A TENTATIVE, CUMULATIVE, DIATHESIS-STRESS MODEL OF INDIVIDUAL DIFFERENCES IN MOOD DYSREGULATION AND SUICIDAL BEHAVIOR

To facilitate further research on mood regulation and its link to suicide, a tentative model can be proposed which focuses on two processes: (a) the development of mood regulation difficulties in childhood, and (b) the occurrence of suicidal behavior in someone at risk due to their difficulties in mood regulation. The model builds on work by Linehan (1993) and Westen (1994) and integrates work on temperament, personality, and psychopathology (e.g., Clark et al., 1994) with work on the mood regulation process (e.g., Mayer & Gaschke, 1988; Parkinson et al., 1996). It is depicted in Figure 1.

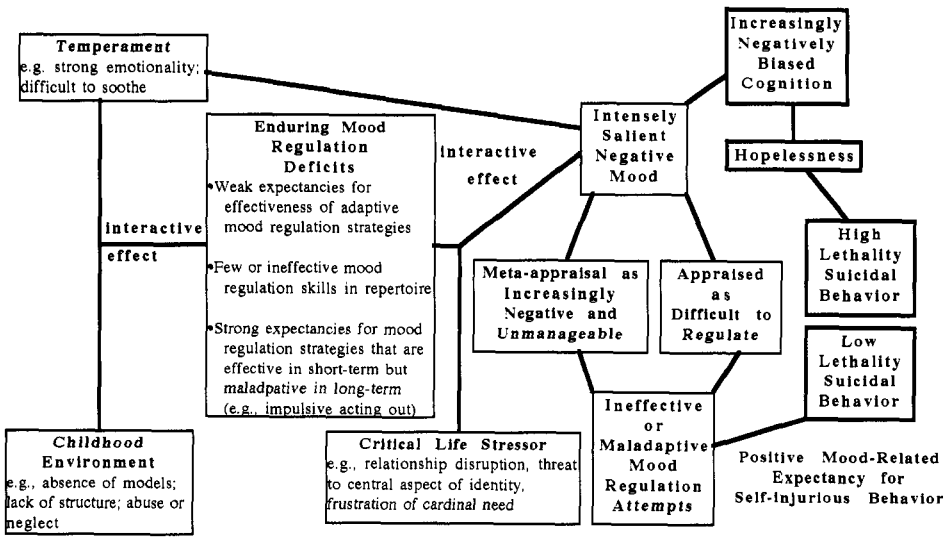

Figure 1. A tentative hierarchical diathesis-stress model of mood dysregulation and suicidal behavior.

The model is called cumulative for three reasons. First, both the development of mood regulation difficulties and the occurrence of suicidal behavior are thought to be due to the combined effects of some pre-existing risk factor and environmental events. Second, the temperamental diathesis influences both the development of mood regulation difficulties and the intensity of negative mood throughout the lifespan. Third, the initial outcome, mood dysregulation, is presumed to be a diathesis for the second outcome, suicidal behavior.

It should be noted that this model does not include all other important correlates and predictors of suicidal behavior, some of which might be subsumed in

parts of the present model. For example, it is left implicit that in some life contexts, such as feeling socially isolated, the threshold for any life event to be a critical life stressor will be lower. Finally, the emphasis in this presentation is on negative outcomes. It is assumed that similarly interactive models will hold for positive outcomes, such as the development of effective mood regulation skills.

The development of mood regulation deficits

Individual differences in strength of emotional reactions to noxious stimuli and ease of being soothed have been documented in young infants; these differences appear to provide the foundation on which develops the personality trait variously called Neuroticism, Emotionality, or Negative Affectivity and have been linked to a negative motivational system (Clark et al., 1994; Fowles, 1993; Gray, 1987; Tellegen, 1985). These differences are probably genetic in nature and constitute an important diathesis for mood regulation deficits.

However, not all children who exhibit these tendencies develop significant mood regulation deficits: Even children who tend to experience strong negative emotions can learn to regulate them. Childhood environments that provide adaptive and flexible models of mood regulation, create structure in daily life, facilitate awareness and acceptance of negative moods, and tolerate emotional expression while setting limits on emotional acting out probably facilitate the development of mood regulation skills. In contrast, environments which provide models of mood dysregulation, are unstable or chaotic, deny or distort the experience of negative moods, and are either restrictive, excessively permissive, or inconsistent regarding expression of negative mood significantly impede the development of an effective mood regulation repertoire. Such conditions typify the experience of children who suffer chronic neglect or abuse. When children disposed to experience strong negative emotional reactions are exposed to unstable, unsupportive, and abusive environments, they are likely to develop clinically significant mood regulation difficulties (Linehan, 1993).

Mood Dysregulation and the Occurrence of Suicidal Behavior

The child who develops a significant mood regulation deficit is now at risk to display suicidal behavior; his or her ineffective mood regulation repertoire now constitutes a diathesis for suicidal behavior. However, suicidal behavior will only be seen in the wake of what can be called a critical life stressor (Shneidman, 1985, 1996). That is, some negative event that is centrally important psychologically to the person triggers an especially intense negative mood. This mood will be highly salient to the person and be appraised as difficult if not impossible to regulate, at least via adaptive means.

Here the model includes two possibilities. For individuals who have developed the expectancy that self-injurious behavior will reduce the intensity of their negative mood, suicidal behavior is predicted to occur (Suyemoto, 1998). While this behavior is likely to be of low lethality, given that the expectancy for its mood-regulatory effect will be based in part on its previous use, it can be dangerous. This is the process likely to occur in individuals with a history of repeated low- to mild-lethality parasuicide, often diagnosed as suffering from borderline personality disorder (Linehan, 1993).

The second possibility is that ineffective attempts to regulate the intense negative mood lead to increasingly negative meta-appraisals of the mood as impossible to regulate and, eventually, unendurable. These meta-appraisals can combine with other mood-biased cognitions (e.g., appraisals of other aspects of the person's life circumstances, attributions for the cause of the current problems, beliefs about reasons for living and other expectancies for the future) to create hopelessness. Unless the cycle is somehow disrupted, a serious suicide attempt is likely to occur, mediated by hopelessness.

Implications of the Model for Future Research

This model raises important empirical questions. In terms of the development of mood regulation skills, more work is needed to understand the nature of the diathesis (or diatheses), to identify the environmental experiences that exert the most powerful impact on the developing child, and to specify precisely how these experiences combine with the diathesis. (Is there a simple threshold that needs to be met? Are some environmental parameters more powerful than others, given the same level of diathesis? Do abuse and neglect experiences have different effects on mood regulation skills? Are there multiple diatheses, and do they interact with Merent environmental parameters?).

In terms of the occurrence of suicidal behavior, similar questions remain about the details of the diathesis-stress interaction and thresholds of intensity of stress or negative mood that trigger suicidal behavior. In addition, research should examine relations between the proposed mood dysregulation diathesis and other know diatheses for suicidal behavior, such as depressogenic attributional style. Perhaps most important, the two proposed alternative mediating chains to qualitatively different suicidal behaviors need to be investigated. Specifically, low-lethality suicidal behaviors characteristic of chronic parasuicides are hypothesized to be mediated by expectancies that such acts will alleviate negative mood, rather than hopelessness. In contrast, more lethal suicidal behaviors (including stronger wishes to die and more elaborately developed plans) are hypothesized to be mediated by hopelessness due in part to increasingly negative cognition which itself results from the persistence of an intense, unregulated negative mood. Finally, the model implies that the effectiveness of treatments that reduce suicidal behavior, such as Linehan's DBT, is mediated by expectancy change, an hypothesis worth investigating given the importance of expectancy change in other behavior change processes (Kirsch, 1990, 1999).

Implications of the Model for Prevention and Intervention

This model is consistent with several well-recognized foci of prevention and intervention, and it suggests a variety of processes that could be targeted separately or in combination. Prevention efforts can be directed at providing environmental structures and learning experiences that foster the development of a diverse repertoire of adaptive mood regulation behaviors. Such efforts might be especially targeted toward those disposed to experience intense negative emotions, or at least should

recognize that people who differ qualitatively in the intensity of their emotional reactions might benefit from qualitatively different mood regulation strategies.

Regarding intervention, it is worth noting Shneidman's (e.g., 1998) insistence that reducing "psychache" reduces the risk of suicide. Certainly, crisis intervention can usefully be viewed as providing the person with structure and support necessary to regulate an intense negative mood today so that he or she can learn more effective strategies tomorrow. Breaking the cycle of increasingly negative and constricted thinking can be accomplished through provision of empathic support, identification of alternatives in which the suicidal individual can believe, or re-appraisal of the mood as potentially manageable or endurable at least in the short run. Treatment protocols can build on the success of programs like DBT by implementing interventions designed to disrupt spiraling cycles of negative meta-appraisal of mood and the biasing effect of negative mood on cognition. If evidence supportive of the two different pathways linking mood regulation deficits to suicidal behaviors is found, then identifying which pathway operates in a particular case of suicidal behavior will facilitate more precisely targeted intervention.

CONCLUSION

It seems self-evident that mood regulation processes (or deficits therein) are a key aspect of suicidal behavior--or at least it seemed so to Henry Murray. Nonetheless, much remains to be learned about the basic processes of mood regulation, how these individual differences in these processes develop, and how difficulties in mood regulation result in suicidal behavior. The model proposed in this chapter is provided as a heuristic to frame the agenda as we try to discover answers to these questions. Whether the specific hypotheses in the model ultimately receive support or not, testing them should lead to important insights into people's efforts to "to stop the unbearable flow of negative affects."

Notes

1. I gratefully acknowledge the assistance of Steven A Miller and Andrew O'Brien with the preparation of this chapter.

2. I will use the term *suicidal behavior* as a general term encompassing completed suicide, parasuicide, and suicidal ideation. I will follow Linehan and colleagues (e.g., Linehan & Kehrer, 1993) in using the term parasuicide to refer to all self-injurious behavior that does not result in death without reference to suicidal intent; this avoids the motivational implications of terms such as attempted suicide, suicidal gesture, or self-mutilation. Clearly, some parasuicides on this definition are highly lethal but unsuccessful attempts to end life, as in the cases described by Shneidman (1996), whereas others are probably best understood in interpersonal and self-regulatory contexts. As we will see, mood regulation processes can be involved in suicidal behavior in a number of ways; they are probably related to completed suicide and parasuicide in slightly different ways.

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DESPERATE ACTS FOR DESPERATE TIMES: LOOMING VULNERABILITY AND SUICIDE

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The terms of our estate may not endure
Hazard so dangerous as doth hourly grow. Shakespeare, *Hamlet.*

Picture a stockbroker in a window of a skyscraper at the dawn of the crash of '29. He jumps out. Such a scene is not fanciful of course, and is one of the haunting images that our society retains about the breaking onset of the Great Depression. What mental events lead people of proven success and ability to carry out such desperate acts? What is their phenomenological world?

In considering the haunting image of this suicidal stockbroker, we might picture an individual who is agitated, motivated to escape rapidly rising psychological pain, and experiencing considerable anxiety as well as depression. The model on which the present chapter is based assumes that it is not just significant losses, but the rate-of-change at which losses or aversive changes occur, that influences affect and behavior. For example, the sudden collapse of the stock market in '29 entailed a markedly rapid change that altered the world that people lived in. The model also assumes that not just depression, but comorbid anxiety, can contribute to the desperation that leads to suicide. The looming vulnerability model (Riskind, 1997, 1999) holds that injurious events that seem to rapidly change, grow, or escalate, are often far more disturbing than those of equal magnitude that do not have a rapid rate of change. The crux of our argument is that the combination of anxiety evoked by acute states of looming vulnerability with depression evoked by hopelessness can greatly increase the risk of suicide in comparison to the risk caused by hopelessness alone. The present chapter explores this model of anxiety, looming vulnerability, and suicide.

ANXIETY, MOOD, AND SUICIDE

Mental disorders are not requisite for suicidal behavior, but between 30 to 70% of individuals who attempt suicide meet the criteria for a mental disorder (Beaumont & Hetzel, 1992). Of these mental disorders, approximately half of all suicides are committed by individuals with major depression, and between 12% to 20% of inpatients who suffer from depression commit suicide (e.g., Angst, Angst, & Stassen, 1999; Bakish, 1999; Goodwin & Jamison, 1990). It is well known that depression and, more specifically, a sense of hopelessness are predominant predictors of suicide (Abramson, Metalsky, & Alloy, 1989; Abramson, Alloy, & Hogan, 1998; Fawcett et al., 1987; Noyes, 1991).

What is less adequately recognized is that anxiety is also implicated in suicide. In our example of the stockbroker, anxiety about feelings of rapidly rising psychological pain were likely to contribute to the desperate urgency of escape. In fact, research has revealed that the comorbidity of anxiety disorders with other mental disorders leads to greater symptom severity and heightened suicide risk (Bakish, 1999; Norton et al., 1993). The striking findings indicate that the presence of anxiety, particularly when comorbid with other disorders, greatly increases the risk of suicidality (e.g., Noyes, 1991). Individuals with comorbid anxiety and depression, when compared to individuals with anxiety or depression alone, have been shown to report more intense suicidal ideation, increased impairment, and more severe symptoms in addition to an increased incidence of suicide (e.g., Bakish, 1999; Rudd, Dahm, & Rajab, 1993). Further, Noyes (1991) contends that there may be a moderated relationship between anxiety and depression and risk for suicide. In a recent study, he provides evidence that anxiety related symptoms (e.g., panic attacks, psychic anxiety, insomnia, and diminished concentration) were the most powerful indicators of completed suicide within one year of assessment, whereas depression- related cognitions (e.g., hopelessness and suicidal ideation) were the most powerful longitudinal predictors of suicide after the first year. These findings suggest that anxiety is a significant predictor of suicide in individuals with clinical depression and that attempted suicide is more common among individuals with comorbid anxiety and depression (approximately 30%) than those with depression alone (approximately 10%) (Bakish, 1999).

Suicidal acts are also often tied to stressful events or life circumstances (e.g., traumatic experiences, loss, economic hardship, etc). Researchers, using retrospective analysis have repeatedly indicated a higher prevalence of stressful events in the recent lives of suicide attempters than in those of matched controls (e.g., Heikkinen, Aro, & Lonnqvist, 1992; Paykel, 1991). For example, in one study suicide attempters reported twice as many stressful events in the year immediately preceding their attempt as nonsuicidal depressed patients (Cohen-Sander et al., 1982). These studies indicate that the most common kinds of recent stresses in suicidality are loss of a significant other via death, divorce, breakup, or rejection (e.g., Heikkinen et al., 1992) and the loss of employment (e.g., Snyder et al., 1992). Further, current research indicates that young adults who have experienced more traumatic experiences (i.e., physical and sexual abuse) are more likely to attempt suicide and have higher levels of suicidal ideation D'Augelli & Hershberger, 1996; Yoder, 1999). In addition, suicidality has been linked to

painful or disabling illness (Lester, 1992), occupational stress (Holmes & Rich, 1990), and role stress (e.g., Stefansson & Wicks, 1991). In many of these cases, the victim of such tragedies experiences considerable *anxiety about psychological pain approaching in the future,* as well as depression and hopelessness regarding the irrevocability of past losses.

Depression is often a common reaction to loss. But coupled with this, loss can make people anxious about further loss (i.e., they fear that the worst is to come) (Riskind, 1999). When the focus is solely on loss itself, and on what is now lacking, the general mood is of depression. When, on the other hand, the main focus is on the fear of what is yet to come, and on the rate of aversive change as a function of time, the general mood is of anxiety. Germane here is Machiavelli's comment in *The Prince* that "One change always leaves the way prepared for the introduction of another." In the case of the stockbroker example, the suicide was not ultimately just a response to what had happened, but to a fear of what was still rapidly to come. Of course, phenomenologically, the individual who has suffered loss often feels a mixture of anxiety and depression, or oscillates between the two. Moreover, comorbid anxiety and depression is probably more the rule than exception. The main point is to recognize that stressful events (such as the loss of loved ones) often create heightened risk for the onset of anxiety disorders (e.g., Last, Barlow, & O'Brien, 984).

At this point, we postulate that an individual who has had sudden, rapd or unexpected losses will probably experience greater looming vulnerability than a person who has had gradual or expected losses. The suddenness of acute loss, and lack of warning of harm, will probably particularly heighten an acute sense of looming vulnerability. This, in turn, will probably heighten suicidality beyond the effects of any comorbid hopelessness. Moreover, the rapidity of the sudden loss might impress on the person the strong need for early detection and a motivation to escape from further sources of psychological pain that are rapidly rising in risk. After a sudden victimization, the individual might form demoralizing new beliefs about life such as "the rug can be pulled from under your legs in an instant."

Anxiety is also implicated in the role of alcohol and substance use in suicidality. The link between substance-use disorders and suicide has been clearly established in the literature (e.g., Anthony & Petronis, 1991). Most epidemiological studies investigating this relationship demonstrate that substance-use disorders are among the most common correlates of suicide, next to depression, and account for as much as 1/3 to - of all completed suicides (e.g., Silverman & Maris, 1995). Further, it has been demonstrated that alcohol abuse constitutes both a distal and proximal risk factor for suicide. Individuals with substance-related disorders display a greater frequency and repetitiveness of suicide attempts, make more lethal attempts, and demonstrate higher levels of suicidal ideation. Coupled with these facts, anxiety and substance use disorders are highly linked to each other. Indeed, recent research has indicated that alcohol use and anxiety disorders have a reciprocal causal influence. In one recent study, college students who were diagnosed as having an anxiety disorder were from 3.5 to 5 times more likely to develop a new alcohol dependence diagnosis from 3 to 6 years later; the reverse causal path was also found, so that alcohol use predicted later development of new anxiety disorders (Kushner, et al., 1999).

There is also neurobiological evidence that anxiety and substance use disorders operate on many of the same neurological pathways, such as GABA A

receptor sites and the mesolimbic dopamine pathway. The neurochemical effects of substances (e.g. alcohol) may serve to activate pleasurable states and simultaneously reduce anxiety. From this perspective, the abuse of substances by anxious individuals is an effective means by which anxiety can be minimized or avoided. Combined with the information that substance use disorders increase the risk of suicide, the fact that anxiety is often comorbid with substance use reinforces the possibility that anxiety is implicated in suicidality.

Schneidman (1992), Maris (1992), Baumeister (1990), and other eminent theorists have identified *escape from psychological pain* as one of the most common motives for suicide. In effect, such escape behavior can be seen as a *subset of avoidance behavior,* a classic hallmark of anxiety. In this chapter, we suggest that suicide is often motivated by anxiety about avoiding intolerable and rapidly rising psychological pain in living.

THE INFLUENCE OF THE RATE OF CHANGE OF AVERSIVE EVENTS ON EMOTION

The fact that there is an empirical description of a link between comorbid anxiety and suicide does not explain the basis for the link. What is the mechanism that underlies anxiety and its effects on suicidality? There are several reasons fix focusing on the rate of change of outcomes as an important determinant of emotional responses and behavior, and of "anxious suicidality" in particular. The emphasis that we give to the rate of change of outcomes is compatible with the fact that emotions theorists believe that emotional experiences are triggered by changes in events rather than unchanging events (Ortony, Clore, & Collins, 1988; Stein & Levine, 1987). As Baumeister and Bratslavsky (1999) suggest, the instigation for emotion is not actually a stimulus but a *change in stimuli.* Indeed, in general, the perceptual and the nervous systems (Gibson, 1979) detect changes in things rather than static things. From an evolutionary perspective, the detection of change is necessary for self-preservation, such that the early detection of threat movement is essential to circumvent personal danger (Soares & Ohman, 1994). Even at the neural level, receptors require the ability to detect small changes in order for their synapses to fire. Conversely, organisms habituate to stimuli that are predictable and undergo little change, even stressful ones (Katz, & Wykes, 1985; Paterson & Neufeld, 1987). Individuals can become desensitized and habituated to very gradually changing stimuli or stability in the environment, even when such stimuli are initially aversive or disturbing. Consequently, it is natural for people to attend and to respond to aspects of the environment that represent change rather than stability since early detection of change allows individuals to engage in proactive coping efforts (e.g., Aspinwall and Taylor, 1997).

The importance of the rate of change is supported by several well-known social-cognitive experiments. In one of these studies (Hsee & Abelson, 1991), research participants were asked to compare the levels of satisfaction they would have with several hypothetical outcomes. Results showed that negative outcomes were preferred that stayed at constantly low levels (such as a constantly low class standing) in comparison to outcomes where they fell from a high level to a low level (such as when they fell in standing in an undergraduate class). The rate at which outcomes fell was also an important determinant of their levels of satisfaction.

The participants far preferred an outcome that was a large but slow fall to an outcome that was a small but rapid fall (i.e., the rapidity of the "fall" makes it more aversive).

These results point to the fact that it is not just the absolute amount of change in the outcomes that determines an individual's affective response. What matters even more to the individual is the speed or rapidity with which the outcomes are changing (the first derivative, or their "velocity relation"). Thus, it is probably the case that the crash of '29 engendered intense emotion in part because of the rapidity of the significant changes that it reflected. As we discuss below, rapid changes that affect well-being are linked to intense anxiety.

THE LOOMING VULNERABILITY MODEL OF ANXIETY

According to the looming vulnerability model (e.g., Riskind, 1997; Riskind, 1999; Riskind & Williams, 1999), the expectancy or perception of rapid, aversive change is a major determinant of anxiety. For example, in the course of our lives, we have all experienced threats to our vital interests, such as losing a job, the break-up of a romantic relationship, or facing a debilitating medical condition. These events share in common the fact that they represent rapidly rising risk and aversive change (displacement) to our well-being. During such times, the most intense or intimidating circumstances are those that involve perceptions of threat(s) as rapidly changing (e.g., mounting, escalating, or approaching.) Dominant ingredients in our assessment of threat are not only its magnitude (e.g., the absolute amount d change), but also, its velocity (i.e., the first derivative with respect to time, or directional speed with which threat is escalating), acceleration (the rate-of-increase of the velocity), and momentum (i.e., the combination of velocity and amount of change).

The most intense anxiety is not usually generated merely by constant conditions or stabilities in stimuli, but by a sense of rapidly rising risk and escalating urgency that we have labeled the *sense of looming vulnerability*. Further, perceptions of threat as rapidly approaching or escalating in danger are likely to engender a sense of urgency in the individual to cope with or neutralize potential threats--behavioral and/or cognitive avoidance or escape. A vivid metaphor for this sense of rapidly rising risk is provided by ethologcal and developmental studies on visual looming. Many studies show that animals as diverse as fish, fowl, crabs, and primates respond with agitation, fear, and defensive reactions when confronted with a rapidly approaching, optically expanding, threatening stimulus such as another animal or object (Fanselow, 1994; Nanez, 1988). This literature offers species-wide evidence for a primordial evolutionary link between anxiety and cognitive content of looming danger.

Humans are unique among animals, however, because they have a "autonoetic" ability to be self-aware in a spatiotemporal context and to mentally project themselves into the past and the future (Wheeler, Stuss, & Tulving, 1997). This unique ability can lead even relatively mundane cues (such as witnessing a mildly reproachful look from a lover or traffic congestion) to produce anxiety when individuals elaborate mental scenarios or play out simulations of rapidly rising risk (Taylor & Phan, 1996; Aspinwall & Taylor, 1997). Looming vulnerability, then

refers to an active process of internally generating representations of rapidly escalatingdanger.

Research on Looming Vulnerability

Over the past eight years, numerous studies have examined the validity the looming vulnerability model of anxiety (e.g., Riskind, 1997; Riskind, Abreu, Strauss, & Holt, 1995a; Riskind, Williams, Gessner, & Chrosniak, 1999; Riskind & Maddux, 1993; Riskind & Maddux, 1994; Riskind, Moore, & Bowley, 1995; Riskind & Wahl, 1992, Riskind & Williams, 1999a & b; Williams & Riskind, 1999; Williams, Riskind, & Long, 1999). These studies have employed a variety of methodologies to investigate the validity of the looming vulnerability model, including self-report assessments, computer-simulated movement of objects (e.g., moving spiders vs. moving rabbits), the presentation of video-taped scenarios (e.g a campus mugging, possible contamination scenarios, etc.), and the presentation of moving and static visual images. Further, these studies have investigated a range of cognitive-clinical phenomena (e.g., anxiety, thought suppression, coping styles, catastrophizing, worry, attachment styles, etc) across a wide range of stimuli (e.g., individuals with mental illness, individuals with HIV, contamination, spiders, weight gain, social and romantic rejection, performance mistakes, etc.) and a diversity of populations (e.g., individuals with subclinical obsessive-compulsive disorder, social phobia, generalized anxiety disorder, post traumatic stress disorder, panic disorder, depression, specific phobias, and subclinical eating disorders).

These studies have provided consistent evidence that the looming maladaptive style represents a cognitive risk factor for anxiety (see Riskind, 1997 for a review). Several studies, using video-taped or computer generated stimuli or scenarios, have found evidence that phobic individuals exaggerate the extent to which their feared stimuli (spiders or germs) are changing, advancing, or moving rapidly forward towards them (e.g., Riskind et al., 1992; Riskind & Maddux, 1993; Riskind et al., 1995a). For example, spider phobics exhibit a bias to imagine spiders as rapidly approachmg or likely to approach them. Individuals with subclinical obsessive-compulsive disorder evidence a tendency to view contaminants as rapidly approaching or rising in risk (i.e., germs as rapidly approaching and spreading). Comparable associations exist between a sense of looming vulnerability and fears of Auto-Immune Deficiency Syndrome (Riskind & Maddux, 1994), fears by the public ofpsychiatric patients (Riskind & Wahl, 1992), and fears of performance mistakes by professional musicians (Riskind & Mizrahi, 1999).

Three early studies conducted by Riskind, Kelley, Harman, Moore, and Gaines (1992) sought to examine some of the predictions of the looming vulnerability model. In the first two studies, undergraduate student participants were given packets containing a photograph of a large tarantula and measures of looming vulnerability, threat, and fear. The sense of looming vulnerability to the tarantula was assessed by the average of five items (e.g., How actively and energetically is the spider moving to you? How quickly could this situation become more dangerous? How slow or fast is it moving toward you? How physically mobile is the spider? Is the speed constant or increasing?). Additional

items of threat appraisal contained two items each for danger, probability of harm, imminence, uncontrollability, and unpredictability and an index of fear (two items).

Our main theoretical prediction was that the sense of looming vulnerability to tarantulas would predict fear of these stimuli, and that this would have unique utility not reducible to the effects of other appraisals. To examine the best predictors among the variables, we conducted a set of multiple regressions. When all cognitive variables are simultaneously entered into the regressions, only the sense of looming vulnerability to tarantulas ($p < .02$ in Study 1, $p < ,0001$ in Study 2) and lack of control ($p < .09$ in Study 1, $p < .01$ in Study 2) reliably contributed Unique variance to the prediction of the fear of tarantulas; the probability, imminence, and unpredictability of harm did not. Thus, the sense of looming vulnerability to tarantulas was not reducible to lack of control, probability, imminence, or uncontrollability -- and provided *additional prediction* of variance in fear. Evidence for this conclusion has also been obtained from a number of additional studies (e.g., Riskind & Maddux, 1993; Riskind, et al., 1995a & b; Riskind & Williams, 1999a & b).

Evidence also shows that a sense of looming vulnerability acts as a determinant as well as a correlate of fear. We addressed this issue in the third study of Riskind et al. (1992) that used an *experimental manipulation* of looming movement. In particular, the study *experimentally manipulated* the looming movement of stimuli by having research participants look at videotaped presentations in which tarantulas and rabbits either moved toward the camera, moved away, or were still. The importance of looming vulnerability was shown by the fact that the looming movement of tarantulas enhanced fear and threat-related cognitions and did this far more than for rabbits that have nonthreatening characteristics. Moreover, the importance of looming vulnerability for fear was shown by the fact that these effects were far stronger for the high-fear-of-spider participants than for the low-fear participants.

Recent correlational studies have supported the idea that looming vulnerability is not only central in anxiety responses to phobic stimuli, but that it is also central to the anxiety responses in obsessive-compulsive disorder, social phobia, generalized anxiety disorder, trait anxiety, and panic disorder (e.g., Riskind, 1997; Riskind et al., 1999; Williams, Riskind, & Long, 1999). These studies suggest that some individuals develop a more generalized *looming maladaptive style*—i.e., a durable cognitive style for environmental information processing that functions as a danger schema and that represents a risk factor for pathological anxiety. The looming maladaptive style is postulated to lead individuals to exaggerate the time course of a potential threat in a way that intensifies its projected rate-of-change, rate of risk escalation, and catastrophic outcomes. It is assumed to be a cognitive vulnerability that promotes the development of anxiety, much as the depressive attributional style promotes the development of depression (e.g., Abramson, Metalsky, & Alloy, 1989).

Our research provides evidence for a mediated model in that increases in acute states of looming vulnerability lead, in turn, to an increased sense of urgency and a significantly greater use of avoidance coping (Williams, Riskind, & Long, 1999). Moreover, using a self-report measure of coping styles, we have obtained evidence that anxiety and depression are differentiated by associations with different with characteristic coping styles. Anxiety and the looming maladaptive style appear to be strongly associated with *avoidance coping;* in contrast, depression

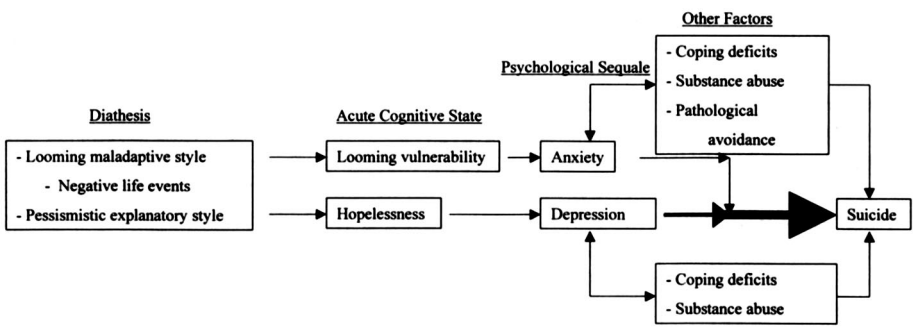
appears to be related to the under-employment of positive reappraisal and control/action-oriented coping.

LOOMING VULNERABILITY, ANXIETY, AND SUICIDE: A SYNTHESIS

Consistent with our model, we conceptualize suicide as being motivated by the desire to avoid rapidly rising, and intolerable psychological pain in living. Particularly at risk for suicide are individuals who perceive their life circumstances as progressively worsening, and/or escalating in risk and pain, and who may perceive their situations as hopeless. Such individuals may be unable to identify strategies that would be most successful in circumventing a negatively anticipated outcome. Not only do these individuals see their current situations as irrevocable, they see their futures as rapidly becoming more painful, creating a sense of urgency and desperation to escape. Avoidance of the rapidly rising risk of pain becomes a dominant goal motivating their behavior. Because they are hopeless and unable to identify alternative ways of avoiding pain, suicide becomes their only means of successfully avoiding looming risk or danger.

The looming model has implications for suicide. Our conception is that a combination of hopelessness and looming vulnerability produces the greatest desperation. In connection with a sense of utter helplessness, the avoidance motive produced by a sense of looming vulnerability is transformed into a suicide motive. Schneidman (1992), Maris (1992), and Baumeister (1990) have identified escape from psychological pain as one of the most common motives for suicide. Building on this idea, we suggest that suicide is motivated by a sense of looming vulnerability to rapidly rising and intolerable psychological pain in living.

Our framework is encapsulated in the relationships depicted in Figure 1. Suicide is often precipitated by stressful life events (such as a collapse in the stock market, or the loss of a loved one). We postulate a series of causal chains that can increase the likelihood of suicidality. One causal chain often begins with the stress-*diathesis interaction* between life events and the looming maladaptive style, the cognitive diathesis that corresponds to anxiety. A parallel causal chain involves the stress-diathesis interaction between life events and the depressive attributional style, the diathesis that corresponds to depression (see Abramson, Alloy, & Hogan, 1998; Priester & Clum, 1992, for evidence on suicide).



The next link of the first causal chain leads from the stress-hathesis to an acute state of looming vulnerability. Similarly, the next link in the second, parallel causal chain leads from the stress-diathesis to an acute cognitive state of hopelessness. While underlying cognitive vulnerabilities often probably set the stage for these causal chains, in some cases, individuals can lack marked cognitive diatheses. As a result, they probably enter the two causal chains later in the sequence -- at the point of experiencing acute cognitive states of hopelessness and looming vulnerability. They probably experience these acute states primarily because of highly specific and powerful situational contingencies. In other cases, some individuals probably enter the two causal chains despite the lack of an particularly stressful events. That is, they probably enter the causal chains later in the sequence -- with acute states of hopelessness and looming vulnerability - because of very extreme cognitive vulnerabilities. Even relatively minor stressful events or hassles trigger acute cognitive states for such individuals that drive suicidal behavior.

As "main effects," the contributions of hopelessness to suicide are probably much greater than the contributions of looming vulnerability. But a major aspect of our framework is that it contends that a *combination* of hopelessness and looming vulnerability is responsible for producing the most intense desperation and suicidality. The cooccurence of a state of looming vulnerability to escalating pain (and a mood of anxiety) with a state of hopelessness (and mood of depression) can markedly elevate the risk for suicide. Thus, the person with comorbid looming vulnerability and hopelessness (or anxiety and depression) probably has an even higher risk of suicide than the person with hopelessness and depression alone. These hypotheses are consistent with evidence that comorbid anxiety increases suicidality above the levels associated with depression and hopelessness alone (e.g., Bakish, 1999; Noyes, 1991; Rudd, Dahm & Rajab, 1993).

Besides the above direct causal chains, and their interactive confluence, an acute state of looming vulnerability and anxiety also directly increase *behaviors to neutralize threat,* including alcohol and substance use. Once present, alcohol and/or substance use, coupled with anxiety and depression, is itself strongly linked to suicidality. This increased suicidality related to substance use would increase the effects of looming vulnerability and anxiety described in the first set of causal chains above. A similar effect can occur when looming vulnerability and anxiety cause or generate avoidance behavior (e.g., not going to work); this in turn can lead to increased self-devaluating thinking and hopelessness. In short, an acute state of looming vulnerability can directly enhance the effects of comorbid hopelessness on suicidality; and it has additional effects by leading to alcohol, substance use, and pathological avoidance that further ample the effects of comorbid hopelessness on suicidality.

Notes

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SUICIDE AND PANIC DISORDER. INTEGRATION OF THE LITERATURE AND NEW FINDINGS

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INTRODUCTION

In 1989, Myrna Weissman and colleagues published the first substantial evaluation of the relationship between panic disorder and suicide' (Weissman, Klerman, Markowitz, & Ouellette, 1989). The findings were startling to many. Weissman et al. found that individuals with panic disorder, compared to other psychiatric conditions, had significantly greater levels of suicidal ideation and significantly more suicide attempts. Even those with a history of panic attacks per se, who did not meet formal diagnostic criteria for panic disorder, were at increased risk fix suicide attempts and showed higher levels of suicidal thoughts. In comparison to nonclinical controls, patients with panic disorder showed almost a 20 times greater risk for suicide attempts! Moreover, these findings could not be accounted for by the coexistence of mood pathology or drug and alcohol abuse.

Prior to the Weissman paper, there had been two published reports examining an association between panic disorder and suicide. However, the surprising findings of this paper, as well as the fact that it appeared in the New England Journal of Medicine and was based on Epidemiological Catchment Area

(ECA) data involving assessments of over 18,000 individuals, produced considerable interest in the topic. In the years following the Weissman paper, there have been approximately 35 papers examining the panic - suicide linkage including additional analyses using ECA data as well as literature reviews. The first section of this chapter will provide a summary of this literature with the goal of ascertaining the current status of the relationship between panic and suicide. The second section of the chapter will provide an analysis of some of our data in order to extend this literature and to further delineate the pathways linking panic and suicide.

PART I. PANIC AND SUICIDE: A REVIEW OF THE LITERATURE

Our review of the panic - suicide literature is divided into three sections corresponding to different suicide outcomes including suicidal ideation, suicide attempts, and completed suicide. These outcomes are often considered and discussed jointly, perhaps due to an assumption that they reside on a continuum of severity. We also believe that these outcomes are linked in the obvious fashion. Ideation is a risk factor for attempts, which is a risk factor for completed suicide. On the other hand, different processes may be involved in each outcome. The mechanism that accounts for the generation of suicidal ideation may not be sufficient for making a suicide attempt. In other words, additional causally-linked parameters may be necessary to produce more extreme behaviors.

Panic and Suicidal Ideation

As we have already noted, there is some discrepancy in the literature concerning an association between panic and suicidal ideation. Our review of the literature suggests, however, that the majority of studies suggest a positive association. Weissman et al.'s (1989) data, along with later studies by Cox, Direnfeld, Swinson, and Norton (1994), Cooper-Patrick, Clum, and Ford (1994), and Friedman, Jones, Cheren, and Barlow (1992) suggest rates of suicidal ideation higher than would be expected in nonclinical samples. It is worth noting, however, that while Weissman et al. suggest that patients with panic disorder show increased risk for ideation after controlling for depression, Cox et al. and Cooper-Patrick et al. did not control for levels of depression in their analyses. This leaves open the possibility that panic disorder per se is not associated with increased rates of ideation. For example, the Friedman et al. study suggested fairly high rates of suicidal ideation, but ideation was largely found in patients with a co-occurring Axis II diagnosis (i.e., Borderline personality disorder). In this study, patients with no Axis II diagnosis exhibited relatively low rates of ideation. However, the Friedman et al. study also suffers from a failure to control for depression. It may be that mood pathology, likely to be confounded with Axis II pathology, accounts for elevated rates of suicidal ideation.

There are a number of studies that have failed to find an association between panic disorder and suicidal ideation (Beck, Steer, Sanderson, & Skeie, 1991; Overbeek, Rikken, Schruers, & Griez, 1998; Rudd, Dahm, & Rajab, 1993). Why the discrepancy? Evaluation of these three studies suggests that the patient sample was selected to represent a "pure" or "uncomplicated" subset of individuals

with panic disorder--pure and uncomplicated meaning, in this case, patients who are free from co-occurring mood pathology. These studies suggest that "pure" cases d panic disorder are not at increased risk for suicidal ideation.

In sum, it is somewhat difficult to determine the degree of divergence in this literature largely due to a failure, in some studies, to account for depression symptoms. Our guess is that co-occuring mood pathology is likely to largely account for the increased rates in suicidal ideation in the studies with positive findings. Weissman et al. (1989), however, did control for mood and continued to find increased risk for ideation. Thus, there is some suggestion that anxiety-specific factors may also contribute to suicidal ideation in these patients.

Panic and Suicide Attempts

Many of the studies reviewed above also assessed suicide attempts. Once again, there are differences in the pattern of findings in this literature. A substantial number of studies have indicated an association between panic disorder and suicide attempts (Cox et al., Friedman et al., 1992; Johnson, Weissman, & Klerman, 1990; Lepine, Chignon, & Teherani, 1993; Markowitz, Weissman, Ouellette, Lish, & Klerman, 1989; Norton, Rockman, Luy, & Marion, 1993; Warshaw, Massion, Peterson, Pratt, & Keller, 1995; Weissman et al., 1989) whereas other studies have not (Beck et al., 1991; Beck, Steer, Sanderson, 1992; King, Schmaling, Cowley, & Dunner, 1995). The bulk of these studies suggest a positive association between panic disorder and attempts but this association must be qualified in a manner similar to that discussed in the case of ideation.

In general, it appears that comorbidity, particularly co-occurring mood pathology, plays an important role in accounting for the relationship between panic disorder and suicide attempts. The Lepine et al. (1993) data are a case in point. In this study, 42% of the overall sample of patients with panic disorder but only 9.5% of the patients with no co-occurring disorder report a history of attempts. We should also note that Axis I conditions other than mood pathology may modulate suicide attempts in panic disorder. There is evidence to suggest that alcohol and substance abuse (Norton et al., 1993; Warshaw et al., 1995; Weissman et al., 1989), GAD and social phobia (Cox et al., 1994; Massion, Warchaw, & Keller, 1993), and eating disorders (Warshaw et al.) are also associated with suicide attempts in patients with panic disorder.

We would summarize the literature in a similar vein to the synopsis pertaining to suicidal ideation. Panic disorder generally appears to place the individual at risk for the development of suicide attempts but this relationship may be substantially impacted by the presence of other co-occurring disorders. Comorbid mood pathology, in particular, is likely to play an important role in the genesis d suicide attempts.

Panic and Completed Suicide

Panic disorder has also been investigated in relation to completed suicide in a number of studies. There have been a fair number of prospective studies of suicide in patients with anxiety disorders that suggest that these patients are at increased risk for suicide (see Noyes, 1991, for a review). Unfortunately, many of these studies were conducted prior to more recent diagnostic system revisions such that the evaluation of a diagnosis of panic disorder is not easily rendered. Several more recent prospective studies have examined panic disorder. A smaller cohort followed over 7 years showed substantial rates of suicide (Noyes et al., 1991) whereas a much larger sample examined for 2.5 years indicated what might be characterized as a slight risk for suicide (Warshaw et al., 1995). One recent retrospective study using "psychological autopsies" (i.e., interviews of family members, health care professionals, etc.) indicated that panic disorder did not appear to pose much risk for suicide (Henriksson et al., 1996). In sum, there is some evidence to suggest a linkage between panic disorder and completed suicide but these data are not especially compelling.

PART II. PANIC AND SUICIDE: NEW DATA

Our review of the literature suggests a number of avenues for further exploration. Our data on approximately 150 patients with panic disorder is suitable for replicating and extending our knowledge in this area. An examination of this data was guided by the following hypotheses, some of which were intended to replicate previous work including: (1) it was hypothesized that patients with panic disorder would show increased rates of suicidal ideation and suicide attempts; and (2) it was hypothesized that the co-existence of other forms of psychopathology, particularly mood pathology, would largely account for the relationship between panic and suicide. Specifically, we expected that patients with no co-occurring mood diagnoses or significant depression symptoms, so-called "uncomplicated" cases of panic disorder, would show lower levels of suicide relative to patients with comorbidity.

Notably absent from the majority of previous work on the panic-suicide link is a rigorous evaluation of the different panic-specific risk factors and their association with suicide. One of the few exceptions to this is that several studies have suggested that panic patients with an agoraphobia diagnosis are at increased risk for suicide (Cox et al., 1994). We sought to extend this literature by conducting more fined-grained analyses of the clinical and cognitive characteristics of patients with panic disorder and the relationship between these variables and suicide. These analyses were guided by several other research questions including: (1) what is the relationship between the different clinical facets of panic disorder and suicide, (2) what is the relationship between panic-related cognitive variables and suicide?

Method

Participants

The sample consisted of 146 patients meeting the following criteria: (a) principal DSM-IV (APA, 1994) Axis I diagnosis of panic disorder With or without agoraphobia. Sixty-nine percent of participants were female with an average age of 36.3 (SD = 11.3). A majority of the patients were Caucasian (82%), married (56%) and employed (79%). Sixty-two percent of these patients had received treatment and 9% had been hospitalized for anxiety problems. Fifty-two percent of patients were taking psychotropic medications (37% benzodiazepines, 25% antidepressants) with 18% of the sample taking both benzodiazepines and antidepressants.

Procedure

Patients were consecutive applicants presenting for evaluation at an academic research center specializing in the assessment and treatment of anxiety disorders who met study criteria. Diagnostic assessment was based on an initial phone screening interview followed by a face-to-face structured clinical interview using the Structured Clinical Interview for Axis I DSM-IV Disorders (SCID-NP) (First, Spitzer, Gibbon, & Williams, 1994). Randomly selected videotaped interviews from our laboratory have demonstrated acceptable kappa coefficients for interrater agreement for all Axis I diagnoses (see Schmidt. Trakowski, & Staab, 1997).

Measures

An assessment battery tapping the major clinical dimensions of panic disorder was administered to all participants. A subset of instruments from this battery were evaluated in the present study including measures relating to suicide as well as measures assessing the clinical facets of panic disorder.

Measures Assessing Suicide

a. *Beck Depression Inventory* (BDI). Level of depressive symptoms was assessed by the BDI. The BDI is a reliable and well-validated measure of depressive symptomatology (A.T. Beck & Steer, 1993). One item of the BDI (item 9) assesses current suicidal ideation and intent. A score of 1 on this item suggests current suicidal ideation without intent or desire, a score of 2 suggests suicidal ideation with desire, and a score of 3 suggests strong desire for suicide. In the present study, this BDI item was used to index current suicidal ideation and intent.

b. *SCID-NP.* The current major depressive episode section of the SCID (First et al., 1994) contains an item assessing current thoughts of death and/or suicidal ideation that are separate from fears of death. The SCID scoring for this item is either absent (0),

subthreshold (1), or present (2). A subthreshold score might be used for patients with fairly transient thoughts of death. In the present study, this item was used to assess current suicidal ideation.

C. *Medical History.* Patients complete a structured and detailed medical history form that includes history of psychiatric and non-psychiatric medical illnesses for the individual as well as for first-degree relatives. This form includes items that assess for a history of suicide attempts (yes, no), history of completed suicide in first-degree relatives (yes, no), and the family member who committed suicide. These items were used for assessing history of suicide attempts.

Measures Assessing Panic-Related Symptoms

a. *Multicenter - Panic Anxiety Scale* (MC-PAS). The MC-PAS (formerly the CY-PAS) is a semi-structured interview rating scale for panic disorder (Shear et al., 1997) that includes ratings of panic frequency and intensity, anticipatory anxiety, avoidance of physical sensations, avoidance of situations, impairment in work functioning, and impairment in social functioning. Each of these symptoms is rated on a 0 (None) to 4 (Extreme) scale. The MC-PAS also includes an overall severity rating ranging from 1 (Normal) to 7 (Among the most extremely ill patients). The MC-PAS has good psychometric properties (Shear et al., 1997).

b. *Sheehan Patient-Rated Anxiety Scale* (SPRAS). The SPRAS (Sheehan, 1983) is a widely used self-report scale for assessing the intensity of anxiety symptoms. The SPRAS has demonstrated adequate test-retest reliability (r = .67) and is highly associated with other measures of anxiety and overall impairment in panic disorder samples (Schmidt, Staab, Trakowski, & Sammons, 1997).

C. *Mobility Inventory* (MI). The MI was used to assess phobic avoidance (Chambless, Caputo, Jasin, Gracely, & Williams, 1985). The MI includes two subscales for determining level of phobic avoidance when alone (MI-alone) and when accompanied (MI-accompanied). The subscales are scored separately and have been found to possess good psychometric properties in clinical samples (Chambless et al., 1985).

d. *Sheehan Disability Scale* (SDS). The SDS is a four-item self-report measure of impairment created by the presenting problem (Ballenger et al., 1988). Consistent with other reports, only one representative item from this scale tapping overall work and social impairment was used in the present report. This item is associated with clinical global ratings of impairment and quality of life in panic disorder samples (Schmidt & Telch, 1997; Telch, Schmidt, Jaimez, Jacquin, & Harrington, 1995).

e. *Anxiety Sensitivity Index* (ASI). The ASI (Reiss, Peterson, Gursky, & McNally, 1986) is a 16 item self-report measure of the fear of bodily sensations associated with arousal. Each item consists of a possible negative consequence of anxiety symptoms.

Items are rated on a 0 - 4 point scale and are summed to compute a total score. The ASI has demonstrated high internal consistency and satisfactory test-retest reliability (Telch, Shermis, & Lucas, 1989). AS was originally proposed as a unitary construct (Reiss & McNally, 1985). Empirical evaluation of this proposition using the ASI has yielded somewhat inconsistent findings. Several early factor analytic studies provided support for the unitary nature of AS (Reiss et al., 1986; Taylor, Koch, & Crockett, 1991). Others found that the ASI is multifactorial (Telch et al., 1989; Wardle, Ahmad, & Hayward, 1990). There appears to be a growing consensus, however, indicating that the ASI is hierarchical (Le., best regarded as unifactorial at a higher level but multifactorial at a lower level) and composed of three first-order factors measuring fears of adverse physical outcomes (Physical Concerns), fear of cognitive incapacitation (Phrenophobia), and fear of publicly observable symptoms (Social Concerns) (Cox, Parker, & Swinson, 1996, Stewart, Taylor, & Baker, 1997; Zinbarg, Barlow, & Brown, 1997).

f. *Body Vigilance Questionnaire* (BVS). The BVS is a four item self-report inventory designed to assess attentional focus to internal bodily sensations. Three items assess degree of attentional focus, perceived sensitivity to changes in bodily sensations, and the average amount of time spent attending to bodily sensations. A fourth item involves separate ratings for attention to 15 sensations (e&, heart palpitations) that include all of the DSM-IV physical symptoms described for panic attacks. Ratings for the 15 sensations are averaged to yield one overall score for item 4. The BVS total score is the sum of items 1-4. The BVS has shown adequate internal consistency and test-retest reliability in clinical and nonclinical samples (Schmidt, Lerew, & Trakowski, 1997).

g. *PanicAppraisaI Inventory* (PAI). The PAI is a 45 item self-report measure composed of three separate scales assessing related aspects of panic appraisal including: estimates of panic likelihood across a variety of settings (PAI-Likelihood), perceived catastrophic consequences of experiencing panic (PAI-Consequences), and coping self-efficacy in the context of panic (PAI-Coping). The PAI-Consequences scale is further divided into three subscales assessing physical, social, and loss of control threats. Each of the PAI subscales possesses high internal consistency (coefficient as = 35-.94), test-retest reliability (rs = 31-39) and is predictive of phobic avoidance and general symptom severity among patients with panic disorder (Schmidt, Telch, & Joiner, 1996).

h. *Agoraphobic Cognitions Questionnaire* (ACQ). The ACQ is a measure of panic-related cognitions (Chambless, Caputo, Bright, & Gallagher, 1984). This measure consists of 14 items assessing different types of ideation (e.g., I am going to pass out; I have a brain tumor; I am going to scream). The frequency of each thought is rated on a 5-point scale (scale ranges from 1 - thought never occurs, to 5 - thought always occurs, but partial scores, e.g., 2.5, are allowed). Typically items are summed and averaged but the summed

total score was used in the present analyses. This scale is a widely used measure of ideation in patients with panic disorder and possesses good psychometric properties (Chambless et al.).

Results

Sample Characteristics and Comorbidity

Scores on the clinician and self-rated clinical measures are reported in Table 1. These measures provide an index of the severity of anxiety and related symptoms in the present sample. In terms of diagnostic co-occurrence, 41% of the sample received a diagnosis of panic disorder with no agoraphobia and 59% received an agoraphobia diagnosis. In addition, 33% received another Axis I anxiety disorder diagnosis and 21% received an Axis I mood disorder diagnosis. More specifically, 19% received a diagnosis for current MDE and 2% received a current Dysthymia diagnosis.

Table 1. Means and standard deviations for clinical measures for patients with and without suicidal ideation and history of a suicide attempt.

	Ideation			*Attempt*		
Measure	+	-	F	+	-	F
Clinician Ratings						
Panic Frequency (0-4)						
M	2.2	1.8	2.19	2.5	1.9	2.17
SD	1.3	1.1		1.1	0.9	
Panic Intensity (0-4)						
M	2.7	2.7	0.05	3.1	2.7	1.54
SD	1.3	0.9		0.8	1.0	
Anticipatory Anxiety (0-4)						
M	2.5	2.1	1.70	3.1	2.1	4.86*
SD	1.4	1.2		1.4	1.2	
Phobic Avoidance (0-4)						
M	2.2	1.8	1.89	2.2	1.9	0.47
SD	1.3	1.3		1.5	1.3	
Avoidance of Sxs (0-4)						
M	2.4	1.7	4.54*	2.9	1.8	5.28*
SD	1.4	1.2		1.0	1.3	
Work Impairment (0-4)						
M	2.0	1.4	3.69	2.1	1.5	2.25
SD	1.3	1.1		1.3	0.2	
Social Impairment (0-4)						
M	2.0	1.6	1.71	2.0	1.7	0.49
SD	1.4	1.2		1.3	1.3	

Table 1 (continued).

	Ideation			*Attempt*		
Measure	+	-	F	+	-	F
Overall Severity (1-7)						
M	5.5	4.7	4.41*	5.3	4.9	0.71
SD	1.2	1.2		1.0	1.3	
Self-Report						
SPRAS (0-140)						
M	73.9	50.3	13.5***	63.1	55.3	0.54
SD	31.1	26.9		27.9	28.9	
MI Accompanied (1-5)						
M	2.0	1.6	4.60*	1.7	1.7	1.00
SD	0.8	0.6		0.9	0.8	
MI Alone (1-5)						
M	2.5	2.0	4.31*	2.3	2.1	0.19
SD	1.1	0.9		0.9	1.0	
Work Disability (0-10)						
M	5.7	3.7	6.99**	4.4	4.0	0.11
SD	3.0	3.1		3.6	3.1	
Social Disability (0-10)						
M	6.3	4.6	6.10*	5.9	4.9	0.70
SD	2.9	2.8		2.9	2.9	
Family Disability (0-10)						
M	5.8	3.7	9.29**	5.1	4.1	0.88
SD	2.7	2.8		3.2	2.9	
Overall Disability (1-5)						
M	4.0	3.4	5.09*	3.7	3.5	0.36
SD	0.8	1.0		1.1	1.0	
BDI (-item 9) (0-60)						
M	25.7	13.2	38.4****	20.3	15.0	2.63
SD	10.7	8.7		10.9	9.8	

Note. Clinical ratings are derived from the MC-PAS; SPRAS = Sheehan Patient Rated Anxiety Scale; MI Accompanied = When Accompanied subscale of The Mobility Inventory for Agoraphobia; MI Alone = When Alone subscale of The Mobility Inventory for Agoraphobia; Disability ratings are derived from the Sheehan Disability Scale; BDI (- item 9) = Beck Depression Inventory.
* $p < .05$, ** $p < .01$, ***, $p < .001$, **** $p < .0001$.

Frequency of Suicide Attempts and Suicidal Ideation

Evaluation of suicide ratings indicated that 8% of the sample reported a lifetime history of at least one suicide attempt. Completed suicide was found in 9% of first degree relatives. For the most part, suicide was completed by the brothers or fathers of the patient. There was only one instance of a mother, and no reports of a sister, completing suicide. Analysis of the BDI suicidal ideation item indicated that 16%

of patients reported current thoughts of killing themselves. There were no instances of patients reporting suicidal ideation plus intent (BDI item 9 scored 2 or 3). The SCID measure of suicidal ideation was positive for 11% of the sample. Of the subsample of patients completing the SCID current major depressive episode section (n = 54), 24% reported current thoughts of death/suicidal ideation, and 6% reported subthreshold ideation of this nature. For later analyses, the few patients meeting the subthreshold criterion were combined with patients meeting the full threshold criterion. Evaluation of the overall association between the BDI and SCID measures of ideation suggests that these indices were significantly but only moderately correlated (r = .40, p < .0001). There were a number of cases in which the BDI item was positive but the SCID was negative (n = 3) as well as cases in which the SCID item was positive but the BDI item was negative (n = 4). Differences in item content as well as differences in method of assessment are likely to have led to these discrepancies.

Relationships among Suicide and Demographic Characteristics

Suicidal ideation was not significantly associated with any of the demographic variables. Suicidal ideation was also not associated with previous treatment or psychatric hospitalization for anxiety problems. Prior history of suicide attempts was not associated with any of these variables, however, there was a trend suggesting that younger patients were more likely to have attempted suicide (F(1, 128) = 3.67, p = .06; History of attempt: M age = 29.5, SD = 10.8, No History: M age= 36.6. SD = 11.3).

Relationships among Suicide and Diagnoses

As expected, the presence of a co-occurring MDE was significantly related to the presence of current suicidal ideation (c^2(1, N = 125) = 13.0, p < .001) with suicidal ideation present in 43% of panic patients with MDE compared to only 10% of panic patients without MDE. The same pattern of findings is obtained when evaluating suicidal ideation and the presence of any current mood disorder (c^2 (1, N = 125) = 15.1, p < .0001). Suicidal ideation was associated with an agoraphobia diagnosis (c^2 (1, N = 121) = 7.64, p < .01). Ideation was found in almost one quarter(24%) of those with an agoraphobia diagnosis compared to only 6% of patients with a panic disorder with no agoraphobia diagnosis. On the other hand, no other anxiety disorder diagnosis as well as the presence of any additional anxiety disorder diagnoses were associated with suicidal ideation (c^2(1, N = 121) = 0.64, p > .05). Suicidal ideation was not associated with any other SCID diagnosis including substance and alcohol abuse. There were no significant relationships between history of a suicide attempt and any current diagnosis or combination of diagnoses (i.e., any current mood diagnosis, any current anxiety disorder diagnoses).

Suicide and Clinical Features

Suicidal ideation (BDI index), history of suicide attempts and their relationship with the various clinical variables are displayed in Table 1. There were a number of significant associations between suicidal ideation and these variables. It appears that suicidal ideation is generally positively associated with the overall severity of panic disorder as well as patient-rated disability associated with the disorder. Ideation was significantly associated with clinician-rated overall severity and each of the disability ratings in terms of work, social, family and overall functioning. Consistent with data from formal diagnoses, suicidal ideation was also significantly associated with overall depression symptoms (BDI total minus item 9) and phobic anxiety when alone and when accompanied. Suicidal ideation was significantly associated with overall anxiety symptoms. Interestingly, only one of the clinician-rated items, avoidance of bodily sensations, was significantly associated with suicidal ideation. This same general pattern of findings was obtained in using the SCID suicidal ideation measure. The differences included somewhat stronger associations between the SCID criterion and the disability ratings. In particular, Family-related disability was highly associated with SCID suicidal ideation *(F(*1, 127) = 22.9, $p < .0001$).

There were fewer associations among symptom measures and a history of suicide attempts. Both of these significant associations involved clinician-rated measures and suggested that history of a suicide attempt was associated with higher levels of anticipatory anxiety and greater avoidance of bodily sensations.

Suicide and Panic-Related Cognitive Measures

Analyses using the cognitive measures are displayed in Table 2. These findings suggest strong and signifcant associations between suicidal ideation (BDI item) and anxiety sensitivity. Ideation was also significantly associated with each of the ASI first-order factors, particularly with the phrenophobia factor. Ideation also showed signifcant associations with each of the panic appraisal measures. Of these measures, the PA1 - Loss of Control subscale showed the strongest association with ideation. Ideation also showed a fairly substantial association with the ACQ and was significantly associated with the BVS. The SCID suicide item also showed a similar pattern of findings with most measures. Two exceptions were that the ACQ and the BVS were not significantly with the SCID item. Analyses evaluating the cognitive measures and history of a suicide attempt indicated no significant associations.

Table 2. Means and standard deviations for cognitive measures for patients with and without suicidal ideation and history of a suicide attempt.

	Ideation			Attempt		
Measure	+	-	F	+	-	F
Anxiety Sensitivity Index (0-64)						
M	37.5	28.3	14.0***	30.9	30.3	0.02
SD	13.6	10.2		10.8	11.6	
Anxiety Sensitivity Index - Physical Concerns Subscale (0-32)						
M	18.6	15.4	4.22*	15.2	16.4	0.25
SD	7.9	6.8		6.4	7.2	
Anxiety Sensitivity Index - Social Concerns Subscale (0-16)						
M	9.5	7.5	7.50**	7.9	7.9	0.00
SD	3.7	3.0		3.6	3.2	
Anxiety Sensitivity Index - Phrenophobia (0-16)						
M	9.4	5.4	21.5****	7.8	6.1	1.62
SD	4.0	3.7		4.5	4.1	
Panic Appraisal Inventory - Panic Likelihood (0-1500)						
M	695.7	477.5	9.58**	621.4	526.5	0.66
SD	341.7	288.3		240.7	303.1	
Panic Appraisal Inventory - Panic Outcomes Total (0-1500))						
M	686.9	435.5	9.66**	630.0	480.3	1.21
SD	411.4	326.4		248.2	354.2	
Panic Appraisal Inventory - Panic Outcomes - Physical (0-500)						
M	206.4	160.1	1.80	181.4	174.6	0.01
SD	167.7	140.8		133.7	147.2	
Panic Appraisal Inventory - Panic Outcomes - Social (0-500)						
M	242.8	145.7	8.31**	208.6	161.1	0.70
SD	153.5	139.7		126.4	146.5	
Panic Appraisal Inventory - Panic Outcomes - Loss of Control (0-500)						
M	242.4	128.8	12.3***	234.3	145.0	2.61
SD	137.2	136.0		108.4	143.5	
Panic Appraisal Inventory - Panic Coping (0-1500)						
M	397.9	588.3	6.68*	524.3	548.8	0.04
SD	327.8	306.6		284.2	323.2	
Agoraphobic Cognitions Questionnaire (14-70)'						
M	38.0	28.1	14.4***	23.5	30.1	1.48
SD	11.6	9.5		8.5	10.6	
Body Vigilance Scale (0-40)						
M	26.4	20.7	6.01*	25.2	21.7	0.83
SD	9.3	9.7		7.1	10.0	

Note. * $p < .05$, **$p < .01$, ***, $p < .001$, ****$p < .0001$. ACQ scores are often averaged after they are summed. These scores were not averaged.

Evaluation of Unique Predictors of Suicidal Ideation

Evaluation of predictors of suicidal ideation suggests a fair number of predictors including current mood disorder diagnosis and depression symptoms as indexed by the BDI. These mood variables present the most parsimonious explanation for the existence of suicidal ideation in these patients with panic disorder. However, depression may only account for some of the variance in predicting suicidal ideation. The anxiety-related indices may also uniquely predict depression. To test this, a series of logistic regression analyses were conducted to predict the presence of suicidal ideation (positive, negative) in which each of the clinical and cognitive predictor variables was assessed separately after covarying the effects of a current mood disorder diagnosis and depression symptoms (BDI minus item 9). Separate analyses were conducted for the BDI and SCID suicide items.

BDI Suicide item. Simultaneously entering the covariates suggested that they accounted for 29% of the variance but only the BDI significantly predicted ideation *(c2(2, N* = 120) = 14.1, $p <$,001). Entering agoraphobia diagnosis and each of the clinical and cognitive measures separately indicated that no variable significantly predicted ideation after controlling for depression symptoms. These analyses would suggest that the many significant associations noted were confoundedby overlap between these measures and depression symptoms.

SCID Suicide item. Similar to analyses using the BDI criterion, only the BDI significantly predicted ideation *(c2(2,* N = 120) = 13.5, $p <$ .001) with the covariates accounting for 38% of the variance. Unlike the previous analysis, there were a number of significant predictors of ideation including the SPRAS *(c^2* (3, *N* = 119) = 5.09, p < .05), the ASI-Phrenophobia subscale *(c^2(3 N* = 117) = 3.84, $p <$ .05), the BVS (c2(3, *N* = 117) = 5.77, $p <$ .05), clinician ratings of anticipatory anxiety *(c2(3, N* = 114) = 5.09, $p <$ .05), and clinician ratings of avoidance of bodily sensations *(c^2* (1, *N* = 113) = 4.34, $p <$ .05). In these analyses, each of these predictors appears to change the R2 value by approximately 8-9%.

What might account for these differencesin prediction of suicidal ideation? It might be assumed that the BDI item 9 is more highly associated with the covariate (overall BDI scores) since it was derived from the same scale, thereby making it more difficult to obtain significance with other predictors. Evaluation of correlations between the suicidal ideation indices and overall BDI scores (minus item 9) suggests that this is not the case as the overall BDI scores are associated comparably with the BDI item *(r* = .47) and the SCID item *(r* = .50). In the context of the moderate level of association among the ideation measures, this suggests that the non-depression related components of the two ideation measures are somewhat distinct.

Predictors of Suicidal Ideation among Those with Major Depression

The SCID data allows us to ask a somewhat different question: what measures predict suicidal ideation among those patients experiencing a co-occurring major depressive episode? These analyses suggested that relatively few variables predicted suicidal ideation among the depressed patients. Significant predictors included: (1) having a family member with a completed suicide *(c^2(1, N* = 51) = 7.81, $p <$ .01); (2) phobic avoidance when accompanied (MI-Acc: *F(1,* 50) = 4.65, $p <$ .05); (3)

disability in familial relationships (SDS-Family: $F(1, 48) = 13.2$, $p < .001$); (4) clinician ratings of impairment in vocational functioning (CYPAS-6: $F(1, 46) = 5.03$, $p < .05$); and (5) severity of depression symptoms (BDI (total minus item 9): $F(1, 49) = 16.7$, $p < .001$). Once again, depression symptoms were very highly associated with suicidal ideation within this subsample. Additional regression analyses, of the sort described above, were conducted to determine whether any of these anxiety-related measures predicted suicidal ideation after controlling for BDI scores. These analyses indicated that none of the anxiety-related measures predicted suicidal ideation beyond the effects of depression severity as indexed by the BDI.

Discussion

Discussion of the Literature Review

A review of the panic disorder - suicide literature suggests some degree of discrepancy with respect to each of the major outcome variables of interest: suicidal ideation, suicide attempts, and completed suicide. On the other hand, we suspect that the conflicting nature of some studies may principally result from a failure to account or control for co-occurring mood disorder diagnoses and/or depression symptoms. We believe that the literature suggests that Co-occurring mood pathology accounts (for the most part) for the increased rates in suicide-Elated behaviors in patients with panic disorder. It is erroneous to conclude that panic disorder is unrelated to suicide, but rather that panic disorder is likely to be a more distal, indirect risk factor for suicide.

Discussion of the New Data

Findings from the data-driven section of this report are basically consistent with previous descriptive studies indicating that patients with panic disorder are at increased risk for suicidal ideation and a history of suicide attempts. The rates of current suicidal ideation and suicide attempts in the present study are consistent with previous studies. The rates that were indicated, however, (approximately 10% of the sample indicating an attempt and 10-15% of the sample indicating current ideation) fall more closely to the conservative estimates derived from previous work.

What models can we use to explain the association between panic disorder and suicide? Our data make it apparent that suicidal ideation is very highly associated with mood pathology in these patients. These findings fit nicely with a fairly simple explanation for the presence of suicidal ideation in patients with panic disorder that might be termed the "depression mediation hypothesis." This hypothesis suggests that patients with panic disorder tend to get depressed and depression is a mediating risk factor that accounts for the development of suicidal ideation. Accordingly, after controlling for the mediating variable, the association between panic disorder and suicide is substantially reduced. Our findings are consistent with this idea (even though formal mediation analyses were not conducted). In other words, depression appears to account for a majority of the variance in explaining the relationship between panic disorder and suicide. In this

case, panic disorder might largely be considered to be an indirect risk factor for the development of suicidal ideation vis a vis its relationship with depression.

The question arises, however, whether there are other alternative, perhaps complimentary, pathways between panic disorder and suicide. Perhaps the most interesting findings generated from these data are suggestions that several anxiety-related variables are associated with suicidal ideation even after controlling for depression. These measures included overall severity of anxiety, anticipatory anxiety, avoidance of bodily sensations, and phrenophobia. At this point, it is unclear how each of these variables may be related to suicidal ideation. We would speculate, however, that these variables might fit into another pathway that could be characterized as the "intolerable experience hypothesis" after the work of Baumeister (1990). According to this hypothesis, suicide is characterized as an escape from intolerable subjective experience. Accordingly, suicidal ideation and attempts will increase as the perception of intolerable experience increases.

What defines intolerable experience? A useful explanatory framework for our purposes would be to define intolerable experience as a high level of negative affect. Higher levels of negative affect should yield a very undesirable, and at some point, intolerable level of distress. According to popular models of affect such as the tripartite model (Clark & Watson, 1991), negative affect is a superordinate factor that is composed of two primary components including depression and anxiety. Of course, negative affect encompasses a wide range of negative emotional states including shame, irritability, hostility and so forth. Negative affect can therefore be considered to be an index of general distress of which anxiety and depression are important facets. We would speculate further that this superordinate factor of negative affectivity should be associated with suicidal ideation, and that this association would not simply be accounted for by the depression facet of negative affectivity. Instead, negative affect would be linked with suicide through other related constituents of negative affect including anxiety.

In other words. an individual's level of general distress should be predictive of intrusive, distressing ideation. In fact, research suggests that higher levels of anxiety and distress are associated with more intrusive ideation (Freeston, Ladouceur, Gagnon, & Thibodeau, 1991; Rachman & deSilva, 1978; Salkovskis & Harrison, 1984). Conceivably, some of this ideation would focus on thoughts of death and thoughts of suicide. In this context, the depression mediation hypothesis can be viewed as a more specific form of the intolerable experience model since depression constitutes only one component of negative affect

How do our data fit into this model? Conceivably, level of anxiety and anticipatory anxiety might be expected to dispose toward suicidal ideation in a manner somewhat different from avoidance of bodily sensations and phrenophobia. In the case of the anxiety-symptom variables, these variables may contribute to suicidal ideation by amplifying general distress levels. Heightened anxiety creates increased distress that increases the subjective sense of intolerable experience and the likelihood for suicidal ideation.

In the case of the other predictor variables, avoidance of bodily sensations and phrenophobia, it is also possible to create somewhat different models connecting them with suicidal ideation. Conceivably, avoidance of bodily sensations and phrenophobia may be involved in a similar process since both are conceptually linked. In the context of anxiety sensitivity models, heightened fear of anxiety symptoms (or the specific cognitive symptoms in the case of

phrenophobia), would be expected to lead to avoidance of these symptoms. As such, avoidance ofbodily sensations is one consequence ofdeveloping high anxiety sensitivity.

It is notable that phrenophobia has been implicated in depression. Taylor, Koch, Woody, and McLean (1996) found that anxiety sensitivity was elevated in patients with major depression. In addition, patients with panic disorder with co-occurring major depression showed higher anxiety sensitivity scores compared to those panic disorder patients without depression. Evaluation of the primary order factors ofanxiety sensitivity suggests that the fear of loss of cognitive control (i.e., phrenophobia) was the only factorassociated with depression.

Our data, suggesting a specific association between phrenophobia and suicidal ideation, may be due to a number of factors. Otto, Pollack, Fava, Uccello, and Rosenbaum, (1995) speculate that the cognitive distortions that are characteristic of depression (and potentially suicidal ideation per se) may also be associated with the attributional style described by anxiety sensitivity (and potentially phrenophobia per se). For example, cognitive biases leading to catastrophizing or likelihood overestimation may be common to both phrenophobia and suicidal ideation. Alternatively, Taylor et al. (1996) have suggested that phrenophobia may act as a specific risk factor for the development of depression (or suicidal ideation) because depression typically includes impairment in concentration and decision making difficulty. An individual experiencing suicidal ideation may take this as evidence that they are losing or that they will lose control of their cognitive processes (i.e., a depressive episode creates or increases phrenophobia). Finally, there is also the possibility that phrenophobia's link with suicidal ideation may be due to amplification ofnegative affectas was described above. Conceivably, phrenophobia may amplify anxiety or other aspects of negative affect, thereby contributing to higher levels ofsuicidal ideation. These hypothesized pathways will obviously require additional evaluation.

There is much to speculate about in the linkage between panic disorder and suicidal ideation; there is considerably less to consider in associating panic with suicide attempts. Although these data are consistent with an increased risk for attempts among patients with panic disorder, there were only two variables that were significantly associated with suicide attempts including anticipatory anxiety and avoidance ofphysical sensations. Interestingly, current mood symptoms were not predictive of prior attempts. Might these two significant predictors simply be spurious? Perhaps, but it is worth considering that both of these variables also appear to account for some of the anxiety-specfic variance in predicting current suicidal ideation. The fact that these are among the few variables that account for unique variance in predicting ideation suggests that they are potentially important to consider in evaluating the genesis of actual suicide attempts. Further work is obviously needed to confirm this relationship and establish whether these anxiety-related variables are antecedent risk factors for, or consequences of, a suicide attempt.

There is a considerable distinction to be made between suicidal ideation and completed suicide. Clearly, suicidal ideation is a risk factor for completed suicide and patients with panic disorder are at increased risk for ideation. There have been several follow-up studies ofpatients with panic disorder suggesting, on average, that 20% of deaths are due to suicide, a proportion similar to the rates found in mood disorders (Noyes, 1991). It would be interesting to evaluate whether

any of the anxiety-related factors that contribute uniquely to the prediction of ideation have any effect on later completed suicide. Prediction of such low frequency events, however, is extremely difficult and would require a considerable research effort such that definitive answers pertaining to completed suicide are unlikely until significant research endeavors have been undertaken.

It is useful to consider the relationship between treatment of panic disorder and mood pathology. Previous reports consistently indicate that panic disorder is associated with elevations in mood pathology. Cognitive behavioral treatment (CBT) for panic disorder does not directly address mood symptoms, typically because these structured protocols are designed to target panic-specific domains. Despite failure to directly focus on depression, treatment outcome data suggest that patients with panic disorder show substantial clinical improvement in depression following CBT (Telch et al., 1993). There are no accounts, however, of the relationship between treatment and changes in suicidal ideation. It might be assumed that reductions in the severity of depression symptoms should be associated with reductions in suicidal ideation. This question, however, deserves additional research since it has not been directly addressed.

A number of limitations should be considered in evaluating the present study. Although multi-modal ratings of suicidal ideation (i.e., interview and paper-and-pencil) are a strength of this report, neither of these methods can be considered state-of-the-art assessment of suicidal ideation. Similarly, the self-report index for history of suicide attempts is probably not preferable. Ideally, more comprehensive assessments of suicide could have been conducted using multi-item interviews and multi-item assessment instruments like the Scale for Suicide Ideation (Beck, Kovacs, & Weissman, 1979).

Another assessment weakness concerns the retrospective nature of the suicide attempt assessment. Moreover, the time of incident in relation to the onset of panic disorder is uncertain. Many of the patients in the study have a long history of panic disorder while others were assessed in closer proximity to the onset of panic. We cannot be sure in these cases, however, whether the panic disorder preceded the suicide attempt. The fact that there is an association is still interesting but the questionable timeframe makes it impossible to speculate about which factor may potentially act as a risk for the other. Even if we assume that panic disorder preceded many of these suicide attempts, there is no way to determine that clinical status at the time of the attempt is related to the clinical status that is currently being assessed. Prospective evaluations are needed to more definitively determine that the anxiety-related factors create increased risk for suicide attempts.

There is potential for both Type I and Type II error in the present report. The present report involved a large number of statistical analyses that were not corrected to control for Type I error. We felt that allowing for a more liberal estimate of statistical significance was acceptable because of the exploratory nature of the report that will hopefully allow others to fillow-up on some of these new findings. It is prudent to view these findings cautiously, as would be the case with any new findings, until they are replicated. On the other hand sample size limitations (in terms of the number of individuals with current ideation or a history of suicide) decreased power to detect differences. Even though the overall sample size was fairly substantial, most analyses focused on predicting only 10-20 "positive" cases.

The present report adds to a fairly substantial literature that has evaluated the relationship between panic disorder and suicide. This literature has been characterized by inconsistencies but hopefully this report will add some clarity to this topic, We cannot consider this issue resolved, but our perspective is that panic disorder should be viewed as a condition that places individuals at risk for the development of suicidal ideation. This risk, however, is substantially mediated by the genesis of depression that is likely to be secondary to panic disorder. There do appear to be some more specific components of anxiety that also contribute to suicidal ideation, but these are less substantial than depression per se.

Notes

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2. There are instances in which, for the sake of brevity, the term "suicide" is used to designate both suicidal ideation and suicide attempts. This term does not refer to completed suicide.

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SUICIDE RISK IN EXTERNALIZING SYNDROMES: TEMPERAMENTAL AND NEUROBIOLOGICAL UNDERPINNINGS

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INTRODUCTION

Suicide is most often considered in relation to "internalizing" forms of psychopathology marked by prominent dysphoria, distress, and behavioral withdrawal—most notably depressive disorders. However, recent research indicates that suicide-proneness is associated with a family of diagnostic conditions and behaviors that is rarely discussed in connection with depression. Specifically, empirical studies have demonstrated a heightened risk for suicidal behavior among individuals manifesting externalizing symptoms and syndromes—including reactive aggressiveness, persistent criminality, antisocial personality disorder (APD), and alcohol use disorders (Bukstein et al, 1993; Virkkunen, 1979; Moeller, Dougherty, Lane, Steinberg, Cherek, 1999).[1] One aim of this paper is to review the evidence for a relationship between suicidal tendencies (ideation, attempts, completions) and externalizing behaviors and syndromes.

A second aim is to review evidence indicating that this connection is mediated by a distinct constellation of temperament traits, that may in turn be linked to a common neurobiological substrate. With regard to temperament, relevant research has revealed a relationship between suicide risk and extreme scores on trait measures of disinhibition/constraint (including measures of impulsive behavior, sensation-seeking, and antisocial nonconformity; Nordstrom, Schalling, & Asberg, 1995; Engstroem, Alsen, Gustavsson, Schalling, & Traskman-Bendz, 1996) and negative emotionality (including trait anxiety, general maladjustment (neuroticism), and alienation; Banki & Arato, 1983; Brent et al., 1994; Apter, Plutchik, & van

Praag, 1993)--personality traits that have also been reliably linked to chronic criminality, aggressiveness, and alcoholism (Bergman & Brismar, 1994a; Krueger, Schmutte, Caspi, & Moffitt, 1994; Patrick, 1994, 1995; Rigby, Mak, & Slee, 1989; Sher &Tdl, 1994). With regard to neurobiology, compelling evidence exists for a relationship between suicidal behavior and reduced levels of the brain transmitter serotonin, which likewise has been implicated in the spectrum of externalizing syndromes.

Thus, the major thesis of this chapter is that there exists a specified subgroup of individuals who are at risk for suicide by virtue of the fact that they are highly stress-reactive and prone to act impulsively. These same individuals show heightened propensities toward criminal activity, violent acting out, and pathological drinking. For individuals of this type, suicidal behavior may represent a characteristically impulsive coping response to circumstances of intolerable distress. Low brain serotonin may serve as a biological trait marker of this at-risk subgroup.

DEFINITIONS AND DISTINCTIONS

Suicide

Forms of Suicidal Behavior

In this chapter, suicide completion refers to an act of self-harm that results in death; suicide completers are also described as suicide "victims." Suicide attempts are deliberate self-harm behaviors that may or may not involve a desire to die, although attempts that result in serious physical harm (i.e., "serious" attempts) are often motivated by fatal intent. The terms "self-injurious behavior", "self-mutilative behavior", or "suicidal gestures" are used by some researchers to denote nonfatal self-harm acts involving motives other than a desire to die. The term parasuicide encompasses all types of self-harm not resulting in death (i.e., suicide attempts and self-injurious or mutilative behaviors, but not suicide completions). Suicidal ideation refers to serious thoughts or plans about suicide that have not yet been enacted.

Suicidal behaviors (ideation, gestures, attempts, completions) have been conceptualized as falling along a continuum, in which ideators, gesturers, and attempters are simply those who have not yet completed suicide (Brent, Perper, Goldstein, Kolko, Allan, Allman, & Zelenak, 1988). Related to this, empirical research indicates that self-harm not resulting in death is related to a higher risk for eventual suicide (Ivanoff, 1992; Marcus & Alcabes, 1993), with a prior history of suicide attempts evident among approximately 65% of suicide completers (see Cross & Hirschfeld, 1986). However, other reports indicate that the majority of attempters or self-harmers do not eventually commit suicide (Linehan, 198 1). Suicide completers differ from attempters and ideators in that they are more likely to have a diagnosis of bipolar disorder; a mood disorder with comorbidity (e.g., major depression coupled with substance abuse); and availability to firearms in the home (Brent et al., 1988). This review considers research relevant to the entire continuum of suicidal behavior, but it should be borne in mind that most existing studies focus exclusively on suicide completers and serious attempters.

Subtypes of Suicidal Individuals

Substantial heterogeneity in personality and behavior exists among suicidal individuals (Engstroem, Alsen, Gustavsson, Schalling, & Traskman-Bendz, 1996). At least two subtypes have been reliably identified: depressed/withdrawn, and irritable/aggressive (Apter, Kotler, Sevy, Plutchik, Brown, Foster, Hillbrand, Korn, van Praag, 1991; Apter, Gothelf, Orbach Weizman, Ratzoni, Har-even, & Tyano, 1995; Bagley, Jacobson, Rehim, 1976; Biro, 1987). Apter and colleagues (1991) demonstrated that, among male violent patients, sadness was not correlated with suicidality; whereas, this correlation was significant and positive for a group of nonviolent hospital patients. A similar observation was made in a sample of conduct disordered adolescents, who exhibited few depressive symptoms, but nonetheless, engaged in more suicidal behavior than did adolescents with major affective disorder (Apter, Bleich, & Plutchik, et al., 1988). Another study by Apter (Apter et al., 1995) found that the relationship between violence and suicide was independent of depressive symptoms, suggesting that suicidality among some individuals may not be solely as a result of feelings of sadness or hopelessness. In effect, major depression and feelings of sadness can clearly contribute to and exacerbate suicidal tendencies in suicide-prone individuals (Beautrais et al., 1996). However, among suicide attempters who exhibit violent and antisocial behavior, suicide risk has been shown to be independent of depressive symptomatology (Apter, Bleich, Plutchk, & Mendelsohn, 1988; Apter et al., 1991; Apter et al., 1995).

The present review focuses on the subgroup of suicidal individuals who are characterized by concurrent externalizing psychopathology (eg, aggression, alcoholism, antisociality). As shall be discussed, links between suicide and externalizing psychopathology appear strongest for individuals who exhibit low serotonin functioning and who display a pattern of personality marked by high negative emotionality and low behavioral constraint (impulsivity).

"Externalizing" Psychopathology

Externalizing syndromes are those that are characterized by impulse control problems and acting out behaviors that are potentially detrimental or harmful to others. The following sections highlight some distinctions within subcategories of externalizing psychopathology, and briefly describe empirical evidence for relationships among these different subcategories.

Criminality, Antisocial Personality, andPsychopathy

Criminality is a broad term that includes violations of official standards of law without regard to the nature or extent of illicit activity or the motives for lawbreaking. This strict legal definition has limited practical utility because many individuals engage in illegal or antisocial acts for which they are never caught. A narrower, more pragmatic definition is one that focuses on criminal violations resulting in formal adjudication (i.e., arrest, prosecution, imprisonment). Because

the risk of detection increases with chronicity of criminal deviance, this still-crude definition appears to have some psychological validity: Criminals defined in this way have been shown to differ from noncriminals on personality trait measures and indices of cognitive and physiological functioning (Eysenck & Eysenck, 1977; Raine, 1993).

The diagnostic category of antisocial personality disorder (APD) within the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders - 4" Edition (DSM-IV) focuses explicitly on individuals who exhibit a longstanding pattern of rule-breaking and unlawful conduct (APA, 1994). To meet criteria for APD, an individual must have engaged repeatedly in deviant behaviors as a child (including aggression, destruction of property, lying or stealing, and/or serious rule violations) and as an adult (including actions that are reckless, irresponsible, impulsive, deceitful, aggressive, and/or illegal). In this regard, APD lies farther along a continuum of criminal deviance than adjudicated criminality, which reflects persistent deviance only indirectly. APD has a relatively low base rate in the population at large (approximately 3% of males and 1% of females, according to DSM-IV), but is common among incarcerated criminal offenders, where prevalence estimates range from 50-80% (Hare, 1991; Hare, Hart, & Harpur, 1991).

The category of antisocial personality disorder in DSM-IV was intended to capture the more traditional construct of psychopathy (or "sociopathic personality") included in earlier versions of the DSM, and the two terms have been used interchangeably by researchers. However, in his influential monograph "The Mask of Sanity", Cleckley (1976) reserved the term psychopath for individuals who manifested a unique profile of emotional and interpersonal characteristics--absence of anxiety, immunity to guilt or shame, incapacity for love or intimacy, diminishment of emotional response, and absence of loyalty--in addition to reckless, amoral behavior. Relatedly, the 20-item Psychopathy Checklist-Revised (PCL-R), developed by Hare (199 1) to identify Cleckley psychopaths in criminal offender populations, breaks down into two correlated factors (Harpur, Hare, & Hakstian, 1989): an "emotional detachment" factor marked by items reflecting the affective and interpersonal profile of the psychopath that Cleckley emphasized, and an "antisocial behavior" factor consisting of items dealing with impulsivity, aggression, and other forms of behavioral deviance.

There is substantial overlap between diagnoses of DSM-IV APD and diagnoses of psychopathy based on Hare's (1991) PCL-R. Correlations between binary APD classifications or symptom counts and PCL-R ratings scores are quite high (averaging about .60; see Hare, 1991; Widiger, Hare, Rutherford, Alterman, & Corbitt, 1996). However, the overlap is asymmetric with respect to the two PCL-R factors: As would be expected from the above description, the PCL-R antisocial behavior factor is substantially related to APD, but PCL-R emotional detachment is statistically unrelated to APD (Hare, 1991; Hare et al, 1991). Because of the strong relationship between PCL-R antisocial behavior and DSM-IV APD, and because a diagnosis of psychopathy requires a high overall score on the PCL-R (and thus its two factors), most PCL-R defined psychopaths will meet criteria for APD. However, among individuals meeting criteria for DSM-IV APD there will be a substantial number who lack the characteristic emotional detachment of the true psychopath (i.e., the base rate for psychopathy in prisons is only 20-25%, versus 50-80% for APD; Hare et al., 1991). These individuals will be impulsive,

irresponsible, and aggressive, but will exhibit normal or hyper-normal emotional reactivity (Patrick, 1994; Patrick & Lang, 1999). It is this subgroup, we will argue below, that is likely to be at heightened risk for suicide.

Reactive and Instrumental Aggression

In theoretical and empirical accounts of aggressive behavior in humans, a distinction has been made between reactive ("hostile", or "angry") aggression and instrumental aggression (e.g., Buss, 1961). Reactive aggression refers to aggressive behavior that is motivated by a desire to retaliate or to hurt another person; instrumental aggression, on the other hand, serves as a vehicle for achieving other, nonpunitive goals. Reactive/hostile aggression is evoked by aversive events, such as insult or attack; instrumental aggression, on the other hand, is instigated by goal-blocking or by a competitor's possession of a desired object (Buss, 1961; Feshbach, 1964,1970).

Cleckley (1976) pointedly stated that hostility, rage, and violence are not characteristic of the psychopathic individual. This fits with the notion that psychopaths are less sensitive to threatening and aversive stimuli (Hare, 1978; Lykken, 1995; Patrick, 1994). However, there is a substantial documented relationship between PCL-R scores and a range of aggressive behaviors (Salekin, Rogers, & Sewell, 1996; Patrick & Zempolich, 1998). To address this apparent contradiction, Patrick and colleagues (Patrick, Zempolich, & Levenston, 1997; Patrick & Zempolich, 1998) reviewed evidence indicating that the antisocial behavior factor of the PCL-R (the component most related to DSM-IV APD) is strongly predictive of spontaneous aggressive acts such as fighting, assaults, and partner abuse, but not of premeditated forms of aggression (e.g., possession or felonious use of weapons), which were more related to PCL-R emotional detachment. These authors concluded that the two PCL-R factors are differentially related to aggressive behavior, and that reactive (or hostile) violence is characteristic of stress-reactive antisocial individuals rather than "true" Cleckley psychopaths.

As will be described later, scores on the antisocial behavior component of the PCL-R are positively related to trait measures of negative emotionality, and inversely related to indices of behavioral constraint (inhibition). Independently, empirical studies have shown that animals with low levels of brain serotonin exhibit high levels of reactive aggression, and hyper-responsiveness to noxious stimulation (see below; Kyes, Botchin, Kaplan, & Manuck, 1995). Preliminary work on PCL-R psychopathy and serotonergic activity suggests an inverse relationship, mediated primarily by the antisocial behavior factor (Newlove, Gretton, & Hare, 1992). Thus, it seems conceivable that reported links between suicide risk and aggressiveness could be specific to reactively aggressive individuals. It is important to highlight that reactive aggression and hostility is not unique to criminal and antisocial personality populations; persons in the general population or within clinical samples may also possess traits that predispose them to acting out behaviors in reaction to environmental irritants and stressors.

Alcohol Use Disorders

The DSM-IV diagnosis of alcohol abuse refers to a pattern of excessive drinking leading to significant negative consequences for the individual (i.e., family, work, financial, and legal problems). Alcohol dependence is a more severe alcohol use disorder, involving physical symptoms brought on by excessive drinking (such as tolerance, physical withdrawal, and health consequences); thus, persons with alcohol dependence often also meet criteria for alcohol abuse (APA, 1994).

Although many studies utilize "alcoholics" as the psychopathology group, a diagnosis of "alcoholism" does not exist within the DSM-IV. In most studies, the label of "alcoholic" is used to refer to individuals who are treated in a drug and/or alcohol intervention center for alcohol problems. The term "alcoholic", especially in relation to persons admitted for formal treatment, usually implies alcohol dependence, as these persons are likely to experience symptoms of tolerance and withdrawal. However, it is also true that "alcoholic" samples may represent heterogeneous subgroups of persons with alcohol problems, since definitions of alcoholism tend to be variable across studies and are often poorly specified. Of course, even within the DSM diagnosis, there is room for substantial variation as the person need only manifest 3 out of 7 symptoms to meet diagnostic criteria for alcohol dependence. Thus, a large range in the severity of the disorder may exist across persons with the same alcohol dependence diagnosis.

A final distinction is made between alcohol abuse vulnerability and acute intoxication as risk factors for suicidal behavior. It should be acknowledged that alcohol intoxication can lead to behaviors that are maladaptive, even when a diagnosis of alcohol use disorder is not warranted (Schuckit, 1973), and a few studies have examined links between suicide and acute intoxication. However, the bulk of the studies reviewed focus on problem drinking in the form of alcohol abuse, dependence, or alcoholism.'

Antisociality, Aggression, andAlcoholAbuse: The "Externalizing"Spectrum

Substantial evidence exists for the co-occurrence of deviant, externalizing pathologies within individuals (Virkkunen, 1979; Moeller, Dougherty, Lane, Steinberg, Cherek, 1999). Men and women with a history of aggressiveness have been found to be at risk for later antisocial and criminal behaviors (Pulkkinen, 1996; Haemaelaeinen & Pulkkinen, 1995; Huessman & Eron, 1992). Excessive alcohol use is associated with criminal deviance and aggressive acting out (Wright, 1993; Jaffee, Babor, & Fishbein, 1988; Norton & Morgan, 1989; Ohannessian, Stabenau, & Hesselbrock, 1995; Hesselbrock & Hesselbrock, 1997), particularly among men (Hesselbrock & Hesselbrock, 1997), and there is evidence for a shared vulnerability factor underlying antisociality and alcoholism.

Cloninger and colleagues (Cloninger, Christiansen, Reich, & Gottesman, 1978; Cloninger, Bohman, & Sigvardsson, 198 1) have demonstrated, through twin and adoption studies, a genetic link between alcoholism and criminal behavior, and Slutske, Heath, Dinwiddie, Madden, Bucholz, Dunne, Statham, & Martin (1998) reported evidence that child conduct disorder (CD) and alcohol dependence in adulthood are linked by a common genetic risk factor. Moreover, individuals diagnosed as APD have a higher risk for violence, criminal behavior, and alcohol

abuse (McGuffin&Thapar, 1998; Reid, 1995; Dinwiddie, 1994; Virkkunen, 1979), and the antisocial behavior factor of the PCL-R (but not the emotional detachment factor) has been shown to be related to alcohol and drug abuse (Lyons, Casbon, Curtin, Patrick, & Lang, 1998; Smith & Newman, 1990).

Although a comprehensive presentation of evidence for connections among these externalizing phenomena is beyond the scope of this paper, Table 1 is provided to alert the reader to relevant review papers.

Table 1. Relevant reviews which provide evidence for the link between various externalizing syndromes.

	Aggression	Criminality/ Antisociality	Antisocial Personality Disorder
Criminality/ Antisociality	Huessman & Eron, 1992 McGuffin & Thapar, 1998	-	-
Antisocial Personality Disorder	Reid, 1995	Dinwiddie, 1994	-
Alcohol Use/Abuse	Leonard & Jacob, 1988 Evans, 1980 Ito et al., 1996 Giancola & Zeichner, 1995	Norton & Morgan, 1989 Cloninger et al., 1981	Hesselbrock & Hesselbrock, 1993 Iwahashi et al., 1995 Sher & Trull, 1994

SUICIDE RISK AND EXTERNALIZING BEHAVIOR: EMPIRICAL RELATIONSHIPS

Suicide, Criminality, and Antisocial Personality

There is substantial evidence for a relationship between criminal deviance and suiciderisk A number of studies have investigated rates of suicide, and suicide risk factors among inmate samples (Ivanoff & Jang, 1991; Ivanoff, 1992; Smyth, Ivanoff, & Jang, 1994; Haycock, 1992). Some of this work has revealed that a history of juvenile delinquency and a history of violent crime are associated with suicidal attempts and completions in adulthood among male inmates (Ivanoff & Jang, 1991; Marcus & Alcabes, 1993). According to Bland, Newman, Thompson, and Dyck (1998), the risk of suicide attempts among prisoners with prison sentences of less than 2 years is 7.1 times that of the general population.

The adolescent suicide literature also supports an association between criminal deviance and suicide risk. Results from this domain indicate that the combination of depressed symptoms and antisocial behavior is a common antecedent of teenage suicide. In a study of adolescent suicide completers (Marttunen, Aro, Henriksson & Eonnqvist, 1994), retrospective reports by relatives revealed that 43% (45% males, 33% females) of victims had exhibited one or more of the following antisocial behaviors: recurrent truancy, stealing, running away, illicit drug use, sexual promiscuity, violence, or criminal arrest or conviction. Because males were overrepresented in this study (44/53 victims), most analyses

were performed on male suicides. Factors distinguishing male victims with antisocial behavior from nonantisocial male victims included separation from parents, parental alcohol abuse, and violent behavior. Depressive disorders were common among all victims, but male victims with antisocial behavior were more likely to exhibit comorbid alcohol abuse or dependence in comparison to victims without antisocial behavior.

The low number of female suicide completers in this and other studies (e.g., Runeson, 1990) suggests that, at least among adolescents and young adults, suicide completions are more prevalent among males (see Cross & Hirschfeld, 1986). Also, due to the small sample size for female suicides, the findings of Marttunen et al. were unclear with regard to the link between antisociality and suicide risk in women. However, results from another study by Weissman et al. (1973) of depressed women indicated that those engaging in suicide attempts had a higher number of criminal convictions and poorer work histories than depressed non-attempters. Thus, the link between criminality/antisociality and suicide risk may not be male-limited.

The evidence for a relationship between antisocial personality disorder (APD) and suicidal behavior is less clear-cut, Garvey and Spoden (1980) reported that although a high proportion (28/39; 72%) of mental health clinic patients diagnosed as APD had attempted suicide, only three (10%) of these APD patients had made a "serious" attempt, and none had used violent methods. The authors' interpretation was that APD individuals use self-harm behaviors to manipulate others. Frances, Fyer, and Clarkin (1986) similarly concluded on the basis of a review of the relevant literature that among APD individuals, suicidal behaviors are typically non-serious and non-violent, and often precipitated by interpersonal conflict with loved ones. At the time of the Frances et al. review, only about 5 studies examining the rate of suicide among APD individuals were in existence, and, as stated by the reviewers, most studies did not utilize DSM criteria for APD.

On the other hand, the manual for DSM-IV states that that individuals diagnosed with APD are more likely than people in the population at large to die by violent means including suicide, and Frances et al. (1986) estimated the base rate of suicide completions among APD individuals to be 5%, with an 11% rate of attempts. Both of these rates substantially exceed those for the general population (i.e., .01% and 1-2%, respectively; National Center for Health Statistics, 1994; Mosciki, 1995). More recent research has emphasized suicide risk as an associated feature of APD (Lester, 1998; Black & Braun, 1998; Black, 1998). Moreover, in a study analyzing the genetic risk for suicide, it was found that suicidal behavior in children was associated with a diagnosis of APD, and with aggressivity and substance abuse, in first-degree relatives (Pfeffer, Normandin, & Kaduma, 1994).

Ambiguities in the literature on APD and suicide risk likely stem from the conceptual and empirical overlap that exists between APD and psychopathy. As noted earlier, prison research data indicate that some proportion of individuals diagnosed as APD will exhibit the characteristic emotional detachment of the true psychopath. With regard to the latter, Cleckley made it clear that although psychopathic individuals may engage in premeditated, bogus suicide attempts, genuine suicidal behavior is not characteristic of the disorder. In fact, Cleckley listed "suicide rarely carried out" as one of his 16 diagnostic criteria for psychopathy, observing that:

"Despite the deep behavioral pattern of throwing away or destroying the opportunities of life that underlies the psychopath's superficial self-content, ease, charm, and often brilliance, we do not find him prone to take a final determining step of this sort in literal suicide. Suicidal tendencies have been stressed by some observers as prevalent. This opinion, in all likelihood, must have come from the observation of patients fundamentally different from our group, but who ... were traditionally classified under the same term... Instead of a predilection for ending their own lives, psychopaths, on the contrary, show much more evidence of a specific and characteristic immunity from such an act" (p. 358-359).

In an empirical investigation of this issue, Hill, Rogers, and Bickford (1996) reported evidence consistent with Cleckley's characterization. Using a screening version of the PCL (PCL-SV), the authors classified male forensic hospital patients into psychopath and non-psychopath groups, and the patients' hospital case files were reviewed for instances of suicide attempts, self mutilation, and aggressive behavior. A history of drug or alcohol abuse and total PCL-SV scores were significant predictors of aggression. The investigators also reported that while none of the physical aggression exhibited by psychopaths was self-directed, 32.5% of documented episodes of physical aggression by non-psychopaths wereself-directed.

Considering that research samples of APD-diagnosed individuals are likely to include some proportion of psychopathc individuals who are at low risk for suicide, but that APD individuals as a whole are more likely to commit suicide, there must be a discrete subcategory of APD individuals who are at disproportionately high risk. In this regard, Frances et al. noted that suicidal behavior is especially likely in cases where APD is accompanied by a comorbid Axis I disorder, particularly a mood disorder or substance use disorder. Relatedy, Ward & Schuckit (1980) reported that APD concurrent with drug or alcohol abuse increased the risk for serious suicidal behavior compared to an APD diagnosis alone. The implication is that the 5% overall rate of completed suicide among APD individuals is attributable to a smaller subgroup whose impulsive antisociality is accompanied by substance abuse or prominent dysphoria and negative affect.

To summarize, descriptive studies on the rates of suicidal behaviors among criminal and antisocial individuals suggest that a substantial percentage of adults and adolescents exhibiting unlawful and disruptive behaviors may have an increased risk for suicide. Misconceptions about the personality correlates of criminality and antisocial personality (vs. psychopathy) may have helped overlook the evidence pointing to these links.

Suicide and Aggression/Violence

Historically, psychoanalytic theorists have described depression and suicide as anger and aggression "turned inwards", under the premise that depression/suicide and aggression reflect opposing manifestations of similar underlying psychic forces (Keltikangas-Jarvinen, 1978; Jakubaschk & Hubschmid, 1994). Implicit in the psychoanalytic perspective was the notion that inner- and outer-directed aggressive impulses are mutually exclusive within individuals. This notion of exclusivity has also prevailed in the child psychopathology literature, where a distinction is often made between children and adolescents who are “internalizers” (depressed, anxious)

and those who are "externalizers" (conduct disorder, oppositional defiant disorder; Hinshaw, Morrison, Carte, & Cornsweet, 1987). However, more recent work has explored the possibility that similar mechanisms (e.g., impulse control, alienation, anger-proneness) might underlie suicidal and violent tendencies (Cairns, Peterson, & Neckerman, 1988), and that propensities toward aggression and suicide may co-exist in some people (Weissman, Fox, & Klerman, 1973; Apter et al., 1995; Lester, 1987).

Descriptive studies have confirmed the co-existence of suicidal and outwardly hostile and aggressive behavior within individuals. Initial research revealed that, among depressed women, suicide attempters were more overtly hostile during a research interview, and also outside the interview. They experienced greater interpersonal discord and significantly more arguments with family and friends than depressed non-attempters (Weissman et al., 1973). According to the authors, attempters and non-attempters were similar on demographic variables, such as race, age, social class, and marital status; and both groups were rated as similarly and moderately depressed, so that differences in hostility were not attributable to the severity of depressive symptoms. In another study of suicide among male adolescents, retrospective ratings by parents revealed that suicide completers exhibited a greater number of lifetime aggressive acts than demographically similar male controls (Brent et al., 1994). Thus, among attempters and completers, a positive relationship between suicidal behavior and outward aggression has been demonstrated.

An association between suicidal behavior and aggressivity has also been demonstrated in habitually violent individuals. Plutchik and van Praag (1990) reported that 30% of violent individuals have a history of self-destructive behavior. In a study examining self-injurious behavior ("deliberate infliction of physical harm on self without conscious suicidal intent") in male psychiatric patients with histories of violence, patients engaging in self-directed aggression exhibited more frequent and severe verbal and physical aggression toward others than patients exhibiting only other-directed aggression (Hillbrand, 1992). However, Hill et al. (1996) reported that aggression toward others and self-harm (suicide attempts and self-mutilation) were unrelated ($r = -.05$) in a sample of male forensic psychiatric patients.

Some investigators have posited that the underlying dimension linking violence and suicide is aggression-proneness. Plutchik and colleagues (Plutchik, 1995; Plutchlk, van Praag, & Conte, 1989) identified overlapping risk factors for suicide and violence, including: alcohol and drug abuse, violence or other deviance in the family environment, previous suicidal behavior, history of psychiatric hospitalization, access to weapons, impulsivity, suspiciousness, rebelliousness, and low brain serotonin. To account for this overlap, Plutchik proposed a "two-stage model of countervailing forces." At one level, suicide and violent behavior represent the expression of a common underlying "aggressive impulse". Whether this tendency is expressed one way or the other is determined by "second stage factors"--i.e., factors that emerge as correlates of suicide risk when violence risk is held constant, and vice versa. Using partial correlations, Plutchik and colleagues (1989, 1993) identified depressive symptoms, number of life problems, and hopelessness as related to suicide risk but not violence risk. Impulsiveness (measured using the Impulsivity Scale) and criminality (measured via structured interview questions about "trouble with the law") were related predominantly to

violence risk. A shortcoming of this work is that the nature of the putative aggression potential construct is not clearly elucidated.

Other researchers have placed emphasis on a general impulse control dimension (Bergman & Brismar, 1994a, b; Hillbrand, 1992; Virkkunen, De Jong, Bartko, & Linnoila, 1989; Virkunnen et al., 1994). Reporting on a sample of male alcoholics, Bergman & Brismar (1994b) presented evidence inconsistent with the notion that that aggression potential per se mediates the suicide-violence relationship. In this study, a significant positive association was found between violence and suicide risk, but suicidal and non-suicidal alcoholics did not differ on personality variables related specifically to aggression. Instead, an impulsivity index from the Karolinska Scale of Personality, was found to differentiate the two groups, with the suicidal alcoholics exhibiting greater impulsivity. Other data are consistent with the notion that impulsivity may underlie both suicide and aggression. Habitually aggressive individuals score reliably higher on measures of impulsivity (Reid, 1995; Patrick & Zempolich, 1998), and about two-thirds of suicide attempts are said to be "impulsive"--occurring with little premeditation and preceded by only a short period of planning (Garrison, McKeown, Valois, Vincent, 1993).

As demonstrated with this literature review, violence, hostility and suicidality are often co-occurring symptoms among psychiatric patients. Much research suggests that this link may be related to an underlying impulsivity trait found among individuals that exhibit externalizing behaviors. A discussion of impulsivity and other related temperament dimensions and their association with suicide risk, externalizing syndromes, and psychobiological risk factors will follow in later sections of this chapter.

Suicide and Alcohol Used/Abuse

A consistent relationship between suicidal behavior and alcohol use/abuse has also been documented. Among adolescent offenders, suicide attempters and self-injurious individuals were much more likely to use alcohol and other drugs than were non-suicidal offenders (Putnins, 1995). This author noted that risk-taking and impulsivity may underlie the link between substance use, suicide risk, and antisocial behavior among youths. The use of alcohol and other drugs can exacerbate problems with impulse control and increase the risk of criminality and suicide.

Data from Marttunen et al. (1994) are consistent with Putnins' hypothesis. In this study, adolescent male suicide victims with histories of antisocial behavior were more likely to have been under the influence of alcohol at the time of suicide than non-antisocial victims (Marttunen, et al, 1994). Extreme intoxication (blood alcohol level > .15%) at the time of suicide was also more common among the antisocial subgroup. Thus, it appears that individuals exhibiting delinquency and other behavioral deviance are especially at risk for engaging in suicidal behavior under conditions of intoxication. In such studies we again notice the clustering of these externalizing behaviors (antisociality, alcohol use) among a subtype of suicidal individuals.

The connection between drinking and suicide is not limited to circumstances of acute intoxication. Recent research has revealed that alcohol dependence may represent an important risk factor for suicide (see Murphy &

Wetzel, 1990; Frances, Franklin, & Flavin, 1986; and Miller, Mahler, & Gold, 1991, for reviews of the literature). It has been estimated that 25% of suicide attempters meet criteria for a diagnosis of substance abuse (Baker, 1988), and that substance use disorders, particularly alcohol dependence, are present in 47% of adolescent and young adult suicides (50% men, 38% women; Runeson, 1990). The results from an investigation of completed suicides in a New York City (NYC) jail (Marcus & Alcabes, 1993) established that all 48 suicide victims had used drugs or alcohol excessively before incarceration, and that 33% had a history of alcohol abuse (versus 18% in the NYC jail population as a whole).

Furthermore, in a study of 15-29 year old suicide completers (72% male), Runeson (1990) reported a greater family history of parasuicide (deliberate but nonfatal self-harm) among suicide victims with substance use disorders (alcohol dependence, in particular) than non-substance-abusing victims. Consistent with evidence cited above on the risk for suicide during intoxication, 38% of post-mortem screenings in this study revealed the presence of alcohol at the time of suicide. About 57% of the victims with a substance use disorder (SUD) were intoxicated at the time of the suicide compared to 20% of the suicide victims without a reported SUD. In addition, suicide victims with SUD left suicide notes less frequently than non-SUD victims (5/27 vs. 16/31, respectively). A number of factors, such as greater social isolation or poorer communication skills among the SUD victims, may account for this subgroup leaving fewer suicide notes; however, these data may also suggest that greater impulsivity was involved in SUD victims' suicidal behavior. It is unclear, of course, whether the presumably unpremeditated nature of suicide attempts among the SUD victims was as a result of acute intoxication, or of a stable trait difference between SUD and non-SUD individuals.

The available evidence thus indicates that alcoholism or alcohol use disorder is often a significant risk factor for suicide, especially among persons with antisocial behavior. The Runeson (1990) study also suggests the presence of a familial link between alcoholism and suicide risk, paralleling the genetic association between criminality and alcoholism reported by Cloninger and colleagues (Cloninger, Christiansen, Reich, & Gottesman, 1978; Cloninger, Bohman, & Sigvardsson, 1981). However, a challenge in evaluating the evidence concerning the link between alcohol dependence and suicide risk is posed by the difficulty in separating the effects of alcohol intoxication as an immediate precipitant from that of a trait disposition toward alcohol abuse and affiliated tendencies. In this regard, Schuckit (1986) reported that alcoholics who had made a suicide attempt were more likely to have a history of juvenile delinquency and adult social and legal problems than alcoholics who had no history of suicidal behavior. In this study, criminal deviance in most cases predated heavy drinking. Relatedly, Bergman and Brismar (1994a) found that male alcoholics with a violent history had a greater history of suicide attempts (33%) compared to non-violent alcoholics (17%). The violent group also had higher proportion of alcoholic fathers (Bergman and Brismar, 1994a). These data suggest that vulnerability to impulsive behaviors resulting from acute alcohol intoxication may not, in itself, underlie the link between alcohol use disorders and suicidality. Instead, the implication is that alcohol use may interact with pre-existing trait dispositions to produce higher rates of suicide risk among some alcoholics--presumably, an "externalizing" or antisocial subtype. The next section reviews evidence concerning the nature of these underlying trait dispositions.

SUICIDE RISK AND EXTERNALIZING BEHAVIOR: THE TEMPERAMENT/PERSONALITY CONNECTION

Temperament and Personality

The documented links between suicidal behavior and various externalizing syndromes, themselves interrelated, strongly suggest the presence of common underlying risk factors. Potential mediators may be sought at different levels of analysis. One target realm is that of personality trait dispositions. Some candidate dimensions, such as impulsivity and aggression-proneness, were alluded to earlier. In certain instances, the presence of these traits has been inferred indirectly from the behaviors exhibited by suicidal, antisocial, or aggressive individuals and/or the circumstances surrounding their destructive behaviors (e.g., Runeson, 1980; Martunnen et al., 1994). However, more direct information in this regard comes from studies that have examined personality and temperament dimensions related to suicidal behavior (completions, attempts, self-injurious behaviors, ideations) and externalizing syndromes (criminality, alcohol abuse) using valid and reliable self-report measures of temperament and personality traits.

Although some controversy surrounds the use of personality and temperament traits as explanatory variables for behavior and psychopathology (Daniels, Plomin, & Greenhalgh, 1984), trait theorists for decades have found reliable and distinct behavioral correlates for measured trait dimensions (Buss & Plomin, 1975). Within the following review on the personality correlates of suicidality and externalizing psychopathology, most studies discussed have utilized trait inventories (e.g., Eysenck Personality Questionnaire, Tridimensional Personality Questionnaire, Karolinska Scales of Personality) that are widely-used, and trait constructs (e.g., neuroticism, psychoticism, extraversion, sensation-seeking, impulsivity) that have been empirically-validated. It is noteworthy that although these inventories were created independently of each other, research has derived similar factor structures and sets of trait factors (neuroticism/trait anxiety/emotionality, sensation-seeking/impulsivity/constraint, sociability/alienation/extraversion) for most (Sher & Trull, 1994). One distinction that is often made within trait theory research is the distinction between temperament and personality. Most theorists conceptualize temperament as early developing, more stable, and often based on biological or genetic influences; on the other hand, personality is thought to reflect broad-based characteristics that, although developing from temperament, are more determined by social factors (Strelau, 1987; Goldsmith, Losoya, Bradshaw, & Campos, 1994). Research demonstrates much convergence among personality and temperament inventories (Ostendorf & Angleiter, 1994; Goldsmith et al., 1994). It is beyond the scope of this paper to refine the distinctions between temperament and personality constructs; thus, we shall review studies that have used personality and/or temperament inventories, without analyzing the developmental bases of these traits.

Temperament and Personality Characteristics of Suicidal Individuals

Empirical investigations have revealed that suicidal individuals score reliably higher on trait measures of impulsivity and hostility (Weissman et al., 1973; Bergman &

Brismar, 1994b). Other personality traits that have been connected with suicide-proneness are: emotional instability, anxiousness, or neuroticism; alienation; social withdrawal; and psychoticism (Frances et al., 1986; Lester, 1987; Nordstrom, Schalling, & Asberg, 1995; Lolas, Gomez, & Suarez, 1991).

Using a psychological autopsy interview method, Brent, Joshua, Perper, Connolly, Bridge, Bartle, and Rather (1994) reported that relatives of suicide completers rated them higher on the Harm-Avoidance scale of the Tridimensional Personality Questionnaire (TPQ; Cloninger, 1987) and the Irritability scale of the Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957) than demographcally-matched controls. The suicide victims were more likely to have a DSM-III-R personality disorder, particularly from the impulsive/erratic (e.g., antisocial, borderline) and anxious/fearful (e.g., avoidant, passive-aggressive) clusters. Completers with personality disorder diagnoses scored higher on the TPQ novelty-seeking scale and on lifetime aggression, measured by the Brown-Goodwin Assessment of Lifetime History of Aggression (Brown, Goodwin, Ballenger, Goyer, & Major, 1979), than those without a personality disorder. A significant limitation of this study is that the dependent measures were based on retrospective diagnoses by researchers and retrospective personality ratings by family members of suicide completers. Nonetheless, the results indicate that suicide completion is related to anxiety (harm-avoidance), irritability (or hostility), and, among the subgroups with personality disorders, impulsivity and sensation-seeking.

Other studies have examined personality and temperament characteristics of suicide attempters and non-attempters. Nordstrom, Schalling, and Asberg (1995), in a study of 16 male and 16 female attempters, reported elevations on the Neuroticism and Psychoticism subscales of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) compared with sex- and age-matched surgical patients. High scores on the EPQ Neuroticism scale reflect anxiousness and emotional instability; high scores on the EPQ Psychoticism dimension reflect insensitivity, aggressiveness, and a lack of regard for social norms (Eysenck & Eysenck, 1975). Attempters also scored higher on indices of Somatic Anxiety, Muscular Tension, Indirect Aggression ("undirected anger expression"), and Suspicion, and lower on the Socialization scale of the Karolinska Scales of Personality (KSP), an index of nonconformity and societal de-abiding behavior. Thus, it appears that antisocial nonconformity and anxiety or negative affectivity characterize individuals who have made suicide attempts. Banki & Arato (1983) reported similar results using the Marke-Nyman Temperament (MNT) Inventory. The MNT produces three major personality dimensions (see Sjobring, 1973): validity, an index of "energy resources and efficiency" (opposite of EPQ neuroticism); solidity, a measure of steadiness and mature lack of changeability (opposite of impulsivity trait); and stability, related to abstraction and emotional distance (similar to EPQ introversion scale). These researchers confirmed that suicide attempters scored significantly higher on the personality dimensions of stability (abstraction and emotional distance) and significantly lower on validity compared to non-attempting patients and controls. Contrary to predictions, however, the suicide attempters did not score lower on solidity (opposite of impulsivity).

Apter, Plutchik, and van Praag (1993) also compared temperament characteristics of suicide attempter and non-attempter groups, comprising equal numbers of men and women. In this study, suicide risk was measured using the

Suicide Risk Scale (Plutchik, van Praag, Conte, & Picard, 1989), which includes items pertaining to past history of suicidal behavior, present suicidal ideation and intent, depression and hopelessness. Consistent with other work reviewed earlier in this chapter, the suicidal group had a higher violence risk, indexed by the Past Feelings and Acts of Violence Scale (Plutchik. van Praag, Conte, & Picard, 1989), than did the non-suicidal group. More importantly, the researchers found that the suicidal group evidenced higher levels of resentment and lower scores on happiness, measured using the Mood Adjective Checklist (Hutch&, 1989), and higher state and trait anxiety as measured by Spielberger's (Spielberger, Gorusch, & Lushene, 1970) State-Trait Anxiety Inventory. When variance associated with violence risk was partialled out from suicide risk, the suicide risk residual was correlated significantly with state and trait anxiety, and with impulsiveness as measured by Plutchik and van Praag's (1989) Impulsivity Scale. When suicide risk variance was removed from the violence risk variable, angry and resentful mood and impulsivity correlated significantly with the violence residual, but trait anxiety correlated negatively with this residual. The authors concluded that anxiety serves as an "augmentor" of self-directed violence and an "attenuator" of other-directed violence. However, this interpretation fails to explain why suicidal individuals engage in both outward and inward forms of aggression. Nonetheless, in this study the dimensions of neuroticism (anxiety), hostility, and impulsivity again emerge as discriminators of suicidal and non-suicidal individuals.

Engstroem, Alsen, Gustavsson, Schalling, and Traskman-Bendz (1996), on the other hand, took the position that current studies on temperament and suicide neglect the substantial heterogeneity that exists among suicidal individuals. These investigators performed a cluster analysis, using temperament traits assessed by the KSP, to identify subcategories of suicidal patients (91 men, 124 women). The authors also utilized EPQ scales to validate the clusters obtained using the KSP. Six clusters were identified. Two of these (clusters 1 and 5) were "close to normal" with mean T-scores on most scales near 50. The four other clusters were distinct, and interesting from the standpoint of the present discussion. Cluster 2 was associated with high anxiety, low socialization, and high detachment (alienation) scores; this subgroup was labeled "neurotic and introverted" by the authors. Individuals in this cluster exhibited low mean EPQ Extraversion scale scores and high Neuroticism scale scores. Cluster 3 individuals scored high on anxiety, high on aggression, lowest on socialization, highest on suspicion, and high on impulsiveness; this cluster of suicidal individuals, described as the "most disturbed," exhibited acting out behavior and violence towards self and others. Mean EPQ Neuroticism and Psychoticism scores were high in this cluster. Cluster 4 was associated with low conformity, high psychoticism (mostly high suspicion and low socialization scores), and high impulsiveness. Mean EPQ Psychoticism scores for this cluster were comparable to Cluster 3 mean Psychoticism scores. Finally, cluster 6 individuals scored high on scales reflecting different forms of anxiety, and were low in socialization and high in guilt and suspicion; high Neuroticism and low Extraversion characterized the EPQ profile of this cluster.

Despite the heterogeneity among suicidal individuals encountered in this research, Engstroem et al. (1996) reported that mean anxiety scores for the sample as a whole were significantly higher than for controls. Moreover, all subgroups of suicide attempters, with the exception of cluster 5, had lower than normal socialization scores. Persons falling within clusters 3 and 4 scored especially low

on the KSP socialization scale--which reflects nonconformity, problematic behavior and social problems, and/or a resentful attitude towards life. Cluster 3 suicide attempters were most prototypic of the externalizing suicidal subtype discussed in this paper, followed by Cluster 4. The Cluster 3 subgroup represented 21% of the suicide attempters in Engstroem et al.'s sample; clusters 3 and 4 combined accounted for 34% of the overall sample. The cluster 2 profile (21% of the sample) also represents an interesting combination of traits — high anxiety, low socialization, and high introversion — a personality profile observed in prior studies of suicide attempters. In effect, even when different subtypes of suicidal individuals are identifed, a consistent pattern of personality traits related to high negative affect, impulsivity, and nonconformity is observed in a large number of cases.

Herpertz, Steinmeyer, Marx, Oidtmann, and Sass (1995) were interested in personality correlates of self-mutilative behavior (SMB), and how persons engaging in SMB differ from suicide attempters. Female patients were categorized as either SMB, defined by engagement in "repetitive direct physical harm without conscious suicidal intent" (p. 64), or as serious suicide attempters. The researchers further divided the SMB group into impulsive (not premeditated) and non-impulsive subgroups based on the level of impulsivity surrounding the SMB. These SMB subgroups were compared to groups of depressed patients who had either attempted suicide or not. The impulsive SMB group scored higher on the Barratt Impulsiveness Scale (Barratt, 1985) than the non-impulsive SMB group. Interestingly, depressed suicide attempters did not differ from impulsive SMB individuals in impulsivity scores. However, both SMB groups had higher anger scores (particularly anger-in suppression scores, measured by Spielberger's State Trait Anger Expression Inventory; Spielberger, 1992) than the two depressed groups. These results suggest that SMB and suicide attempts are both related to impulse control deficits, although anger may be more prevalent among those exhibiting SMB.

The research literature also indicates that personality traits of persons who are simply contemplating suicide (suicidal ideators) are similar to those of suicide completers and attempters. Compared to college students without serious suicidal thoughts, students who report serious suicidal ideation score higher on the Psychoticism and Neuroticism scales of the EPQ (Mehryar, Hekmat, & Khajavi, 1977; Irfani, 1978), and higher on the non-conformity and alienation scales of Lanyon's Psychological Screening Inventory (Mehryar et al., 1977). Thus, suicide ideators score high on neuroticism, psychoticism, and low on sociability (or extraversion)--paralleling the results among samples of suicide attempters and completers.

In summary, despite the wide variety of measures of personality and temperament used in the studies reviewed, a cluster of personality factors related to suicide risk reliably emerges: high neuroticism (anxiousness); high hostility/irritability ; low socialization, high psychoticism, high impulsivity and sensation seeking; and high alienation, introversion. Several of these trait dimensions are closely interrelated. Impulsivity, sensation seeking, socialization, and psychoticism are linked to a higher-order low Constraint (behavioral [dis]inhibition) dimension, and anxiousness/neuroticism, alienation, and hostility coalesce around a higher-order dimension of high Negative Emotionality (Tellegen & Waller, in press). Extraversion, sociability, and happiness (wellbeing), on the other hand, all relate to a higher-order dimension of Positive Emotionality (Tellegen

& Waller, in press). Thus, the personality profile of the suicidal individual (particularly where co-morbid personality disorder exists) is one of heightened Negative Emotionality and low Constraint, and perhaps low Positive Emotionality.

Temperament Links Between Suicide and Externalizing Psychopathology

The personality and temperament characteristics of suicidal individuals are similar to those of antisocial and aggressive individuals and alcoholics. In particular, the clustering of impulsivity- and anxiety-related traits has been frequently reported among antisocial personalities and alcoholics, especially men (Sher & Trull, 1994).

Temperament Variables Related to Criminality/Antisociality and Aggression

Temperament traits associated with anxiety and impaired impulse control co-exist among impulsive, alcoholic, violent offenders (Virkkunen, Kallio, Rawlings, Tokola, Polan, Guidotti, Nemeroff, Bissette, Kalogeras, Karonen, Linnoila, 1994), and high impulsivity and low sociability traits are often encountered within criminal populations (see Schalling & Asberg, 1985). Patrick (1994) examined correlations between PCL-R psychopathy and the Emotionality-Activity-Sociability Temperament Survey (EAS; Buss & Plornin, 1984) and Buss and Plomin's (1975) Impulsivity scale in a male prisoner population. Total PCL-R scores were correlated positively with Impulsivity and EAS-Anger, but differential relationships between these and other temperament scales were found for the two psychopathy factors. The PCL-R antisocial behavior factor accounted entirely for the correlation of overall psychopathy with Impulsivity and EAS-Anger. In addition, the Fear and Distress subscales of the EAS correlated positively with PCL-R antisocial behavior, but negatively with PCL-R emotional detachment.

In a subsequent paper examining relationships between PCL-R ratings and traits assessed by the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) in a larger male inmate sample, Patrick (1995) reported that overall psychopathy was associated with elevations on Social Potency and Aggression subscales, low scores on a Social Closeness subscale, and low overall Constraint (a higher-order MPQ factor encompassing scales reflecting impulsiveness, risk-taking, and nonconformity). PCL-R emotional detachment was associated with high Social Potency and Achievement, and low Stress Reaction, whereas PCL-R antisocial behavior was associated with higher overall Negative Emotionality (including facets of Stress Reaction, Alienation, and Aggression) and low overall Constraint.

Krueger et al. (1994) examined relationships between the MPQ and delinquent behavior in a community sample (Krueger et al., 1994), and found that higher behavioral deviance was associated with higher scores on the NEM factor of the MPQ and its constituent scales, and lower scores on the CON factor and component scales. The construct of delinquency in this study focused on illegal actions, rule violations, and substance abuse, and therefore was akin to criminality or antisociality rather than psychopathy. Studies have also confirmed a relationship between family history of antisocial personality disorder and proneness toward negative affect (Finn, Sharkansky, Viken, &West, 1997).

These data on criminal and delinquent populations suggest a relationship between antisocial deviance and personality dimensions of low constraint (behavioral disinhibition, impulsivity) and negative emotionality (anxiety, neuroticism)--paralleling the personality characteristics of suicidal patients.

Temperament and Alcoholism/Alcohol Use Disorders

Although some controversy surrounds the identification of an alcoholic personality profile (Lang, 1983). research data on temperament dispositions of studied alcoholics and persons at risk for alcoholism parallel much of the findings reviewed above, In a review of this literature, Moss (1987) noted that traits of impulsivity, low frustration tolerance, sensation seeking, and high emotionality are linked in the empirical literature to a predisposition towards alcoholism. Using extensive social history and psychological interview information, researchers have found that men at hlgh risk for alcoholism, by virtue of having an alcoholic father, were rated higher on impulsivity and aggression, and lower on a measure of shyness, than men without an alcoholic father (Schulsinger, Knop, Goodwin, Teasdale, & Mikkelsen, 1986). As already mentioned, these identified trait dimensions may not be general to all alcoholic individuals (Lang, 1983). Many of the participants used in this research, especially those with a family history of alcoholism, are likely to represent a subgroup of alcoholics who also exhibit aggressive and antisocial behaviors--thus, the personality traits discussed in connection with alcoholism in this chapter appear most related to an antisocial subtype of alcoholism.

Review papers often fail to acknowledge the finding that high negative emotionality (trait anxiety) is observed reliably among persons with concurrent alcohol abuse problems and criminality. Limson, Goldman, Roy, Lamparski, Ravitz, Adinoff, and Linnoila (1991) reported that male alcoholics scored higher than male inpatient controls on the Neuroticism scale of the EPQ, as well as the Lie and Impulsiveness-venturesomeness (sensation-seeking) scales. These authors also found that alcoholics scored higher on the Novelty-seeking (cf. reversed Constraint) and Harm-avoidance (cf. Negative Emotionality) scales of the TPQ, as well as on the Depression, Psychasthenia, Anxiety, and Psychopathic Deviate (Pd) subscales of the MMPI (the latter a marker of antisociality rather than true psychopathy; Hare, 1991). Research using the NEO Five Factor Inventory has suggested that the neuroticism scale is positively correlated with alcohol use disorders (Martin & Sher, 1994).

The finding that high harm-avoidance and anxiety are present among alcoholics who also exhibit sensation-seeking and impulsive tendencies seems at odds with Cloninger's typology of alcoholic individuals (Cloninger et al., 1981; Dinwiddie & Cloninger, 199I), which identifies two mutually exclusive subgroups. Type 1 alcoholics putatively drink to cope with stressful life events, commence drinking later in life (i.e., after age 25), and exhibit traits of low Novelty-seeking and high Harm-avoidance. Type 2 alcoholics, on the other hand, are characterized as possessing a male-limited genetic risk factor for alcoholism, as having an earlier onset of drinking (i.e., before age 25), as exhibiting criminal and violent behavior, and as temperamentally high in Novelty-seeking and low in Harm-avoidance. The first type can thus be considered an anxious-maladjusted subtype, and the second type an antisocial-psychopathic subtype.

Some researchers have begun to challenge the veridicality of Cloninger's typology (Sannibale & Hall, 1998; see Howard, Kivlahan, & Walker, 1997) on the grounds that the TPQ dimensions of temperament do not consistently predict early-onset, Type 2 alcoholism. Although high TPQ Novelty Seeking predicts early-onset alcohol abuse and criminality, the Harm Avoidance and Reward Dependence subscales are much less consistent in indentifying Type 2 alcoholics (Howard et al., 1997). Furthermore, the body of literature reviewed earlier in this chapter clearly reveals that alcoholics and persons with a genetic risk for alcoholism show anxiety-related traits (high harm avoidance, neuroticism) as well as impulsivity and sensation-seeking (i.e., low Constraint). In addition, to the extent that a relationship exists between criminal psychopathy and substance abuse, this relationship is mediated by the antisocial behavior component of psychopathy (Lyons et al., 1998; Smith & Newman, 1990)--which, as noted earlier, is linked to high Negative Emotionality and low Constraint (Patrick, 1994, 1995). It is conceivable that Cloninger's theoretical typology, which links alcoholism to criminal behavior, may be based on the mistaken assumption of an equivalency between antisocial deviance and psychopathy. Although psychopaths are prototypically low in anxiety and negative emotionality, many criminal and antisocial individuals are not true psychopaths, and a significant subgroup exhibit heightened stress reactivity. It is this latter subgroup, rather than true psychopaths, who appear to be at heightened risk for alcohol and other substance abuse (Lyons et al., 1998; Smith & Newman, 1990).

Relevant to the above point, another controversy that exists within this literature relates to the causal pathways in the alcoholism-anxiety link (Sher & Trull, 1994). Negative emotionality may be a consequence of drinking-related difficulties instead of a predisposing factor. Further research, such as prospective studies of persons at risk for developing alcohol problems, can aid in elucidating potential causal pathways among different alcoholic subtypes. Nonetheless, the available evidence does suggest that personality dimensions related to impulsivity, sensation-seeking, and high negative affect/anxiety are identified among at least a subgroup of alcoholics exhibiting antisocial characteristics.

SUICIDE RISK AND EXTERNALIZING BEHAVIOR: THE BRAIN SEROTONIN CONNECTION

Suicide and Serotonin

In attempting to understand the mechanisms underlying suicide-proneness, researchers in the past 25 years have focused on the relationship between brain serotonin (5-HT) and suicidal behavior. This literature has been extensively reviewed (for example, see Mann & Arango, 1992; Coccaro & Astill, 1990; Linnoila & Virkkunen, 1992). In the next section, we provide a synopsis of the major areas of research on the suicide-serotonin link, highlighting key findings within each. Subsequent sections review the literature on connections between brain serotonin and externalizing behavior.

Many studies on the relationship between serotonin and suicidal behavior have been post-mortem studies of suicide victims. These studies fall into three categories: (i) analysis of brain serotonin concentrations in suicide victims, (ii)

analysis of imipramine binding to brain tissue in brain regions of suicide victims, and (iii) analysis of the number of 5-HT receptors in the brains of suicide victims. A review of this literature reveals substantial consistency across these different studies in the finding of decreased central serotonergic functioning in suicide victims compared with controls (see Coccaro & Astill, 1990).

Serotonergic functioning has also been examined among patients who have made suicide attempts in comparison to depressed non-attempters and healthy controls. Most studies of this kind have investigated levels of the major serotonin metabolite called 5-hydroxyindoleacetic acid (5-HIAA) in the cerebrospinal fluid (CSF) of suicidal patients and depressed individuals. The concentration of 5-HIAA assessed via lumbar puncture provides a pre-synaptic measure of 5-HT function, and human studies have shown that 5-HIAA concentrations in the lumbar CSF are highly correlated with levels of 5-HT in the frontal lobes (see Higley & Linnoila, 1997). Suicidal patients have shown reduced 5-HIAA concentrations across a number of studies (Asberg, Traskman, & Thoren, 1976; Edman et al., 1986; Lidberg, Tuck, Asberg, Scalia-Tomba, & Bertilsson, 1985). However, at least one negative finding has been reported, with no relationship found between personal or family history of suicide attempts and CSF 5-HIAA (Roy-Byme, Post, Rubinow, Linnoila Savard, Davis, 1983).

Studies using platelet imipramine binding concentrations as a measure of serotonergic function in humans have also revealed reduced serotonin levels in suicidal patients (Marazziti & Conti, 1991; see Meltzer & Arora, 1986). Other studies of 5-HT functioning have utilized pharmaco-challenge tests, in which fenfluramine, which acts as a releaser/uptake inhibitor of serotonin, is administered to participants. The body's neuroendocrine reaction, in the form of a prolactin (PRL) response to fenfluramine (PRL[FEN]; or cortisol), is thought to reflect dynamic serotonergic functioning (Coccaro, 1992). Pharmaco-challenge studies of this type (Coccaro, Kavoussi, & Lesser, 1992; Coccaro & Astill, 1990; Coccaro, 1992; New, Trestman, Mitropoulou, Benishay, Coccaro, Silverman, & Siever, 1997) have demonstrated decreased PRL [FEN] responses in suicidal patients compared to controls.

In summary, across many different studies using varying methodologies to assess serotonergic activation, it has been consistently found that suicide risk (completions and attempts) is associated with reduced serotonergic functioning. Given the efficacy of central serotonergic agonists (such as serotonin-specific reuptake inhibitors; SSRIs) in the treatment of depression, it has long been theorized that serotonin is involved in general depressive symptomatology (see Casacchia, Pollice, Matteucci, & Roncone, 1998). However, neurobiological studies using the various methodologies described above have not demonstrated a direct relationship between serotonin levels and depression (Coccaro, Siever, Klar, Maurer, Cochrane, Cooper, Mohs, & Davis, 1989; Asberg et al., 1976).

In their seminal study of serotonin and suicidal behavior, Asberg et al. (1976) reported a bimodal distribution of CSF 5-HIAA concentrations among depressed patients. Depressed suicide attempters (73% female) were overrepresented among patients with low 5-HIAA levels, compared with non-suicidal depressed patients (72% female), even though the groups did not differ in rated severity of depressive symptoms. Another study utilizing PRL[FEN] as a measure of serotonin function revealed that, among male depressed and personality disordered patients, peak PRL[FEN] did not discriminate patients with and without

major depression (Coccaro et al., 1989). Instead, patients with a history of at least one suicide attempt evidenced significantly reduced PRL[FEN] values compared with non-suicidal patients.

Research in this area has also focused on whether low serotonin relates to specific forms of suicidal behavior. For example, researchers have found that low CSF 5-HIAA is more common in violent suicide attempters (e.g., gun shot, hanging) than non-violent attempters (e.g., drug overdose), independently of psychiatric diagnosis (Asberg et al., 1976; see Roy & Linnoila, 1990; Edman et al., 1986). Also, post-mortem investigations have revealed an increased number of post-synaptic 5-HT receptors (putatively resulting from compensatory up-regulation due to low levels of the neurotransmitter) in the brains of suicide completers who used violent methods compared to those who used non-violent methods (Mann et al., 1986). However, in another study (Coccaro et al., 1989), suicide attempters who used violent means did not exhibit lower PRL[FEN] values than non-violent attempters. PRL[FEN] values were, instead, inversely related to measures of impulsive aggressiveness, and not general aggressiveness.

Linnoila, Virkunnen, and others (Linnoila & Virkunnen, 1992; Linnoila, Virkunnen, Scheinin, Nuutila, Rimon, & Goodwin, 1983; Virkunnen, Nuutila, Goodwin, & Linnoila, 1987; Virkunnen et al., 1989) have underscored the importance of distinguishing between impulsive and non-impulsive behaviors when assessing the role of serotonin in suicidal and violent behavior. Pertinent to this, Engstroem and colleagues (Engstroem, Alling, Oreland, Traskman-Bendz, 1996) examined the relationship between temperament variables and indices of serotonin. They found a significant relationship between low MNT solidity scores (reflecting greater impulsiveness) and low 5-HIAA levels, but only among patients within their larger suicide attempter sample who exhibited alcohol abuse problems.

To summarize, the weight of the available evidence indicates that reduced levels of the brain neurotransmitter serotonin are reliably associated with suicide risk, and not simply depressive symptomatology. The question remains as to whether this low serotonin link is specific to violent suicides, or whether it reflects a broader impulsivity trait. In this regard, a number of human suicide studies and animal investigations of serotonin function (see below) indicate that impulsivity may, in fact, represent the behavior manifestation of low serotonin—and the key ingredient in the connection between externalizing behavior and suicide risk,

Aggression, Hostility, and Serotonin

Brown et al. (Brown, Goodwin, Ballenger, Goyer, & Major, 1979) were the first to identify a link between brain serotonin and aggression in humans, using a sample of military men with no history of psychiatric illness but with various personality disorders. These researchers found that history of aggressive behavior was inversely related to lumbar CSF 5-HIAA levels, and that MMPI Pd scale scores (related to antisocial nonconformity) were inversely correlated with 5-HIAA among persons with a diagnosis of borderline personality disorder (Brown, Ebert, Goyer, Jimerson, Klein, Bunney, & Goodwin, 1982).

Following the Brown et al. studies, interest in the aggression-serotonin connection, and the link between serotonin, aggression, and suicide, became widespread among researchers (Coccaro, 1989). This interest was further

stimulated by animal data indicating increased muricide (mouse-killing behavior) in 5-HT depleted mice (see Roy, Virkkunen, & Linnoila, 1990, for a review). A more recent study of humans reported that mean 5-HT platelet uptake was 18% lower in male outpatients with episodic aggression than in sex and age matched non-aggressive controls (Brown, Kent, Bryant, & Gevedon, 1989).

In addition to overt aggression, self-reported hostility has been shown to correlate with serotonin functioning. For example, Roy, Adinoff, & Linnoila (1988) found that scores on the "urge to act out hostility" subscale of the Hostility and Direction of Hostility Questionnaire (HDHQ) were negatively related to serotonin metabolite levels among normal volunteers. Similarly, Coccaro (1992) reported that irritable impulsive aggression, measured by the BDHI assaultive and irritability scales, was the most powerful behavioral correlate of fenfluramine challenge indices of serotonin function. Based on these data, and findings from the serotonin animal literature (see Soubrie, 1986), Coccaro (1992) concluded that the effect of reduced 5-HT is to lower the threshold for reactive aggression (i.e., the level of noxious or threatening stimulation required to provoke an aggressive response).

Related to this, Linnoila, Virkunnen, and colleagues (1983, 1992) reported in a male alcoholic offender sample that impulsively violent offenders (i.e., those committing unpremeditated acts of violence) had lower mean CSF 5-HIAA concentrations than offenders committing non-impulsive violent crimes. Impulsive fire setters, who were otherwise nonviolent, also exhibited low serotonin levels-suggesting that impulsivity, and not violence per se, is the behavioral correlate of low serotonin (Virkkunnen et al., 1987). Brown et al. (1989) also reported a negative correlation between platelet 5-HT uptake and impulsivity scores, further supporting the hypothesis that serotonin function is tied to impulsive or dysregulated behavior more generally.

The negative correlation between aggression and serotonin levels has been replicated in a number of studies. Initially, these results were interpreted as indicating that aggression-proneness served as the link between suicide and aggression, and that low levels of serotonin were related to general aggressivity in humans. However, the studies by Linnoila et al. (1983, 1992) suggested instead that a behavioral dysregulation and reactivity dimension may, in fact, underlie links between suicide risk, violent criminality, and alcoholism (Siever & Trestman, 1993; see also Coccaro et al., 1992).

Alcoholism and Serotonin

Earlier in this review, we discussed evidence for a heightened risk of suicide among alcohol-abusing and alcoholic individuals. Serotonergic function represents another link between alcohol abuse and suicide risk. Linnoila and Virkunnen (1992), based on findings from studies of violent offenders identified as Type 2 alcoholics according to Cloninger's typology, posited that alcohol problems are related to a heritable defect in serotonin functioning. Research by these investigators revealed markedly lower serotonin levels among impulsively violent alcoholics than among nonviolent, non-alcoholic controls, with nonimpulsively violent alcoholics falling in between. However, interpretation of these results is complicated by the fact that aggressiveness, alcohol abuse, and personality disorder diagnoses were confounded

across groups; thus, the relationship between any one of these behaviors and serotonergic activity could not be isolated.

Other research indicates that alcohol's effects on the serotonergic system may mediate heavy drinking among low serotonin individuals (Heinz et al., 1998; see Roy et al., 1990, for a review). Reduced concentrations of CSF 5-HIAA have been reported in alcoholics, and particularly in recently detoxified alcoholics (Ballenger, Goodwin, Major, & Brown, 1979). However, alcoholics in the immediate post-intoxication phase (i.e., soon after they discontinue drinking) often exhibit serotonin metabolite levels equivalent to non-alcoholics (Ballenger et al., 1979). In a study of male alcohol-dependent patients, Borg, Kvande, Liljeberg, Mossberg and Valverius (1985) reported that levels of 5-HIAA correlated positively with blood ethanol concentration during episodes of acute intoxication, but that levels decreased as a function of length of abstinence, so that after three months of abstinence subnormal levels were detected in alcoholics. Thus, elevated 5-HIAA levels are apparent during abuse periods in alcoholics, but not in acutely intoxicated controls, suggesting a phenomenon associated with prolonged abuse rather than a phasic effect of alcohol (Borg, Kvande, Liljeberg, Mossberg, & Valverius, 1985). Recent studies (Naranjo & Seller, 1989; Gorelick, 1989; Gill & Amit, 1989) documenting the successful use of serotonin uptake inhibitors in the treatment of problem drinkers further underscore the potential role of serotonin in regulating alcohol use behaviors.

Animal studies also suggest that serotonin levels have direct effects on drinking behavior. Monkeys with low 5-HIAA levels have been shown to exhibit higher rates of alcohol consumption (Higley, Suomi, & Linnoila, 1996), and studies show that CSF 5-HIAA levels and the availability of serotonin transporters in the blood are negatively correlated with alcohol tolerance and aggressiveness among male rhesus monkeys (Heinz et al., 1998). In addition, alcohol preference among the genetic strain of rats that prefers alcohol to water is dependent on low serotonin levels, as evidenced by a reduction of ethanol consumption in these rats when administered serotonin uptake inhibitors (see McBride, Murphy, Lumeng, & Li, 1989). There is also evidence that serotonin serves to decrease appetitive urges, including alcohol-seeking, in animals (Higley & Linnoila, 1997). In humans, it has been shown that alcohol ingestion may function to release serotonin among heavy drinkers (Ballenger et al., 1979; see Moss, 1987), but only after prolonged periods of use (McBride et al., 1989). This effect of alcohol on the serotonergic system could account for excessive alcohol consumption among alcoholic patients with pre-existing low brain 5-HT levels. However, a notable limitation of this work is that it leaves unanswered the question of whether low serotonin is a consequence of alcohol abuse, or an instigating factor (Borg et al., 1985). This is particularly an issue in view of the fact that transient increases in serotonin levels, as a result of heavy alcohol consumption, may lead to further depletion in the long run (Ballenger et al., 1979).

Other work suggests that a genetic risk for alcoholism, and not simply the physiological impact of heavy drinking, underlies the connection between low serotonin and alcoholism. Linnoila, DeJong, and Virkkunen (1989) compared 35 alcoholics who had alcoholic fathers with 19 alcoholics who had nonpaternal alcoholic relatives; those with alcoholic fathers had lower CSF 5-HIAA and were more impulsive than those without alcoholic fathers. Constantino, Morris, and Murphy (1997) reported that newborns having a first- or second-degree relative

with a diagnosis of APD had lower CSF 5-HIAA concentrations than newborns with no family history of APD. However, in this sample of newborns, serotonin levels were not related to family history of alcoholism. Although findings from these studies are relatively consistent with the possibility of a genetic link between alcohol risk and suicide risk, what is needed are adoption, twin, or other family studies that more directly examine genetic links between neurobiological variables (such as serotonergic function) and risk for alcoholism, violence, antisociality, and suicide.

In effect, research evidence suggests a connection between low levels of serotonin and alcohol abuse and dependence. As demonstrated by human and animal studies, serotonin levels may actually have direct effects on alcohol consumption. Further research is needed to explore whether low serotonin serves as a vulnerability factor that directly leads to problem drinking, or whether it may underlie some impulsivity dimension that makes an individual vulnerable to alcohol problems as well as other externalizing behaviors.

Behavioral and Affective Traits Associated with Serotonin

Although serotonergic systems may be affected by prior experience (Higley et al., 1996; see Higley & Linnoila, 1997), the stability of serotonin concentrations across the lifespan has been demonstrated in macaque monkeys and in humans (Higley & Linnoila, 1997). This trait-like quality of serotonin is also indicated by the fact that low levels of CSF 5-HIAA are observed in individuals even when symptoms of psychopathology (e.g., suicidality) have dissipated (Apter, Plutchik, van Praag, 1993). Evidence also exists for the heritability of CSF 5-HT function (Moss, 1987; Higley & Linnoila, 1997; Constantino et al, 1997).

Besides its involvement, as previously discussed, in human suicide, aggression, and alcohol abuse, 5-HT dysfunction has been implicated in other forms of impulsivity (Coscina, 1997), such as compulsive gambling (Moreno, Ruiz, Lopez-Ibor, 1991) and fire-setting (Linnoila & Virkunnen, 1992). The temperament-personality literature suggests that serotonin levels are negatively correlated with EPQ Psychoticism and KSP Socialization, Monotony Avoidance and Impulsivity (Schalling et al., 1983). As mentioned earlier, serotonin levels are also inversely related to MMPI Pd scale scores among personality-disordered individuals (Brown et al., 1982) and to MNT Solidity scores among alcoholic suicide attempters. This research, however, is necessarily correlational in nature, limiting the conclusions that can be drawn.

Some investigators argue that 5-HT may have very little specificity as a risk factor. The increasing number of psychiatric conditions in which 5-HT metabolism is found to be abnormal has led some to conclude that 5-HT is a non-specific transmitter (Kraemer, Schmidt, & Ebert, 1997). In opposition to this viewpoint, van Praag et al. (1987) argue that abnormal serotonergic function is a specific risk factor for aggression and impulsive behavior. In addition, animal studies in which the behavioral effects of alterations in serotonergic function, induced by lesions or injection of serotonin antagonists, are measured also speak to the specificity of the neurotransmitter.

Animal investigations involving direct manipulation of serotonergic function lend support to the position that serotonin is involved in the regulation of

impulse control. More specifically, this literature suggests that 5-HT plays a role in behavioral arousal and ability to withhold responding. Reduced serotonin transmission in animals produces a significant attenuation of punishment-induced response inhibition (Soubrie, 1986; Soubrie & Bizot, 1990). In passive avoidance tasks, in which animals must to learn to inhibit a response to a cue that was initially associated with reward but now is linked to punishment, animals with reduced CNS serotonin show an increased frequency of passive avoidance errors (i.e., emission of responses despite threat of punishment).

It is important to note that serotonergic neurons are believed to exert control over punished behavior not by decreasing anxiety, but by altering "waiting ability" (Higley & Linnoila, 1997; Soubrie & Bizot, 1990). In fact, other reviewers have concluded that behavioral disinhibition as well as neuroticism or high negative affect, expressed as a hyperemotional response to moderate stressors, characterize "low 5-HT" animals and humans (Depue & Spoont, 1986; Spoont, 1992). Soubrie and Bizot (1990) underscore that low serotonin produces a lowered threshold for frustration and response activation, which may underlie the findings that serotonergic dysfunction in animals is related to a propensity toward "irritative" (reactive) aggression (i.e., aggression provoked by threat or noxious stimulation; Kyes et al., 1995). Moreover, low sociability and low positive emotionality may also be regulated by serotonergic functioning. Higley and colleagues (see Higley & Linnoila, 1997) have conducted a series of studies that demonstrate that low serotonin monkeys exhibit more isolation and less social potency than monkeys with normal levels of 5-HT. Among infant monkeys, those with low CSF 5-HIM levels had lower social dominance and reduced rates of social interaction (Higley, Suomi, & Linnoila 1996b). Thus, given the behavioral effects of low serotonin in animals, it is not surprising that low serotonin has been implicated in suicidal, aggressive, and alcohol abusing behaviors in human studies.

SYNOPSIS, LIMITATIONS, AND FUTURE DIRECTIONS

Summary of Empirical and Conceptual Links

The wide range of empirical studies and research data that we have reviewed in this paper converge on the notion that heightened suicide risk is associated with a spectrum of externalizing phenomena including antisocial deviance, angry ('reactive") aggression, and alcohol use disorders. The data reviewed further indicate that these syndromes share in common a temperament profile marked by impulsiveness (low constraint) and high neuroticism, which appears to be linked in turn to a distinct biological substrate (i.e., reduced brain levels of the neurotransmitter serotonin).

Early in this chapter, we distinguished between chronic criminality or antisocial personality as defined in DSM-IV, and the syndrome of psychopathy as described by Cleckley (1976) and operationalized by Hare's (1991) PCL-R. A significant proportion of antisocial individuals will meet criteria for psychopathy; however, a substantial number of persons displaying antisocial deviance of sufficient chronicity to meet criteria for APD, or at least to have been incarcerated and labeled as criminal, will not possess the callous imperturbability and affective poverty of the psychopath — qualities that according to Cleckley effectively

immunize the true psychopath against authentic suicidal attempts. These nonpsychopathic antisocial types will show characteristic social and interpersonal difficulties and emotional instability. They will exhibit a propensity to be impulsive, hostile, and aggressive, and to alienate acquaintances, employers, and family members by engaging repeatedly in behaviors that are reckless or destructive. Abuse of alcohol or other substances will in many cases compound these problems. On the other hand, it is important to note that a substantial number of these externalizing suicidal individuals are not necessarily criminal offenders or antisocial personalities. This subtype of suicidal persons also includes chronically hostile and impulsive individuals in the general population who may not exhibit antisocial or criminal behavior due to distinct environmental influences in their lives -- although they possess personality dispositions similar to criminal populations. These persons are also at high risk for acting out with hostility and aggression (directed at self or others) in response to stressors, alienating significant others, and engaging in destructive, although not criminal, behaviors.

Limitations of the Research Literature

Despite some reliable connections between suicide, externalizing syndromes, serotonergic function, and temperament, major problems with the current research literature place constraints on the interpretation of findings. Studies have done little to tease apart the effects of different syndromes (aggressivity , personality psychopathology, antisociality) on serotonin and temperament variables. There is a need to conduct research that analyzes correlates of suicide among different diagnostic groups (e.g., depressed suicide attempters vs. APD suicide attempters vs. alcoholic suicide attempters vs. non-attempters diagnosed with these disorders). The difficulty with studies of this kind is that "pure" forms of psychopathology are likely to be uncommon and difficult to find in view of the abundant evidence that externalizing psychopathology naturally clusters within the same individuals. Nonetheless, research that analyzes relatively pure subgroups of suicidal individuals can aid in specifying the syndromes and behaviors that relate most directly to low serotonin and the impulsive/negative-affect temperament pattern.

Furthermore, researchers must begin controlling for the severity of symptoms and psychopathology across groups in the course of examining relationships between neurophysiological variables, temperament variables, and suicide potential. This would permit investigators to ascertain whether suicide risk is in fact related to specific patterns of comorbidity (e.g., alcoholism, APD, depression), or simply to severity of psychopathology. In this regard, a study by Beautrais et al. (1996) suggests that although the odds of serious suicide attempts increase with psychiatric comorbidity, the highest risk for suicide is associated with comorbid mood disorders, alcohol dependence, conduct disorder, APD, or nonaffective psychosis. Further studies are needed to establish the replicability of these findings.

Another point is that although suicide researchers have focused on the serotonin metabolite, 5-HIAA, biological research demonstrates high levels of interaction between many neurotransmitter systems in the central nervous system (Kraemer et al., 1997). Neuroscience research indicates that it is difficult to discuss the effects of serotonin on behavior without discussing its effects on other

neurotransmitter systems, particularly dopaminergic systems. A small number of studies have examined levels of dopamine and norepinephrine metabolites, and other neurobiological variables, among suicidal and violent patients (Maw Stanley, McBride, & McEwen, 1986; Asberg, Schalling, Traskman-Bendz, & Wagner, 1987; Brown & Goodwin, 1986). However, evidence for a connection between these neurotransmitter levels and suicidality is far less consistent than for serotonin. Nonetheless, further research on the interaction between these neurotransmitter systems in predicting suicidal and externalizing behaviors may provide a more accurate description of connections between neurophysiological function, temperament traits, and behavior.

Analyses of gender differences in suicidal behavior as they relate to the link between suicide and externalizing psychopathology is also important to the present discussion. Research reports indicate that women are more likely to attempt suicide, but men are overrepresented among completers due to the fact that men use more lethal methods (Cairns, Peterson, & Neckerman, 1988; see Cross & Hirschfeld, 1986). Many of the studies reviewed in this paper have confirmed this observation (Marttunen, Aro, Henriksson, & Lonnqvist, 1994; Runeson, 1990). However, in many studies the gender distribution of research samples tends to be constrained by the population of interest. In studies analyzing suicidal behavior among delinquent, antisocial personality, or alcoholic samples, men are in the majority (Putnins, 1994; Ivanoff, 1992; Hill, Rogers, & Bickford, 1996; Berglund, 1984). On the other hand, in investigations in which persons with a Major Depressive Disorder or Borderline Personality Disorder diagnosis are the focus of study, women are more predominantly represented in the study (Weissman et al., 1973; Fyer et al., 1988).

One question that is relevant to the psychopathological and behavioral pattern addressed in this paper is whether this subtype of suicide is male-limited, or at least more prevalent among males. Unfortunately, in studies where both male and female participants are included, gender is often not examined in the analyses; thus, delineation of gender differences in the identification of suicide risk among antisocial and aggressive individuals is limited by a lack of reported data. In one study that utilized a cluster analytic methodology to typologize suicide attempters based on temperament-related variables, no differences were observed in the proportion of men and women in the different sub-types identified, even among the subgroups exhibiting externalizing psychopathology (Engstroem et al., 1996). Preliminary research (Marttunen et al., 1994), using a small sample (n=9) of female completers, suggested that about 1/3 (n=3) of female suicide victims exhibited an externalizing pattern of behavior. In this same study, approximately half of male suicide completers (out of a total of 44 males) exhibited a pattern of externalizing behavior (Marttunen et al., 1994; Runeson, 1990). Future research should investigate differential rates of externalizing psychopathology among suicidal men and women.

Another limitation in the literature involves the lack of integration across the areas of research reviewed in this chapter. Despite the extensive amount of research that has been conducted, independently, on suicide, externalizing syndromes, and behavioral correlates of serotonin, a much smaller body of literature has investigated the mechanisms underlying the connections among these areas. The final section of this paper will provide a model for future research in this area

that can effectively elucidate the underlying mechanisms involved in the links between suicidality and externalizing psychopathology.

Future Directions and Potential Model of Links and Mediators

As mentioned, a pattern of low constraint, accompanied by heightened negative emotionality or dysphoria, appears to characterize the externalizing suicidal subtype. In addition, these individuals as a group show reduced levels of serotonergic functioning. Considering the temperament and personality variables that characterize suicidal patients and the research on the behavioral effects of low serotonin in animals, it appears that a higher order constraint/behavioral disinhibition dimension relates to low serotonin functioning. When this disinhibition dimension is coupled with anxious and/or depressed mood, the expression of suicidal behaviors, angry violence, and alcohol abuse appears to be enhanced. In this regard, Fowles (1987) identified a personality pattern in which persons show "effective processing" of punishment cues, and even the development of a strong emotional reaction (i.e., anxiety) to such cues; however, motor pathways involved in the inhibition of behavior appear to be relatively ineffective in these persons. Gray (1987) postulated that low serotonin levels in suicidal individuals may prevent inhibition of motor acts, such that considerable anxiety arises surrounding thoughts related to suicide, but without inhibiting the suicidal behavior.

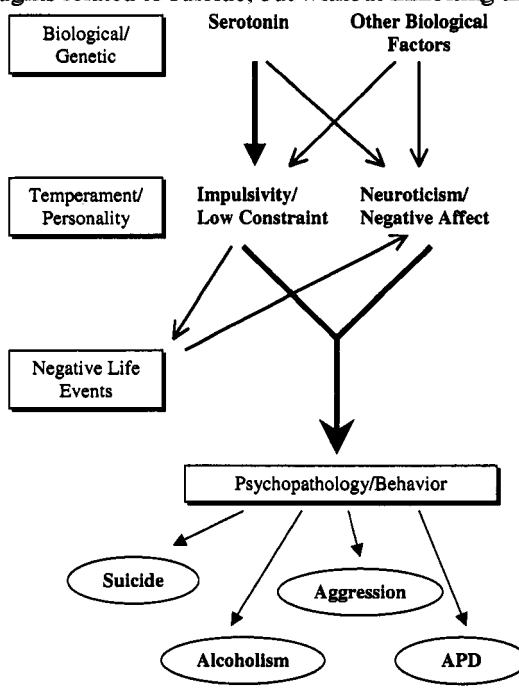

Figure 1. Preliminary multi-level model for mechanisms and mediators of links between suicidality and externalizing syndromes.

Figure 1 represents a preliminary multi-level model of the connections between temperament/personality, serotonin, environmental factors, and the behavioral and psychological manifestations of these variables as discussed within the present review. At the biological level, research has examined the role of one neurotransmitter system, serotonin, as a predisposing factor toward certain types of psychopathology. Other neurotransmitter systems and various other biological/genetic influences were not analyzed in this paper, but are also likely to account for relationships observed. Research on the behavioral and affective correlates of low serotonin suggest that serotonin is most closely related to a behavioral dysregulation or impulsivity dimension. Other relevant data from the serotonin literature may also indicate, although less clearly, that low serotonin is linked to greater stress-reactivity and emotional maladjustment in the face of external irritants. These two personality dimensions, impulsivity/low constraint and neuroticis/general maladjustment/negative emotionality, themselves related to serotonin, also serve, along with serotonergic functioning, as potential mediators of the suicide-externalizing syndrome link.

The predictive potency of these trait dispositions within the current model involve their interaction with environmental forces, so that persons who are chronically impulsive may experience high levels of negative life events, such as strained peer and family relationships, difficulties with authority figures, and involvement in deviant and antisocial behavior. These unpleasant experiences may, in turn, serve to increase the level of emotional instability and negative emotionality. Relatedly, Spoont (1 992) suggested that high negative emotional reactivity among patients with low 5-HIAA may result from an accumulation of stressors produced by a weakly regulated behavioral system. The manifestation of suicide, aggression, criminality and antisocial personality, and alcohol dependence may be the end result of these accumulated risk factors.

Currently, the research available does little in informing us on the direction of causality and possible pathways of causal action. Research in the area of suicide links to externalizing psychopathology would benefit from analyses that attempt to validate the mediational roles of neurobiological and temperament factors. If in fact serotonin levels and/or temperament variables underlie the link between suicide and aggressivity, for example, we can demonstrate, through mediational analyses, that the relationship between history of suicide and history of aggression significantly decreases when the mediator variables are included in the analyses. This research is essential in elucidating potential mechanisms in the development of suicidal and externalizing syndromes.

Furthermore, this line of study not only may elucidate potential mechanisms in the development of psychopathology, but also may identify risk factors for suicide among certain subgroups of individuals. For instance, persons who exhibit impulsive and thrill-seeking behaviors, but who nonetheless do not have a predisposition toward high stress reactivity or negative affectivity, may be at lower risk for engaging in suicidal behavior than are individuals with the same impulsive tendencies who are highly stress-reactive. These discoveries and distinctions may help in suggesting possible interventions that might prevent predisposed individuals from engaging in acts of irreparable harm to themselves and others.

Notes

1. In this paper, the term "externalizing" shall be used to refer to the spectrum of behaviors and syndromes (aggression, criminality, APD, and alcohol use disorders) associated with the particular suicidal subtype discussed in this paper. We'd like to differentiate our use of this term, in discussing adulthood syndromes, from how it is used in the child psychopathology literature in relation to child acting out behaviors. We also recognize that, although we include alcohol use disorders and alcoholism within the scope of externalizing syndromes, many forms of alcohol abuse and dependence are not externalizing in nature.
2. Of course, abuse and dependence on drugs other than alcohol, such as cocaine or heroine, has also been linked to suicidality (Weiss & Hufford, 1999). However, in this paper we focus on alcohol use disorders, as there is substantial evidence of genetic links between alcohol-related problems and the externalizing syndromes discussed herein, that is not as firmly established within the literature on other drug abuse.

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STUDYING INTERPERSONAL FACTORS IN SUICIDE: PERSPECTIVES FROM DEPRESSION RESEARCH

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More than 30,000 people in the US. commit suicide each year making it the 9th leading cause of death (Anderson, Kochanek, & Murphy, 1997). Moreover, the rate of suicide among young people is growing, and suicide is now the third leading cause of death for people between the ages of 15-24 (Centers for Disease Control, 1992). What leads a growing number of people to experience suicidal ideation, attempt suicide, or commit suicide? Fortunately, research has identifted many risk factors for these outcomes. One set of risk factors that has received a great deal of attention in the literature is interpersonal factors.

Studies have consistently found that interpersonal factors are associated with suicidal ideation and behavior. However, this research is in its infancy and has barely gone beyond documenting a direct association between a diffuse number of interpersonal factors and various suicide outcome variables. It is the goal of the present chapter to outline ways in which research on interpersonal factors in suicide can move beyond its present state. To do so, we turn to the literature on interpersonal factors in depression. We believe that this is appropriate for two reasons. First, depression is clearly a risk factor for suicide ideation, attempts, and completions (e.g., Blazer, 1991; Goldston et al., 1998; Guze & Robin, 1970; Lewinsohn, Rhode, & Seeley, 1996; Rao, Weissman, Martin, & Hammond, 1993; see also Clark & Goebel-Fabbri, 1999). Hence, what we know about depression can inform us, at least to some degree, about suicide. Second, there is an extensive, theoretically and methodologically sophisticated literature on interpersonal factors in depression. We believe that the advances that have been made in studying

interpersonal factors in depression (and the problems that still exist) can be applied to the study of suicide to move the field forward. In the following sections of this chapter we will concentrate on four topics drawn from the depression literature that have implications for studying interpersonal factors in suicide: approaches to measurement of interpersonal variables, defining and measuring interpersonal stress, addressing comorbidity, and utilizing a developmental conceptualization

APPROACHES TO MEASUREMENT OF INTERPERSONAL VARIABLES

The depression literature has focused on numerous types of interpersonal variables, and a systematic program of research for each is emerging. Among the many variables studied are stressors, social support, interpersonal problem solving, marital functioning, peer relations, family functioning, early loss and separation, reassurance-seeking behavior, and interpersonal dependency. It is important to focus on these numerous interpersonal variables for a number of reasons. First, it leads to the broadest understanding of the diverse types of interpersonal factors that play a role in depression. Second, it leads to a precise understanding of how different interpersonal factors affect and are affected by depression. Although it may be the case that many interpersonal variables show similar associations with depression, research on interpersonal factors in any disorder or problem should not assume that this is the case. Rather, types of interpersonal variables and their respective roles should be clearly distinguished. For example, in the depression literature, some types of interpersonal problem-solving skills, such as problem solving appraisals, are directly associated with depression (e.g.. Heppner & Anderson, 1985; Nezu, 1985, 1986). Other types of social-cognitive problem solving skills (e.g., attempts at solving hypothetical problems) do not consistently show direct associations, but may instead be associated with increases in the types of interpersonal stressors that ultimately lead to increased depressive symptoms (e.g., Davila, Hammen, Burge, Paley, & Daley, 1995).

In addition, each interpersonal variable must be carefully defined and measured so that appropriate conclusions can be drawn. Again. the interpersonal problem solving literature provides a good example. Early research on interpersonal problem solving employed self-report measures that largely assessed perceived problem solving ability (Heppner & Petersen, 1982). These measures were correlated with depressive symptoms (e.g., Heppner, Baumgardner, & Jackson, 1985; Nezu, 1985). However, given that depressed people tend to view themselves in a negative manner (eg, Beck, 1967), it was not surprising that they would also view themselves as poor problem solvers. Subsequent research improved upon early measures of problem solving in a number of ways. First, self-report measures began to include more of a focus on specific skills, in addition to a focus on perceived ability (e.g., D'Zurilla & Nezu, 1992). This can reduce the likelihood that scores on these measures are mood state dependent. Second, objectively scored problem solving interviews that did not rely on subjective perceptions were developed (eg, Platt & Spivack, 1975; Davila et al., 1995). Third, behavioral observations of actual problem solving interactions were utilized (e.g., Biglan et al., 1985). This development came largely from research on the marital and family functioning of depressed people and led to the most objective assessment of problem solving.

A similar process occurred in the study of social support and depression. Early studies employed self-report measures of social support. Like problem solving measures, these measures were also susceptible to mood state biases. Moreover, it was not clear what aspects of social support were actually being measured (e.g., provision of support by others, satisfaction with support, extent of support network; e.g., Lakey & Drew, 1997). However, like in problem solving research, more recent research has used behavioral observation of supportive behaviors to examine associations between depressive symptoms and the capacity to provide and receive social support (e.g., Davila, Bradbuxy, Cohan, & TocNuk, 1997), thereby clarifying exactly what was being measured and not relying on subjective perceptions.

Thus, the study of interpersonal factors in depression has been advanced by distinguishing among interpersonal variables and developing precise definitions and measurements. How has the research on interpersonal factors in suicide fared along these lines? Relatively well in terms of distinguishing among interpersonal variables. A diverse set of variables, including interpersonal stress, interpersonal problem solving, social support, marital relations, family functioning, peer relations, and interpersonal losses, are being studied. The area in which adequate distinctions are lacking most is in the research on interpersonal stress, which will be discussed later.

Research on interpersonal factors in suicide has not, however, grappled sufficiently with defining and measuring interpersonal variables. Like the depression literature, this is particularly evident in the research on problem solving and suicide, which will be used as an example of common limitations. Before discussing those limitations, it should be noted that this research has a number of strengths. Various ways of measuring problem solving have been used in clinical and nonclinical samples, and this research generally indicates an association between suicide variables (e.g., ideation, attempt) and poor problem solving (see Yang & Clum, 1996). Moreover, researchers have attempted to test more complex theories of the association between problem solving and suicide, including diathesis-stress models (e.g., Rudd, Rajab, &Dah 1994; Schotte & Clum, 1982; 1987). However, the limitations of this research obscure the interpretation of researchfindings.

There are three related limitations. First, it is not clear what aspect of problem solving is deficient among suicide ideators and attempters (see also D'Zurilla, Chang, Nottingham, & Faccini, 1998). Second, it is not clear whether self-reported problem solving is more than a manifestation of hopelessness or depression. Third, it is not clear what aspects of problem solving are risk factors that are present before the suicidal state, versus manifestations or consequences of the suicidal state. These problems are due largely to the reliance on self-report measures of problem solving and cross-sectional research designs.

To understand these points, a brief discussion of the typical problem solving measures employed is necessary. A number of studies have employed measures such as the Problem Solving Inventory, which is considered a measure of problem solving appraisal (PSI; Heppner & Petersen, 1982) and includes items such as "I trust my ability to solve new and different problems", "Many problems I face are too complex for me to solve", "I make decisions and am happy with them later". Other studies have employed the Social Problem Solving Inventory (SPSI; D'Zurilla & Nezu, 1992), which is considered a measure of both problem orientation (e.g., "When I cannot solve a problem quickly and without much effort, I tend to think

that I am stupid or incompetent"; "I spend too much time worrying about problems instead of trying to solve them"; "When my first efforts to solve a problem fail, I tend to get discouraged and depressed") and problem solving skills (e.g., "When I am attempting to solve a problem, I usually act on the first idea that comes to mind"; "After carrying out a solution to a problem, I do not usually take the time to evaluate all of the results carefully"; "I think that I am too impulsive when it comes to making decisions").

Problem solving appraisal and problem orientation both assess the cognitions and emotions people experience in relation to problem solving, and may be considered indicators of problem solving efficacy or motivation (see D'Zurilla et al., 1998). In essence, these measures assess how people view themselves, and research indicates that suicidality is consistently associated with viewing oneself as a poor problem solver (e.g., Dixon, Heppner, & Rudd, 1994; D'Zurilla et al., 1998; Rudd et al., 1994; Sadowski & Kelley, 1993). However, because these measures assess self-views, they may be susceptible to mood state biases, and as noted earlier, scores on these measures are consistently associated with depressive symptoms (e.g., Heppner & Anderson, 1985; Heppner et al., 1985; Nezu, 1985,1986)

Problem solving skills on the SPSI focus on the strategies people use to define problems, generate solutions, make decisions, and implement solutions. These skills are less consistently associated with suicidality. For example, D'Zurilla et al. (1998) found that rational problem solving skills (including skills in problem definition, solution generation, decision making, and solution implementation) were associated with suicidality among a suicidal psychiatric sample, but not among a general psychiatric sample, or a community sample. Reports of these types of skills may still be open to mood state bias, although they may be less susceptible than are measures of problem solving efficacy or motivation.

A number of studies have used the Means-End Problem Solving procedure (MEPS; Platt & Spivack, 1975), a measure of problem solving outcome, in which participants generate solutions to hypothetical problems. Although by no means exempt from mood state biases (e.g., Schotte, Cools, & Pavyar, 1990), the MEPS requires participants to actually think through problems and attempt to solve them rather than simply report on what they would do in a problem solving situation. Some researchers have used an adapted version of the MEPS in which participants attempt to solve real problems from their own lives that they provide (e.g., Schotte & Clum, 1987). Results of research examining associations between the MEPS and suicidality is mixed. For example, Rotheram-Borus, Trautman, Dopkins, and Shrout (1990) found that poor problem solving on the MEPS was associated with suicide attempts, but Wilson et al. (1995) did not. Schotte & Clum (1987) found associations using the adapted version of the MEPS, but not the original version.

The research on suicide and problem solving thus suggests that, although suicide is associated with viewing oneself as a poor problem solver, it may or may not be associated with problem solving attempts. To our knowledge, no published studies have examined suicidal persons' actual interpersonal interactions and the problem solving skills they use to negotiate such interactions. Therefore, by the very nature of the measures used, we do not know whether suicidal people actually negotiate interpersonal problems differently than anyone else or whether they simply view themselves as being poor problem solvers. Add to this the reliance on cross-sectional designs and we do not know whether suicidal people show problem solving deficits that are trait-like in nature rather than concomitants of the suicidal

state. In fact, one study indicated that problem solving deficits on the MEPS improved as the suicidal state improved, suggesting that suicidal individuals do not show ongoing impairment in problem solving (Schotte et al., 1990).

Moreover, given that problem solving, suicidality , depression, and hopelessness are interrelated(eg, Dixon et al., 1994; D'Zurilla et al., 1998; Schotte & Clum, 1982; 1987; Wetzel & Reich, 1989), when self-report measures are used in cross-sectional designs it is impossible to distinguish among these associations to precisely specify the relations among the variables. For example, a number of studies have tested and supported models in which hopelessness mediates the association between problem solving and suicide variables (e.g., Dixon et al., 1994). Mediation implies that deficient problem solving "leads to" hopelessness, which then "leads to" suicidal ideation, but a simple alternative to this interpretation is that self-reported deficient problem solving is simply an indicator of hopelessness, or possibly of depression Supporting this, two studies failed to demonstrate consistent associations between hopelessness and problem solving attempts, one using the MEPS (Schotte & Clum, 1987) and another using the SPSI (D'Zurilla et al., 1998). If deficient problem solving was a trait that "leads to" hopelessness, then skill based measures should be associated with hopelessness. If only beliefs about problem solving are associated with hopelessness, it suggests that these beliefs may be a manifestation of hopelessness, not the other way around.

As noted earlier, this discussion of problem solving was presented as an example of some of the common limitations evident in research on interpersonal factors in suicide. Although some of what was presented may be specific to the problem solving area, these limitations are related to two broader issues that apply to all research on interpersonal factors in suicide. First, the use of prospective, longitudinal research is critical to advancing understanding of interpersonal factors in suicide. Such methods are now standard in depression research. Although they raise challenging problems for the study of suicide, such as selecting an appropriate and sufficiently large at-risk sample, they offer important advantages. They allow for the distinction of interpersonal precursors, correlates, and consequences of suicidal ideation and attempts, and they allow for precise testing of complex models of suicidal ideation and behavior, particularly diathesis-stress models of suicide which are prominent in the problem solving and social support literatures (e.g., Reifman & Windle, 1995; Schotte & Clum, 1982). Furthermore, they allow for an examination of transactional processes (e.g., Cicchetti, Rogosch, & Toth, 1994). Interpersonal perspectives on depression and interpersonal dysfunction (e.g., Coyne, 1976; Gotlib & Hammen, 1992) suggests that each reciprocally influences the other over time. This perspective espouses the idea that as people move through life they both construct their lives and respond to existing circumstances. Prospective, longitudinal studies of the transactions between people who are prone to suicidal ideation/attempts and their interpersonal environments have the potential to offer important insights into the course of suicidal thinking and behavior.

Second, a focus on understanding the actual interpersonal behaviors and interactions of suicidal people is also critical to advancing understanding of interpersonal factors in suicide. Reports of interpersonal thoughts, behaviors, and experiences are useful indicators of cognitive models of interpersonal functioning, but the extent to which they are indicative of actual interpersonal functioning is not clear. Moreover, the meaningfulness of associations between self-reported interpersonal functioning and suicide may become more apparent when we also

have knowledge of the associations between actual interpersonal behavior and suicide. It may in fact be the case, for example, that perceptions of relationships play a more important role in suicide than actual experiences in relationships, but that must be determined empirically. In addition, knowing what actually occurs between people at risk for suicide and their various significant others (e.g., parents, peers, romantic partners) will not only advance basic knowledge about suicide, but it has the potential to advance intervention and prevention efforts that focus on interpersonalfactors.

Research on depression and interpersonal factors is turning to another issue that seems relevant for the study of interpersonal factors in suicide. Researchers are questioning what it is that keeps people vulnerable to depression during times when they are not depressed, and more specifically, what keeps people vulnerable to depression in the context of interpersonal relations (e.g., Coyne & Benazon, in press; Davila, in press). That is, what is it about the ongoing interpersonal functioning of people prone to depression that will keep them at risk for future episodes of depression. This same question can applied to suicidal ideation and attempts. What is it about the ongoing interpersonal relations of people who are prone to suicidal behavior that keeps them so? In the next section we discuss the model of stress generation, which is one way of conceptualizing and studying this question.

DEFINING AND MEASURING INTERPERSONALSTRESS

When a friend or family member has committed suicide, loved ones typically wonder why it happened. Frequently, they view a life stressor as having precipitated the death (Heikkinen, Aro, & Lonnqvist, 1992). In line with this, a substantial body of research has investigated precipitants to suicide, typically focusing on the occurrence of episodic events.

Several studies using the psychological autopsy method have investigated the relationship between episodic stressors and suicide. Brent, Perper, Moritz, Baugher, Roth et al. (1993) reported on stressors in adolescent suicide victims and community controls. As compared to the controls, victims experienced more interpersonal conflicts and loss in the past year, even controlling for depression. Marttunen, Aro, and Lonnqvist (1993) reported on precipitant stressors in 53 adolescents who had committed suicide. Precipitating stressors in the month prior to suicide were very common, occurring in 70% of cases. Interpersonal events were the most common form of precipitating event observed. However, no control group was employed, making the importance of these events in predicting suicide difficult to discern. Rich, Warsradt, Nemiroff, Fowler. and Young (1991) reported on rates of life events among suicide victims across different age groups. Interpersonal events involving conflict, separation, and rejection were the most common type of episodic stressor, occurring prior to suicide in 21% of victims. However, developmental variation in the rates of interpersonal events were striking. Of the victims aged 19 and younger, 56% had experienced at least one interpersonal event, in contrast to only 17% of those aged 80 or older.

One major problem with the psychological autopsy method, however, is the understandable tendency of loved ones to look retrospectively for a "cause" of the death. This variation on the phenomenon of "effort after meaning" (Brown, 1974)

might lead loved ones to have somewhat distorted recollections of the stressors experienced by the victim prior to suicide. An alternative research strategy is the use of samples of suicide attempters, typically patients. In an early study, Slater and Depue (1981) took a methodologically rigorous approach. The interviewed a set of patients, all of whom met criteria for a depressive disorder, half of whom had made a serious suicide attempt. They excluded "dependent" events from the analyses, those events that could have been provoked or contributed to by the patient's own behavior or symptoms. The authors reported that "independent," or fateful, events were significantly more likely to have occurred in the year prior to an attempt, compared to the same time period for non-attempters. Interpersonal exit events were especially common among those who attempted suicide, as compared to other depressedpatients.

Several studies have looked at rates of events, especially interpersonal events, among adolescent suicide attempters. In one of the earlier reports, Hawton, O'Grady, Osborn, and Cole (1982) described problems experienced by adolescents admitted to a hospital following a deliberate overdose. Although there was no formal control group, patients were judged by interviewers to have had a noteworthy rate of problems with parents (76%) and problems with romantic partners(52%).

Wilson et al. (1995) examined rates of life events in a sample of adolescent inpatients who had made suicide attempts and a non-psychiatric control group. The number of life events reported in a semi-structured interview as having occurred in the past six months was significantly greater in the patient group than in the control group. In terms of specific events, 50% of patients reported that their most stressful event was a relationship problem with a parent, versus 15% of controls, a significant difference. The use of a non-psychatric control group, however, makes it difficult to infer a specific association between interpersonal stress and suicidality.

Spirito, Overholser, and Stark (1988) examined self-reported problems in a community sample of adolescents and in a sample of adolescents who had been hospitalized for a suicide attempt. They divided the community controls into two groups, one that reported feeling depressed and anxious in response to a problematic situation in the last month and those who did not. The authors reported that the frequency of problems was not randomly distributed across the three groups, but they do not provide specific comparisons. Nevertheless, the descriptive information provided suggests that problems with a romantic partner are common in both suicide attempters (27%) and non-attempters who feel distressed about the problem (25%). Ten percent of suicide attempters reported problems with friends, versus 14% of non-distressed, non-attempters. These results suggest that future research on life events and suicide with adolescents should more carefully examine the normative frequency of particular stressors.

Beautrais, Joyce, and Mulder (1997) examined rates of life events in the year prior to suicide attempt in 129 individuals aged 13-24. They compared the rates in the group of attempters to rates in randomly selected community controls. Compared to the controls, attempters were significantly more likely to have experienced events in the following domains: interpersonal, work, finances, legal, and personal illness. The effect for interpersonal events held even when controlling for a variety of social, familial, and personality factors. Again, however, because the control group was from the community, rather than a clinical population, it is

impossible to discern whether or not the relationship between stress and suicide is simply a function of psychopathology.

Several investigators have examined relationships between suicidal thinking or behavior and life stress in adolescent community samples. Dubow, Kausch, Blum, Reed, and Bush (1989) administered questionnaires to a large sample of junior high and high school students, querying about life events, suicidal ideation, and history of suicide attempts. They reported that students who had made a suicide attempt in the last year, seven percent of the sample, were more likely to Rave experienced a negative event in the last year than those who had not made an attempt, although they did not distinguish between interpersonal and non-interpersonal events. Degree of suicidal ideation was also associated with the presence of negative life events.

In a rare prospective study, Lewinsohn, Rohde, and Seeley (1994) reported on risk factors for later suicide attempts in a large, community sample of high school students. Followed over a one year period, 1.7% of the students reported in an interview having made a suicide attempt between an initial and a follow-up interview. Life events were assessed via a self-report questionnaire and level of depressive symptomatology at the initial interview was controlled for in analyses. In contrast to most of the other studies reviewed herein, there was no association between the experience of major life events and the presence of a suicide attempt, either prospectively, looking at attempts over the next year, or retrospectively, looking at prior attempts. It is possible that had the authors used a measure of stress temporally closer to each subject's attempt, rather than a global index of the preceding year, some association may have been found.

In a somewhat older sample, Joiner and Rudd (1995) looked at self-reports of life events and suicidality over a 10 week period in college students. They found that interpersonal stress that had occurred in the past 10 weeks, but not achievement related stress, was associated with suicidal ideation at the end of the follow-up period.

Clearly, the risk factors for depression and suicide overlap greatly (Lewinsohn, Rohde et al., 1994). Is the relationship between stress and suicide simply an artifact of the stress-depression link? The data of Slater and Depue (199 1), described above, using two groups of depressed patients, one with suicidality, suggests that this is not the case. Also, a few community-based studies of adolescents have indicated that the association between suicidality and stress is not merely a consequence of co-occurring depression. For instance, Rubenstein, Halton, Kasten, Rubin, and Stechler (1998) examined self-reported stress and suicidal behavior in a sample of 272 high school sophomores and juniors. In this sample, almost 14% reported some form of suicidal behavior in the past year. Suicidal behavior was significantly associated with total number of life events experience in the prior year. The relationship between stress and suicidality was not accounted for by level of current self-reported depression. Similar results were found in an earlier study of high school students (Rubenstein, Heeren, Housman, Rubin, & Stechler, 1989). Likewise, Roberts, Roberts, and Chen (1998) administered a self-report questionnaire assessing suicidality and stress to 5,423 middle school students. Youngsters who reported greater levels of suicidal ideation in the past two weeks also reported greater levels of life stress, even controlling for depression, although the authors did not provide information describing the nature of the stress assessed.

Thus, a substantial body of research, using a variety of methodologies, including psychological autopsies, studies of patients who have made suicide attempts, and examinations of suicidal thinking and behavior in community samples, have almost uniformly demonstrated an association between suicidality and episodic stress, especially interpersonal stress. What, then, are some of the refinements that might help to advance the study of interpersonal stress in suicide? We will offer several suggestions based on advancements that have been proposed or are being made in the study of depression.

There are several methodological and theoretical limitations to the predominant approaches used to date in studying stress in suicide. First, there is a set of issues related to temporal aspects of stress assessment. Wide variations exist between studies in terms of the duration of the period in which events are assessed, ranging from 12 hours (Pillay & Wassenaar, 1997) to one year (e.g., Beautrais et al., 1997; Lewinsohn, Rohde, et al., 1994; Rubenstein et al., 1988). This wide range of time frames for assessing life events makes differences between studies difficult to interpret. In the depression literature, it has been suggested that events that precipitate mood episodes typically occur within six months of symptom onset (Brown, Bifulco, & Harris, 1987). It would be fruitful for suicide researchers to make explicit whether they are studying stressors that are temporally proximal or distal to the suicide (or ideation) and to determine periods in which stress best predicts suicidality. In a similar vein, it appears that the literature on stress and suicide has attended much more to episodic events than to chronic stress. Ongoing difficulties faced by individuals in domains such as intimate relationships, more general social life, finances, work, and health are predictive of depression both in adults and in offspring of depressed mothers (Hammen, 1991b). Indeed, some research has suggested that chronic stress may be more closely related to depression than are discrete events (McGonagle & Kessler, 1990). Incorporation of attention to chronic stress, both alone and in interaction with episodic stressors (see Brown et al., 1987), would help to refine the already considerable body of literature on acute stress and suicide.

There also appears to have been a reliance on cross-sectional designs assessing stress and suicide, which historically has been a problem in depression research as well (Barnett & Gotlib, 1988). Because of the low base rates, it is certainly difficult to follow a large enough group of individuals to be able to prospectively predict completed suicide. However, the problem in psychological autopsy studies of relatives trying to make sense of a suicide by looking for precipitants, a version of effort after meaning, is not an insignificant one. Prospective studies of high risk groups, with frequent life stress assessments to minimize recall biases, would add to this literature. Certainly studies assessing suicidal ideation and behavior longitudinally would be more economically feasible than those looking strictly at completed suicide, and would help to distinguish between antecedents, concomitants, and consequences of suicidality.

Another methodological issue is the tools for assessment. The vast majority of research reviewed herein has utilized checklists for the assessment of life stress. Some have distinguished between different content categories of events, or have looked especially at negative events. However, the meaning of the same event may differ dramatically according to one's circumstances. As a consequence, many depression researchers have made use of contextual methods of assessing episodic stress stemming from the work of Brown and Harris (1978). The contextual

approach allows researchers to assign a rating of threat to an event that reflects the likely impact, or meaning, of an event for a person in the subject's particular circumstances, while excluding the subject's subjective response from consideration. For instance, the impact of a romantic break-up is quite different for an individual who has only dated the partner briefly, has a wide social circle, and does not experience cultural or familial expectations to be already married, than for a person who had been in a long-term relationship, has no other close confidant, and whose family makes regular references to their other relatives whose children are already married and having children of their own. Contextual approaches also allow investigators to make distinctions between events that are independent of or dependent upon the individual's own behavior, an issue to which we now turn.

If the literature supports the proposition that stress plays a role in precipitating suicide, one then should ask what factors play roles in precipitating stress, especially interpersonal stress? The issue of dependence of events is a crucial one, because most stressful occurrences are not fully independent of one's own behavior, as a natural disaster or death of a loved one would be. The notion that individuals play a role in constructing their own environments, and the associated stressors, is one that has been proposed by theorists from a wide range of perspectives including developmental psychology (Bronfenbrenner, 1977), social psychology (Buss, 1987), and psychopathology (Hammen, 1991a). For instance, Hammen (1991a) examined rates of life events in women with either no disorder, medical illness, unipolar disorder, or bipolar disorder, and observed that women with unipolar depression had an excess of dependent (at least partially self-generated), but not independent, events. She concluded that the behavior of depressed individuals plays some role in precipitating the very stressful experiences that contribute to onset and maintenance of depression, leading to a vicious cycle. Several studies have replicated the stress generation model, showing that individuals with depression experience an excess of dependent life stress (Adrian & Hammen, 1993; Daley et al., 1997; Davila, et al., 1995; PotthoffHolm & Joiner, 1995). This literature has grown to demonstrate that a range of factors other than unipolar depression itself (although typically associated with depression) also predict the process of stress generation, including Axis I comorbidity in depression (Daley et al., 1997), Axis II symptomatology (Daley, Hammen, Davila, & Burge, 1998; Daley, Burge, & Hammen, 1999; Davila, Cobb, & Lindberg, 1999), and autonomous personality style (Daley et al., 1997). To date, however, little of the research on suicide distinguishes between dependent and independent events (for an exception, see Slater & Depue, 1981). Like individuals with depression and Axis II symptomatology, some suicidal people may interact with the world around them, especially the interpersonal world, in a way that fosters the occurrence of stressful experience. Unlike independent stressors, some dependent stress could be averted with appropriate intervention. Accordingly, to inform suicide prevention efforts, attention should be paid to the factors that contribute to the occurrence of stress in suicidal individuals

Finally, there appears to have been relatively little attention paid to the diatheses at play in precipitating suicide in the face of stress. This is a criticism familiar to depression researchers (see Monroe & Simons, 1991), despite the theoretical emphasis on diathesis-stress models of psychopathology. In the suicide literature, a few researchers have examined potential diatheses such as attributional style (Joiner & Rudd, 1995) and problem solving (Dixon et al., 1991; Rudd et al., 1994). Others have suggested a possible potentiating effect of early adversity

(Silove, George, & Bhavani-Sankaram, 1987) and substance abuse (Duberstein, Conwell, & Caine, 1993; Marttunen, Aro, Henriksson, & Lannqvist, 1994; Rich, Fowler, Fogarty, & Young, 1988), but the majority of literature on stress and suicide has focused on main effects models, rather than considering stress-vulnerability interactions. Consideration of temporal aspects of stress, the use of contextually-based assessments, attention to the process of stress-generation, and inclusion of diatheses in predictive models would be valuable refinements to the current literature on interpersonal stress and suicide.

ADDRESSING COMORBIDITY

As noted earlier, depression is thought to be one of the psychiatric disorders most associated with suicide. However, the vast majority of depressed individuals will never commit suicide. One of the many variables that may help to predict which depressed individuals will go on to make a serious suicide attempt is comorbidity. In the depression literature, increasing attention is being paid to the issue of comorbidity. Among children and adolescents, data indicate that it is more common for depression to coexist with another disorder than for it to occur independently (Hammen & Compas, 1994). High rates of Axis I (Kessler, Nelson, McGonagle, Liu, Swartz, & Blazer, 1996) and II (Farmer and Nelson-Gray, 1990; Ruegg & Frances, 1995) disorders are also observed in depressed adults.

Some studies of suicide have neglected the issue of comorbidity. For instance, Marttunen et al. (1994) examined rates of various stressors in adolescent suicide victims grouped by diagnosis derived through psychological autopsy. In particular, they compared adolescents with depressive disorders to those with alcohol abuse. However, of the 14 subjects in the "alcohol abuse/dependence" group, 9 also had a depressive disorder. Likewise, Duberstein et al. (1993) assessed rates of interpersonal losses and conflicts prior to suicide in a sample of adults categorized by diagnosis, based on psychological autopsy. They also included subjects with affective disorders in their 'Ialcohol/substance dependence" group in comparisons with a group of subjects with mood and anxiety disorders. Black (1998) made use of a data set that used a hierarchy for assigning diagnoses, rather than allowing multiple diagnoses per subject. Analyses such as these make it difficult to infer particular characteristics of various diagnostic groups, given the high rate of comorbidity.

Accordingly, it appears that psychiatric comorbidity is increasingly being attended to in the study of suicide. As a general phenomenon, the presence of two or more disorders is strongly associated with suicidality. For instance, Beautrais et al. (1996) examined rates of psychiatric disorder in a sample of 302 adults who had made a suicide attempt and in 1028 community controls, all of whom were administered structured clinical interviews to assess psychopathology. In this sample, individuals with one psychiatric disorder were 17.4 times more likely than those with no disorder to have a serious suicide attempt. In contrast, the risk for individuals with two or more disorders was almost 90 times greater than the risk in those with no disorder. Thus, clearly, the presence or absence of comorbidity is an important consideration in the prediction of suicide from psychiatric status.

In terms of distinguishing among depressed individuals with and without comorbid psychopathology, several studies have examined disorder prevalence in

suicide victims using the psychological autopsy method. Henriksson et al. (1993) used a psychological autopsy method to examine rates of psychiatric disorders in Finnish suicide victims, including children, adolescents, and adults. Depressive disorders were the most common diagnosis, occuring in 59% of the victims. Of the subjects with major depression, 24% also had a comorbid alcohol dependence and 3 1% had a comorbid personality disorder. Looking specifically at adolescents, depressive disorders were, again, the most prevalent, being observed in 51% of victims (Marttunen, Aro, Henriksson, & Lönnqvist, 1991). Comorbidity was present, however, in the majority of subjects when considering both Axis I and II disorders.

Conwell et al. (1996) used a psychological autopsy method to examine rates of psychiatric disorders in adult suicide victims in the US.. Forty-six percent of the victims with an active mood disorder also had an active substance abuse disorder. Of the victims with mood disorders, those who also had a comorbid substance abuse disorder were younger at the age of death.

Looking at child and adolescent suicide victims in the U.S., Shafii, Steltz-Lenarsky, Derrick, Beckner, and Whittinghill (1988), conducted a psychological autopsy of 21 victims aged 11-19. Eighty-one percent of the suicide victims had two or more Axis I disorders, versus 29% of matched-control subjects. Likewise, in a study of adolescent suicide victims and suicidal inpatients, Brent et al. (1988) reported that of those with an affective disorder, suicide completers were more likely to a have comorbid non-affective disorder than were attempters. Thus, descriptive data from psychological autopsy studies consistently indicate the risk of suicide is not only associated with the presence of a psychiatric disorder, but also is heightened in the context of two or more disorders.

The psychological autopsy is an important methodology in suicide research, but, like any approach, not without its limitations (see Martin, 1985, for discussion). Accordingly, it is useful to examine the comorbidity issue in studies using other approaches, such as investigations of patients who have made suicide attempts. High rates of comorbidity have also been observed in patient samples of suicidal individuals. For instance, Rudd, Dahm, and Rajab (1993) examined rates of psychiatric disorders, assessed using a structured diagnostic interview, in a sample of adults in an outpatient program targeting suicidal behavior. Mood disorders were the most common, present in 88% of subjects. Ninety-four percent of subjects with major depression also had a comorbid Axis I disorder.

In samples of patients with depressive disorders, the association between comorbid personality disorder and suicidality has received a good deal of attention. Looking at Axis II disorders generally, in a study of depressed inpatient adults, Black, Bell, Hulbert, and Nasrallah (1988) found that those patients whose charts reflected the presence of any personality disorder were also significantly more likely to make a suicide attempt following discharge than those without an Axis II condition

Borderline personality disorder has frequently been linked to suicidality; indeed, suicidal behavior is one criterion for the disorder. Friedman et al. (1982) examined the rate and lethality of suicide attempts described in the charts of an adolescent inpatient sample. The authors noted that affectively disturbed adolescents with co-existing borderline personality disorder were significantly more likely to have attempted suicide and to have made a highly lethal suicide attempt that those without borderline personality disorder. Of course, because suicidality is

one criterion of borderline personality disorder, this finding may be in part an artifact of the definition of borderline personality disorder. In a sample of affectively disturbed adolescents and young adults, Friedman, Aronoff, Clarkin, Corn, and Hurt (1983) provided a more rigorous test of this question by including in their borderline personality group only those subjects who would meet criteria for borderline personality disorder when the suicidal behavior criterion was eliminated. The authors found that subjects with depression plus borderline personality disorder were significantly more likely to have attempted suicide than were those subjects with depression plus another personality disorder (90% versus 60%). Borderline personality disorder was also significantly associated with increased lethality of suicideattempts.

A number of studies have examined the rates of suicide attempts in depressed patients with any of the Axis II Cluster B disorders (antisocial, borderline, histrionic, and narcissistic). Shea, Glass. Pilkonis, Watkins, and Docherty (1987) found that depressed patients who had a comorbid Cluster B personality disorder, assessed using a form of clinician-rating, the Personality Assessment Form, were significantly more likely to have attempted suicide in the past. Barrash, Pfohl, and Blum (1993) examined the rate of suicide attempts among individuals aged 26 and above who had been diagnosed with a Cluster B personality disorder while hospitalized for depression 4 years previously. These older patients with a comorbid Cluster B personality disorder made significantly more suicide attempts, both categorized as "medically serious" and "manipulative," in the follow-up period than did those without a Cluster B diagnosis.

Corbitt, Malone, Haas, and Mann (1996) examined suicidal behavior in inpatients with major depression using structured diagnostic interviews. In addition to looking at personality disorder diagnoses categorically, they also employed dimensional indices, which are thought to be have greater validity (Klein, 1993; Widiger, 1992). They found that number of borderline (excluding the item pertaining to suicidality) and number of non-borderline Cluster B symptom evidenced were more powerful indicators of past suicidal behavior than were depressive symptoms, even among those subjects who did not meet the diagnostic threshold for an Axis II disorder.

Thus, the data in this area strongly indicate that a Cluster B personality disorder, especially borderline, is associated with suicidality in depressed individuals. This effect appears to hold even when the suicidality criterion is eliminated from the borderline diagnosis (e.g., Friedman, et al., 1983; Corbitt et al., 1996). The relationship between personality disorder and suicidality appears not to be limited to Cluster B, but likely applies to personality disorders in general as well (Black,1988).

Unfortunately, very few available studies ofcomodidity employ a longitudinal methodology. However, some data do exist that indicate that personality disorder is a risk factor for subsequent attempts in patients who have already been hospitalized for a suicide attempt (Fridell, Ojehagen, & Traskman-Bendz, 1996). Another problem with the studies reviewed herein is the typical reliance on patient samples, which may limit generalizability to the population at large (Cohen & Cohen, 1984; Newman, Moffitt, Caspi, & Silva, 1998). However, there are some data that suggest that comorbidity in adolescent depression is associated with increased suicidality in community samples as well (Lewinsohn, Rohde, & Seeley, 1995).

Thus, a reasonable body of literature exists demonstrating gross associations between comorbidity and suicide. The question for this chapter remains, why is comorbidity of relevance in considering interpersonal factors in suicide? In the mood disorders literature, the comorbidity issue has raised questions about the degree to which factors thought to be related to depression are indeed associated with depression, per se, versus being related to a co-occurring disorder or the combination of depressive and non-depressive pathology. Comorbidity appears to have particular relevance in the context of models of stress and depression.

In terms of Axis I disorders, the generation of episodic stress, described in the section above, appears to be associated with depression comorbidity among adolescents. Daley et al. (1997) examined rates of various types of events in a sample of late adolescent women followed prospectively over two years. Women with comorbid depression went on to have more dependent stress than women with pure depression and only the comorbid group went on to experience a heightened level of stress related to interpersonal conflicts. Likewise, Lewinsohn, Gotlib, and Seeley (1 997) examined correlates of depression in a large sample of high school students. Again, only comorbid depressed adolescents, not those with depression alone, had an elevated level of life events. Similar results have also been found in a sample of clinic-referred children and adolescents. Rudolph, Hammen, Burge, Lindberg, Herzberg, and Daley (1999) reported that dependent interpersonal episodic stress was highest in youngsters with comorbid depression, as compared to pure depression or pure externalizing disorders. Adult samples have also demonstrated greater numbers of life events in comorbid versus pure depression (Newman & Bland, 1994). Thus, despite a great deal of literature linking stress, especially interpersonal stress, to depression (Gotlib and Hammen, 1992), when investigators take a more refined approach to categorizing depressed individuals, stress appears most strongly associated with comorbid depression, and sometimes is not associated with pure depression at all.

Axis II comorbidity also appears to be an important factor in interpersonal dysfunction and stress generation. Among depressed individuals, comorbid Axis II symptomatology has been associated with risk of being single, separated, or divorced (Flick, Roy-Byrne, Cowley, Shores, & Dunner, 1993) and experiencing poor social support (Pfohl, Stangl, & Zimmerman, 1984). Controlling for comorbid depression, Axis II symptoms have been shown to predict romantic conflicts, increases in romantic chronic stress, and risk of being physically or psychologically abused by one's partner (Daley et al., 1999). In a psychological autopsy study of suicide victims, personality disorder was associated with a higher rate of recent interpersonal events, controlling for comorbid depression and alcoholism (Heikkinen et al., 1997).

Thus, the apparent association between suicide and comorbid Axis I or II pathology in depressed individuals may be partially mediated by the generation of interpersonal stress. In other words, the relationship between comorbidity and suicide may be due, in part, to the tendency of depressed individuals with additional comorbid symptomatology to play a role in provoking interpersonal stress, which may then precipitate suicidality (see Daley, et al., 1998, and Davila et al., 1999, for tests of such models in depression).

To conclude, most people with depression and most people who experience stressful life events do not commit suicide. If researchers want to predict which individuals with mood disorders are at heightened risk for suicide, especially when

considering interpersonal stress, greater attention should be paid to factors that contribute to the heterogeneity of mood disorders, one of which clearly is comorbidity.

UTILIZING A DEVELOPMENTAL CONCEPTUALIZATION

By developmental conceptualization we mean two things. One relates to the course of development over time and includes the processes of continuity and discontinuity over the changing life phases. The other relates to the origins of, or factors influencing the initial development of the problem under study. Depression research has made progress in both areas. Much is known about the course of depression. For instance, we know that there is considerable continuity in depression from childhood and adolescence to adulthood (e.g., Bardone, Moffitt, Caspi, Dickson, & Silva, 1996; Harrington, Fudge, Rutter, Pickles, and Hill, 1990; Rao et al., 1995; Rao, Hammen, & Daley, in press). It has also been observed that earlier onset predicts longer episodes (Lewinsohn, Clarke, Seeley, & Rohde, 1994) and the more episodes that have occurred, the more likely recurrence is in the future (Lewinsohn, Zeiss, and Duncan, 1989). We also know something about depression at various life stages as there are separate literatures examining depression in childhood, adolescence, adulthood, and older adulthood. Many processes involved in depression are similar across life phases. In particular, interpersonal factors are associated with depression at all ages (e.g., Garber, Kriss, Koch, & Lindholm, 1988; Hammen, 1991a; 1991b; Hinrichsen & Pollack, 1997; Mullins & Dugan, 1991; Puig-Antich et al., 1985; 1993).

Research has also begun to make some progress in specifying the course of suicidal ideation and behavior. Just like past depression predicts future depression (e.g., Belsher & Costello, 1988), past suicidal ideation and behavior puts people at risk for future suicidal ideation and behavior (e.g., Farberow, 1989; Lewinsohn et al., 1996), although suicide completions are not always preceded by prior attempts (e.g., Fawcett et al., 1987). In addition, life span perspectives on suicide are emerging (e.g., see Lenaars, 1991; Stillion, McDowell, & May, 1989) as are separate literatures on suicide in adolescents. adults, and older adults. This research suggests that interpersonal processes are implicated in suicidal ideation and behavior at every phase of the life course. For example, adolescent suicidal ideation and behavior is associated with poor family, peer, and romantic functioning (e.g., Brent, Perper, Moritz, Baugher, & Allman, 1993; Brent, Perper, Moritz, Baugher, Roth, Balack & Schweers, 1993; Garber, Little, Hilsman, & Weaver, 1998; Lewinsohn et al, 1996). Adult suicidal ideation and behavior is associated with a loss or lack of intimate relationships, romantic relationshp problems, and domestic violence (e.g. Heikkinen, Aro, & Lönnqvist, 1992; Kaslow et al., 1998; Nordentoft & Rubin, 1993), and older adult suicide is associated with social isolation and death of loved ones (see McIntosh, Santos, Hubbard, & Overholser, 1994).

Given these associations, it seems reasonable to conceptualize the role of interpersonal processes in suicide within a life span perspective that highlights the interpersonal nature of suicidal ideation and behavior in addition to the intrapersonal aspects. However, there is an important caution that must be heeded. Different interpersonal processes may be operating at different phases of life, at different phases of the disorder or problem, and for different subtypes of the

disorder or problem. For instance, Coyne (1999) suggests that first episodes and recurrences of depression may have different implications for coping and how others react to the depressed person. Similarly, he suggests that depressed people can have very different experiences to the extent that their interpersonal environment changes. The interpersonal nature of suicidal ideation and behavior may also vary at different ages and developmental stages.

As another example, some depression researchers have suggested that there is a specific group of people for whom depression starts early and is closely linked with interpersonal dysfunction over the life course (e.g., Davila, in press). These people may have some of the worst depressive and interpersonal outcomes. There may also be a group of people for whom suicidal ideation and behavior starts early and is linked with interpersonal dysfunction in an ongoing way, but this may not describe the course of suicide for everyone. For example, some researchers have suggested that some people have an acute course of suicidal ideation, whereas others have a chronic course (e.g., Jacobs, Brewer, & Klein-Benhein, 1999; Linehan, 1999). The distal and proximal risk factors for each course may be very different and, as such, interpersonal factors may play a different role in each course. The clearest understanding of suicide (and depression) will emerge if there is specificity in to whom theories are applied.

Turning to the origins, or factors influencing the initial development of depression, much is known about this topic as well. As noted earlier, interpersonal factors affect the development of depression at all phases of the life course. However, although onset of depression can occur at any age, the average age of onset is getting younger over time, and rates of childhood and adolescent onsets are increasing rapidly (e.g., Burke, Burke, Regier, & Rae, 1990; Cross-National Collaborative Group, 1992; Kashani et al., 1987: Ryan et al., 1992). Given that earlier onset predicts a worse course, this suggests that a focus on origins in childhood and adolescence is necessary for at least some groups of depressed people. Indeed, depression research has suggested a number of possible childhood origins, some of which are interpersonal in nature, including early loss, inadequate parental care, and family dysfunction (Bifulco, Brown, & Harris, 1987: Cicchetti et al., 1994; Cummings et al., in press; Hammen, 1991b).

One prominent theory of how early experiences influence later depression comes from the field of developmental psychopathology which suggests that the unsuccessful negotiation of earlier developmental tasks negatively impacts people's capacities to successfully manage later tasks (e.g., Cicchetti et al., 1994). According to this perspective, people may travel down one of many paths, and their success or failure at various junctures along the way determines the path they follow. Early failures put people at risk for psychopathology in the future.

Depression research has made progress in identifying some of the tasks that may be impaired and that may send people down a pathway towards depression. For example, one important developmental task involves emotion regulation in times of stress and, in particular, the extent to which support is sought from others (e.g., Cassidy, 1994; Cicchetti, Ganiban, & Barnett, 1991; hard & Kobak, 1991). Research has indicated that impairment in this arena is associated with psychopathology in general, but that people with depressive symptoms may show different types of impairment than people with certain other symptoms (e.g., eating disorders; Cole-Detke & Kobak, 1996). This type of research helps to refine understanding of how specific types of impairment in specific types of

interpersonally oriented developmental tasks may lead to specific types of negative outcomes.

Researchers are also beginning to approach the study of suicide from a developmental psychopathology perspective (e.g., Borst & Noam, 1993; King, 1998) and, given the rise in adolescent suicide, doing so makes a great deal of sense. Yet, relatively little research has tested this perspective, or done so adequately. For example, there is quite a bit of research indicating a correlation between various measures of early family dysfunction and suicidal ideation and behavior in children and adolescents. However, as Wagner (1997) points out in a review of this literature, many of these studies suffer from serious methodological problems. For example, it is impossible to determine whether family variables are risk factors for suicidality when most studies are cross-sectional or provide only minimal information about the temporal sequence of events. In addition, many studies do not control for concurrent psychopathology which means that the specificity of family risk factors for suicidality cannot be determined. As such, these studies cannot adequately speak to whether and how different family processes affect suicidal ideation and behavior for different young people. From a developmental psychopathology perspective, it would be important to know which interpersonal risk factors are involved, which developmental tasks are impaired, what other risk factors they interact with, and how they might specifically affect suicidal ideation and behavior.

One theory that may serve as a useful guide is attachment theory (Bowlby, 1969, 1973, 1980). Some developmental psychopathologists (e.g., Cummings & Cicchetti, 1990) conceptualize the earliest psychosocial precursors to depression as arising out of early parent-child relations. Following predictions of attachment theory, these researchers suggest that the early parent-child relationship results in internal representations of self, others, and relationships that guide interpersonal functioning and risk for psychopathology across the life span. More specifically, attachment insecurity in childhood may impair the capacity for successful emotion regulation, successful self-regulation, and successful interpersonal relating. Hence, as a child develops, these deficits may impair their functioning at various critical life junctures rendering them at risk for the development of depression.

A growing body of research examining the association between attachment security and depression has emerged. This research has consistently yielded an association between insecurity and depression, suggesting that attachment factors may play an important role in depression. For example, high levels of preoccupation, anxiety about abandonment, and hyperactivating defensive strategies (e.g., constant monitoring of the attachment figure, excessive focus on attachment-related information) are associated with depression and depressive symptoms (e.g., Carnelley, Pietromonaco, & Jaffe, 1994; Cole-Detke & Kobak, 1996; Murphy & Bates, 1997; Roberts, Gotlib, & Kassel, 1996). Researchers have also begun to study attachment processes in suicide and, although this work is in a very early phase, a number of studies have yielded associations between self-reported attachment insecurity and suicidal ideation and behavior (e.g., Armsden et al., 1990; de Jong, 1991). In fact, Adam (1994) has elaborated a model of attachment and suicide in which the suicidal crisis is seen as an attachment crisis.

Specific models of the association between attachment and suicide are important because attachment theory has been applied to many disorders and negative outcomes, and existing research is quite lacking in specificity. For

example, attachment insecurity is not only associated with depression, but with negative outcomes including anxiety, antisocial behavior, personality disorders, and poor interpersonal functioning (e.g., Burge, et al., 1997; Collins & Read, 1990; Hammen et al., 1995; De Ruiter & van IJzendoorn, 1992; Fonagy et al., 1996; Rosenstein & Horowitz, 1996; van IJzendoorn et al., 1997). Unfortunately, comparatively few studies have attempted to explain how attachment specifically affects depression (e.g., Cole-Detke & Kobak, 1996). Hence, as a focus on attachment emerges in research on suicide, researchers should be mindful to test predictions that can help explain unique associations between attachment and suicide.

The methodological adequacy of the literature on attachment and depression also varies considerably. Some of the better studies have at least one of the following qualities: they are longitudinal and prospective, they test specific, complex competing hypotheses rather than simple, broad associations, they use varied types of measurements (e.g., do not rely entirely on self-report), and they distinguish among different negative outcomes. These are the sorts of studies that will move forward our understanding of the development of both depression and suicide.

Two recent studies of attachment and suicide provide a good foundation for work in this area. Both use clinically relevant samples, varied types of measurements, and test predictions that move past basic associations between suicide and generic attachment insecurity. Adam, Sheldon-Keller, & West (1996) compared the attachment styles of two groups of adolescents in psychiatric treatment: those who had a past history of suicidal behavior or severe ideation and those who had never experienced suicidal ideation or behavior. Suicidal ideation and behavior and attachment style were assessed via interview by independent raters. Results indicated that the suicide group was Characterized by a preoccupied attachment style (excessive focus on attachment relationships and traumas with displays of anger or helplessness) in interaction with an unresolved-disorganized state-of-mind about attachment experiences (specific lapses in reasoning about an attachment-related trauma; a lack of resolution of an attachment-related trauma). On the other hand, the comparison group was characterized by a dismissing attachment (downplaying of attachment relationships; defensive or idealized view of attachment relationships in which normalcy is emphasized). Importantly, the comparison group was not characterized by an unresolved-disorganized state-of-mind, suggesting that the suicide group uniquely suffers from a type of cognitive disorganization. This disorganization may be a specific risk factor for suicidal ideation and behavior among adolescents with psychiatric disorders.

Lessard and Moretti (1998) also compared the attachment styles of two groups of adolescents who were referred to a mental health facility largely for conduct problems: those with suicidal ideation and those without. Attachment was assessed with a standardized interview. Similar to the findings of Adam et al. (1996), the suicidal ideation group was characterized by a preoccupied attachment and the comparison group was characterized by a dismissing attachment. The suicidal ideation group was also characterized by a fearful attachment (desire for attachment relationships, but avoidance of them due to fear of rejection).

Of course, although these studies provide a good beginning to understanding the attachment organizations of people at risk for suicide, many questions remain. For example, given that depression is associated with suicidal ideation and behavior

and that depression is associated with a preoccupied attachment style, to what extent do these findings tell us specifically about suicide versus depression? Can information about attachment organization tell us anything about predicting future suicide attempts? Is it only attachment to parents that matters? What about attachment in current close relationships? The attachment literature is also struggling with serious issues such as how best to measure attachment, what different measurements tell us, and whether attachment is stable over time (e.g., Bartholomew & Shaver, 1998; Davila, Karney, & Bradbury, 1999). Any research on attachment, including suicide research, will need to wrestle with these issues as well. Hence, although there is reason to be optimistic about attachment conceptualizations of suicide, a host of theoretical and methodological challenges must be met in order for attachment conceptualizations to prove useful.

CONCLUSIONS

In this chapter we have attempted to outline ways in which research on interpersonal factors in suicide can advance. Using the literature on interpersonal factors in depression as a model, we have described four topics that have implications for studying interpersonal factors in suicide. We have suggested that suicide research will advance if researchers use more precise and rigorous approaches to the measurement of interpersonal variables, particularly interpersonal stress, account for the existence of comorbidity and its effects on suicide risk, and utilize a developmental conceptualization to understand the origins and course of suicidal ideation and behavior over time. Although each topic addresses specific issues in the study of interpersonal factors, many of our recommendations cut across topics. Specifically, our main methodological recommendation is the use of prospective, longitudinal designs to study the course of suicide risk over time and to identify interpersonal precursors, correlates, and consequences of suicidal ideation and behavior. In addition, we have called for an examination of the actual interpersonal circumstances of suicidal people's lives in order to best understand their interpersonal context. As for theoretical recommendations, we propose taking a perspective that considers how the suicidal person both reacts to and contributes to their interpersonal context. To date, research has focused almost exclusively on suicidal reactions to interpersonal circumstances. Consistent with a developmental psychopathology perspective and a stress generation perspective, we suggest that the best understanding of the role of interpersonal factors in suicide will come from knowing not only what types of interpersonal factors can lead to suicide, but how people at risk for suicidal ideation and behavior shape their interpersonal worlds.

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GENDER, SOCIAL ROLES, AND SUICIDAL IDEATION AND ATTEMPTS IN A GENERAL POPULATION SAMPLE

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One of the strongest predictors of suicidal ideation, suicide attempts, and suicide completion is gender (Canetto, 1997a). Far more women than men think about and attempt suicide (Canetto & Lester, 1998; Canetto, 1997a; Mosciki, O'Carroll, Rae, Locke, Roy, & Regier, 1988) while famore men than women complete suicide (NCHS, 1994; Diekstra, 1989). Depression, which is associated with suicidal ideation and behavior (Paykel, Myers, Lindenthal, & Tanner, 1974; Petronis, Samuels, Mosciki, & Anthony, 1990) has also been found to be consistently higher in women than in men (Culbertson, 1997; Robins, Locke, & Regier, 1991; Weissman & Klerman, 1977; Weissman, Leaf, Tischler, Blazer, Karno, Bruce, & Florio, 1988).

In the United States there have been a limited number of epidemiological surveys assessing suicidal ideation. The Epidemiological Catchment Area studies found the lifetime prevalence rates for having any thoughts related to suicide to be 28.9% (Weissman, Bruce, Leaf, Florio, & Holtzer, 1991). Lifetime prevalence rates for having speclfic thoughts about committing suicide have been found to range from approximately 13% to 16% (Schwab, Warheit, & Holzer, 1972; Swanson, Harter, Breed, Scrignar & Hardin, 1971; Paykel, Myers, Lindenthal, & Tanner, 1974). Lifetime prevalence rates for thoughts about committing suicide have not been found to differby gender (Schwab, Warheit, & Holzer, 1972). The one year incidence rates for thoughts about committing suicide were found to be 8.9%, with

women having thoughts about suicide during the last year twice as often as men (11.4%vs. 5.7%, Paykel, Myers, Lindenthal, & Tanner, 1974).

Lifetime rates ofattempted suicide in the United States have been found to range from 1.1% to 2.9% and one year prevalence rates for attempted suicide have been found to rangefrom .3% to .8% (Mosciki, 1995; Mosciki et al., 1988; Paykel et al., 1974; Schwab, Warheit, & Holzer, 1972). For lifetime prevalence rates, Mosciki et al. (1988) found that significantly more women than man had attempted suicide (4.2% vs. 1.5%), as did Schwab et al. (1972; 4.0% vs. 1.2%). Andrews and Lewinsohn (1992) found the lifetime prevalence rate of attempted suicide among high school students to be greater for females than for males, however, one year prevalence rates for attempted suicide did not differ. One year prevalence rates for attempted suicide were also found not to differin a large adult general population sample (Petronis, Samuels, Mosciki, & Anthony, 1990).

Rates of suicide completion are greater in men than women. According to the National Center for Health Statistics (NCHS, 1994) 1.4% ofthe total number of deaths in the United States are from suicide. The age adjusted suicide rate is 11.4 per 100,000, and the ratio ofmen to women has increased gradually from 3.1 (1979) to over 4.1 (1991). Examining completed suicides in 18 nations between the years 1987 to 1992, Pampel(l998) found the male to female ratio to be 3.05.

Why is it that more women than men attempt suicide while more men than women complete suicide? The estimated ratio of attempted suicide to suicide completion is 8:1 for men and 59:1 for women (Petronis, Samuels, Mosciki, & Anthony, 1990). Mosciki (1995) suggests that women may be better reporters of suicidal ideation and attempts. She also suggests that the higher rate of depression in women may be associated with suicidal gestures that are a symptom of distress. The higher rate of suicide completion in men may be the result, in part, of the more lethal methods used by men in committing suicide (Canetto & Lester, 1998; Lester, 1984). Canetto (1997a) argues that suicidal attempts are actually encouraged in women as an appropriate way to express their distress while men are given the message that surviving a suicide attempt is unacceptable. Canetto and Sakinofsky (1998) argue that these gender biases may even be reflected in the under-reporting of suicide attempts in men.

Canetto and Lester (1998) speculate that western culture's concept ofgender interacts with beliefs about suicide which in turn, influence gender specific suicidal behavior. Theories regarding masculine and feminine traits characterize suicidal ideation and attempts as feminine behavior, while suicide completion is characterizedas masculine behavior (Linehan, 1971, 1973; White & Stillion, 1988; forreviews see Canetto, 1997a; & Kushner, 1989). Canetto and Lester (1998) point out that suicidal behavior in women is viewed as emotionally weak and precipitated by relationship problems while suicidal behavior in men is construed as a decisive, calculated response to adversity. Canetto (1997b) asserts that our language describing suicidal behavior is gender biased, women "attempt", "gesture" and "W at suicide, while men "successfully"complete suicide. She suggests that these terms may function as a self-fulfilling prophecy. Society may convey to women that suicidal ideation and suicidal attempts are a gender-appropriate manner to express their distress. On the other hand, men are discouraged from admitting suicidal ideation or seeking help for suicide (Canetto. 1997b; Canetto & Sakinofsky, 1998).

Theories examining why women tend to have higher rates of suicidal ideation and suicide attempts while men have higher rates of suicide completion

have focused on the gender socialization of children, the disadvantaged status of women in our society, and the adult sex roles of men and women. Gove (1979a) speculates that the socialization of adolescents into gender appropriate sex roles is more stressful for girls than boys. While young girls are allowed to participate in what are later defined as masculine activities, such as academic success, he argues that adolescent girls are given covert messages not to compete with men. He suggests that sex roles of adolescent girls tend to be narrower than those for boys, that female adolescents are told that they should defer to men, and that women experience their adult sex roles to be more stresful than do men because they realize that society favors men over women.

Primary adult social roles include marriage, parenthood, and employment. There has been considerable debate as to whether these specific social roles interact with gender in affecting rates of suicide. Lester (1979) argues that the more rigid a person's social role the less likely it is that they will demonstrate suicidal behavior. He suggests that women have "ascribed roles (homemakers) while men have "achieved roles, resulting in a lower propensity towards suicide in women. The combination of specific roles individuals occupy may also affectrates of disorders. Conflict among role demands may have more to do with psychological distress than the demands of any specific role (Cleary & Mechanic, 1983; Pearlin, 1975). Moreover, the actual number of roles an individual occupies may affect his or her mental health. In this regard there currently are three competing theories first articulated by Gove (1972a) and further elaborated by others. These are the role-gender interaction theory (or role strain), the role accumulation hypothesis (Thoits, 1983), and the role configuration theory (Goode, 1960).

The role gender-interaction theory (role strain) contends that women have a greater number of disorders because women have less positive experiences than men within any given role, particularly for the role of marriage (Gove, 1972a). This theory was first proposed to account for the higher rate of mental health problems and the higher rate of suicide attempts found in married women who were homemakers (Haavio-Mannila, 1986; Gore & Mangione, 1983; Gove, 1972a, Gove, 1972b). Gove (1972b) suggested that the higher rate of suicide attempts among women is due to the "minimally rewarding" role of "homemaker".

While in some studies marriage has been associated with increased mental health problems in women (Radloff, 1975; Gove & Tudor, 1973), other studies have consistently found lower rates of mental illness in married women when compared to unmarried women (Romans-Clarkson, Walton, Herbison, & Mullen, 1988; Tauss, 1967). For the most part epidemiological studies have found marriage to be a protective factor against suicidal ideation (Schwab et al., 1972), suicide attempts (Mosciki et al., 1988) and suicide completion (World Health Organization, 1982). In a large epidemiological survey the one year prevalence rate of suicide attempts was estimated to be six times greater for the divorced or separated, as compared to all other married and unmarried persons (Petronis, Samuels, Mosciki, & Anthony, 1990). However, some researchers found no appreciable difference in suicidal feelings and attempts due to marital status (Paykel et al., 1974).

Researchers have suggested that participation of women in the work force leads to role conflicts resulting in higher rates of suicide in married women (Stack, 1978; Newman, Whittemore, Newman, 1973). The role configuration theory contends that conflicting demands of roles leads to disorders, particularly for

women. Goode (1960) hypothesized that different social roles have different goals, which can place incompatible demands on the individual, leading to tension and stress and the eventual emergence of mental health problems including suicidal behavior (Gove, 1972a; Gove, 1972b). Men and women are thought to experience different degrees of conflict while occupying the same roles (Gove, 1972a; Gove & Tudor, 1973; Aneshensel, Frerichs, & Clark, 1981; Gore & Mangione, 1983) because they are viewed by themselves, their husband, and society as the "primary homemaker" whether they are employed or not. Gove (1972a, 1979) argues that working wives are viewed as merely supplementing family income, and that working women still must do most of the housework. He suggests this leads to higher rates of suicide in women.

Findings in this area are inconsistent. Several studies have found no appreciable differences in rates of psychiatric disorders when married, employed women were compared to married, and unemployed women (Cleary & Mechanic, 1983; Aneshensel, Frerichs, & Clark, 1981; Radloff, 1975; Radloff, 1980; Gove & Geeken, 1977). Fewer cases of depressive disorders have been found among the employed women compared to unemployed women (Brown and Harris 1978; Newberry, Weissman, & Myers, 1979; Pearlin, 1975; Radloff, 1975). However others have found a relation between affective disorders and employment (Bebbington, Hurry, Tennant, Stuart & Wing, 1981).

Similar to the role configuration theory other theorists have speculated that the employment of women may have negative consequences on society leading to higher rates of suicide in both men and women. Researchers have suggested that women's movement into the workplace increases social disintegration which according to Durkheim's theories (Durkheim, 1951) should lead to an increase in rates of suicide. In Fernquist and Cutright's (1998) analysis of suicide rates across 21 developed countries they argue that women's increased participation in the labor force has increased family disintegration leading to an increase in suicide rates for both men and women. Yang and Lester (1988) suggest that employment of women may lead to higher suicide rates in men because a "working wife is a sign of a man's failure... and female participation in the work force may add to a man's difficulty in finding jobs" (pg. 270). Yang and Lester (1988) found an association between female participation in the work force and female suicide rates, as did Newman et al., (1973), and Davis (1981).

In contrast, Pritchard (1988) concluded that there is a strong association between suicide and unemployment. In Pritchard's (1989) review of suicide rates and unemployment for 23 countries over a 22 year period he found a correlation between unemployment and suicide for both men and women. Mosciki et al., (1988) found a correlation between unemployment and attempted suicide in a large population sample. However, other studies failed to find an association between unemployment and suicide (Lester, 1973; Diggory & Lester, 1976).

Lester (1979) speculates that as women's roles in our society change, leading to an increase in opportunities in education and careers, these changes may be accompanied by a rise in suicide among women. Pamppel (1998) proposed that gender inequity may protect women from suicide because of their greater involvement in family life and kinship. On the other hand, Pamppel (1998) speculated that the unequal benefits of marriage to men and women may have attenuated the differential suicide rate between men and women and thus as women move out into the workplace, rates of suicide among women may even decrease.

Examining these issues Pamppel (1998) found that the initial stages of women entering the labor force were associated with an increase in female suicide rates, while at higher levels, participation was associated with a decrease in female suicide rate.

While multiple social roles could lead to conflict, alternatively involvement in multiple roles also has the potential for having a positive impact on one's life. Some theorists have suggested that if women have higher rates of psychiatric disorders it is because they have fewer social roles available to them compared to men. The role accumulation hypothesis contends that social roles give the individual his or her sense of identity in the community, and gives meaning to behavior (Sieber, 1974; Thoits, 1983). Thus the more identities or social roles possessed by the individual, the greater his or her sense of belonging in the community. This greater sense of integration within the community would then serve as a buffer against psychological distress, particularly the stress associated with alienation, isolation and loneliness. This theory is consistent with Durkheim's theory of suicide (Durkheim, 1951) in which suicide may reflect the individual's lack of integration within the community. Thus the role accumulation hypothesis predicts that the number of roles an individual occupies would be associated with increased well being leading to a decrease in suicidal ideation and behavior.

In support of the role accumulation hypothesis a number of studies have found positive psychological and physical effects for multiple roles. Thoits (1983) found that as the number of roles increased there was a corresponding decrease in "distress" in both men and women. Gore and Mangione (1983) found the combination of employment and marriage to have a positive impact on the psychological health of men and women. Verbrugge (1983) as well as Adelmann (1994a) found multiple roles to have a positive health benefit for both men and women. A number of studies that included only female subjects also found positive effects of multiple roles for women including enhanced self-esteem (Pietromonaco, Manis, & Frohardt-Lane, 1986), better physical health (Haavio-Mannila, 1986; Waldron & Jacobs, 1989), increased psychological well being (Adelmann, 1993; Adelmann, 1994b), less alcohol consumption (Wilsnack & Cheloha, 1987) and longevity (Moem, Dempster-McClain, & Williams, 1989).

THE PRESENT INVESTIGATION

The present study provides a unique opportunity to evaluate the relation between gender, social roles and suicidal ideation and suicidal attempts in a large, adult, general population sample (n=4,745). First, the one year prevalence and the lifetime prevalence of suicidal ideation and suicidal attempts in the population sample is described in relation to gender. Secondly, the relation between gender, social roles (marriage, employment and parenthood) and the rate of suicidal ideation and attempts is examined. How specific roles and interactions among roles may be associated with rates of suicidal ideation and suicide attempts is explored in relation to each of the social role theories. The following hypotheses are examined:

1. Suicide and gender:

a. Rates of suicidal ideation and rates of suicidal attempts are expected to be greater for women than for men.

2. Social role theories, gender and suicide:

a. The role gender-interaction theory (role strain) predicts that married women would have higher rates of suicidal ideation and attempts than unmarriedwomen.

b. The role configuration hypothesis predicts that women who are married and employed would have a higher rate of suicidal ideation than women who are married and unemployed.

C. The role accumulation hypothesis predicts that the number of roles an individual occupies will be inversely related to suicidal ideation and suicidal attempts in both men and women.

Studies have generally shown that the rates of completed suicide increase with age (Mosciki, 1995; Girard, 1993) while suicide attempts are higher among the younger age groups (Mosciki et al., 1988). It is also likely that there is a relation between the specific roles individuals occupy and their age. Therefore some analyses were performedcontrolling forthe effectsofage.

Finally, it is important to point out that the role theories posit a casual relation between the effectsofroles on suicide. However, it is problematic to make causal attributions for any observed relation. Other factors, such as selection, may account for the relationships. It may be that "psychologically healthy" individuals arebetter able than others to both obtain as well as maintain multiple social roles. These limitations must be kept in mind when interpreting the results ofthe study.

Methodology

The methodology for the study was patterned after that of the ECA project (see Reigier et al., 1984 for a detailed description ofthe methodology). The data for this study was obtained as part of a large statewide survey of the Colorado general adult population, the *Colorado Social Health Survey* (CSHS; Ciarlo, Tweed, Shern, Kilpatrick, & Sachs-Ericsson, 1992) which included a probability sample of 4,745 adults.

Subjects

A stratified random sample of Colorado residents were interviewed for the study during 1985 through 1986. Subjects were randomly sampled from the Colorado general population, using the U.S. decennial census data to select geographic subareas. Subjects were sampled by household, with the response rate being 72%. A detailed description ofthe sampling procedure is provided in Ciarlo et al. (1992).

Diagnoses

The Diagnostic Interview Schedule (DIS, Robins, et al., 1981) was specifically developed for use in the ECA program to determine the prevalence rates of psychiatric disorders in a general population sample. The DIS is a highly structured interview designed for use by non-professional interviewers. The DIS obtains diagnoses through a patterned series of fully specified questions. A detailed

description of the development of the DIS is provided by Robins et al. (1985).

Measurement of Suicidal Ideation and Suicide Attempts

The depression section of the DIS includes four items pertinent to suicide. All subjects were asked each of the four suicide related items regardless of their endorsement of other symptoms. These items included the following:

1. Has there ever been a period of two weeks or more when you thought a lot about death-either yours or someone else's or death in general?
2. Has there ever been a period of two weeks or more when you felt you wanted to die?
3. Have you ever felt so low you thought about committing suicide?
4. Have you ever attempted suicide?

After each item for which the subject responded affirmatively the respondent was then asked the recency with which they had the thought or behavior.

Social Roles

Social roles, gender, and age were assessed in a comprehensive demographic section. Social roles, which included marital status, employment and parenthood were also defined as dichotomous variables. Marital status was defined as presently married or presently not married (separated, divorced, widowed, never married). Parenthood was defined as a dichotomous variable based on whether or not the subject served as a parent to a child regardless of the child's residence. Finally, employment was defined as employed presently working for pay or not employed (working 0 hours per week). However, part-time employment was also examined in relation to the social role theories.

Results

Demographics

The sample was comprised of 56.8% females and 43.2% males. The mean age of the sample is 43.8 and the median age 39.0. Most of the subjects were Caucasian (78.9%), followed by Hispanic (12.3%0), African American (6.4%), Native American (1.3%), Asian (O.6%), and Pacific Islander (0.1%). The majority of the sample was presently married, 51% of the females and 57.1% of the males. More men than women were employed for pay outside of the home. Specifically, 73% of the men worked for pay outside of the home compared to 53.7% of the women. Over two-thirds of the sample were parents, 79.1% of the women and 70.0% of the men.

Suicidal Ideation and Attempts

Table 1 describes, separately for men and women, the percentage of respondents that endorsed each of the suicidal items. The recency with which the respondent

experiencedthe suicidal thoughts or attempt is also presented. Lifetime prevalence rates ofthe items are as follows. Almost one-third of the subjects had endorsed experiencing one or more ofthe suicidal items over their lifetime. One-fourth of the sample reported that they had a period oftwo weeks or more in which they thought a lot about death. 8.7% ofthe respondents reported that they had experienced a period of two weeks or more when they wanted to die, 14.3% thought about committing suicide, and 3.9% of the sample indicated that they had attempted suicide. Gender differences were signifcant for each item. Women experienced significantly more suicidal ideation and had attempted suicide more often than men. (All chi-squares signifcant at the .001 level ofsignificance.)

Table 1. Frequency of Suicidal Ideation and Attempts

	Sample	N	lifetime %	< 1 year %
Two weeks or more thought about death				
	all	4745	23.5	10.2
	women	2693	27	11.7
	men	2051	18.9	8.2
Two weeks or more wanted to die				
	all		8.7	3.1
	women		10.9	3.6
	men		5.7	2.3
Thought about commiting suicide				
	all		14.4	3.6
	women		15.9	3.5
	men		12.3	3.7
Attempted Suicide				
	all		3.9	0.3
	women		5.1	0.4
	men		2.2	0.2
Any Suicidal Items				
	all		31.4	11.9
	women		35.4	13.3
	men		26.1	10.1

One year incidence rates of suicidal ideation and attempts were also examined. There was 12.5% ofthe sample that endorsed having experienced one or more ofthe items within the last year. There was 10.2% ofthe sample that reported having a period of two weeks or more in which they thought a lot about death. There was 3.1% of the sample that reported that they experienced a period of two weeks or more when they wanted to die, 3.6% thought about committing suicide,

and 0.3% ofthe sample indicated that they had attempted suicide. Gender differences for one year prevalence of each item were also examined. Only the frst two items, thinking about death and wanting to die, were significantly greater for women than men (p's <.01 and <.05, respectively). The percentageofsubjects who endorsed the last suicidal ideation item, thinking about committing suicide, and the one item assessing an actual suicide attempt was not significantly different for men and women. One year prevalence for each item is described in Table 1.

SuicideScale

An overall suicide ideation and attempt scale (SIAS) was calculated for the suicide items which the respondent had experienced within the last year. There were 4 suicide items. Subjects were given 1 point for each item that they endorsed as having experienced in the last year. The range on the scale was 0 to 4 with a mean of. 17 (SD=.52) and a mode and a median of0. The scale's internal consistency was examined and found to be adequate with a coefficient alpha of .65.

It was found that suicide attempts were accompanied by suicidal ideation. Among the individuals who had attempted suicide within the last year 100% reported having experienced at least one suicidal ideation item in the last year and 56% had endorsed all 3 suicide ideation items.

In the following analyses the relationship between respondent's present social roles and one year prevalence of suicidal ideation and attempts (as demonstrated on the SIAS) was examined for the role gender-interaction theory, role configuration theory, and role accumulation hypothesis. SIAS score in relation to each social role and social role combinations is described in Table 2.

Table 2. Role Status and Suicide Score

ROLE STATUS	N		All Suicide score	Women N	Suicide score	Men N	Suicide score
ALL SUBJECTS	4,745		0.17	2693	0.19	2051	0.14
	%	age					
NO ROLES	4.4	43	0.27	104	0.32	107	0.22
EMPLOYED ONLY	13.6	29	0.18	283	0.2	360	0.16
MARRIED ONLY	1.6	52	0.25	43	0.26	32	0.25
PARENT ONLY	13.7	41	0.24	514	0.23	137	0.28
EMPLOYED, PARENT, NOT MARRIED	14.9	41	0.22	429	0.22	275	0.23

Table 2 (continued)

ROLE STATUS	N	All Suicide score	Women N	Women Suicide score	Men N	Men Suicide score
EMPLOYED, NOT PARENT, MARRIED	**5** 30	0.1	133	..13	116	0.07
UNEMPLOYED, PARENT, MARRIED	18.1 **52**	0.13	586	0.16	275	0.09
EMPLOYED, MARRIED, PARENT	28.5 41	0.13	600	0.16	749	0.1

	%	Suicide Score	Females Suicide score	Males Suicide score
NOT MARRIED		0.22	0.23	0.2
MARRIED	53.4	0.13	0.16	..1
NOT EMPLOYED		0.19	**0.2**	0.17
EMPLOYED	62.1	0.16	0.18	0.14
NOT PARENT		0.18	0.21	0.16
PARENT	75.2	0.17	0.19	0.14

Number of Roles		Suicide Score All	Females N	Females Suicide Score	Males N	Males Suicide Score
0	211	0.27	104	0.33	107	0.22
1	1369	0.21	840	0.22	529	0.19
2	1841	0.16	1148	0.17	666	0.14
3	1350	0.13	600	0.16	749	0.1

Role Gender Interaction Theory (Role Strain)

While the role gender-interaction theory (role strain) predicts that married women would have higher rates of suicidal ideation and attempts than unmarried women the results showed just the opposite. For all subjects, suicidal ideation and attempts were significantly greater for unmarried subjects compared to married subjects (.22 vs. .13, T=5.8, df=4743, p<.001). This differencewas significant for females (.23 vs. .16, T=3.3, dS2691, p<.01) and males (.20 vs. .lo, T=4.95, df=2049 p<.001). Married men did, however, have a lower suicide score than married women (.16 vs. .lo, T=3.3, df=2532 p<.001).

It is ofinterest to note that forthe most part, unmarried subjects regardless of status (divorced, separated, widowed) had similarly high suicide scores. However, higher scores were found among those subjects who were married, living apart (.27). It is not clear what are the circumstances in which these people are

living apart. The rates of suicidal ideation and attempts in relation to each marital category are described in Table 3.

Table 3. Marital Status and Suicide Items: One Year Prevalence

Marital Status	**N=4,745**	**Any Suicidal Ideation or Attempts**	**SIAS Score**
	Percentage	**Percentage**	**Mean**
Married Living Together	53.4	10.2	.13
Married/Apart	1.4	16.4	.27
Widowed	9.9	16.2	.21
Separated	2.9	15.4	.24
Divorced	13.5	13.3	.22
NeverMarried	18.9	15.4	.21

Role Configuration Theory

This hypothesis predicts that women who are married and employed would have a higher rate of suicidal ideation than women who are married and not employed. First, the suicide scores of married women with children who were employed was found to be the same as those who were unemployed (.16). Secondly, the SIAS score ofmarried men who were parents and employed were compared to those who were unemployed (.10 vs. .09). This differencewas not significant. However, it should be noted that the age difference between these two groups, 42 and 62, respectively, suggest the latter group is comprised of retired men and comparisons between the groups may be inappropriate. '

Analyses were also performed examining rates of suicidal ideation and attempts in relation to the number of hours an individual worked for pay outside of the home and whether or not the person was employed part-time or full time. Results ofthese analyses were consistent with those described above. Number of hours worked and employment status (not working for pay, working part-time, working full time) was unrelated to the suicide scores.

The results ofthese analysis failed to support the role configuration theory for either men or women.

Role Accumulation Hypothesis

The role accumulation hypothesis predicts that as the number of roles increase,

suicidal ideation and attempts would decrease. This appeared to be the case. As the number of roles increased from 0 roles to 3 roles, the mean of the suicide scale significantly decreased (.27, .21, .16, .13; F=8.38, df=3,4740, p.<.00). When examined separately, this was true for males (.22, .19, .14, .10; F=4.7, df=3,2047, p.<.01) and females(.32, .22, .17, .16; p.<.01; and F=3.77, df=3,2688, p.<.05).

A stepwise linear regression analysis was performed to examine the relation between the number of social roles an individual occupied and suicidal ideation and attempts. Controlling for age and gender, the number of roles occupied by the subject made a significant contribution to the model (F=17.15, df=3,4731, p.<.0001). Secondly, men and women were analyzed separately. Controlling for age, the number of roles an individual occupied contributed significantly to the overall model for both men (F=8.84, df=2,2047, p.<.001) and for women (F=12.74, df=2,2682, p < .001).

Thus these findings appear to be consistent with the role accumulation hypothesis, suggesting that as the number of roles increase, the overall rate of suicidal ideation and attempts decreased. However, subsequent analyses described below indicate that marriage, for the most part, accounted for the relation between number of roles and suicide.

To investigate the possibility that any one specific role could account in itself for the observed relation between number of roles and suicide, a series of regression analyses were performed. When marriage was entered into the regression model first, number of roles did not make a significant contribution to the model. This was true when all subjects were included, as well as for when men and women were analyzed separately.

Further, regression models were performed controlling for the specific role of parenthood and then for the specific role of employment. In these analyses it was found that the number of roles still contributed significantly to the model even if employment or parenthood were entered into the model first. Thus it appears that the specific role of marriage accounts for the observed relation between the number of roles and suicide score. In this respect, it can not be said that the role accumulation hypothesis was supported.

Discussion

Almost one third of this general population sample had experienced suicidal ideation during their lifetime, 12.5% during the last year. Lifetime prevalence rates for specific thoughts about committing suicide were 14.4% and for suicide attempts were 3.9%. One year prevalence rates for thoughts about committing suicide and for suicide attempts were 3.6% and 0.3%, respectively. These population rates were, for the most part, consistent with rates found in other large general population studies (Weissman, Bruce, Leaf, Florio, Holtzer, 1991; Schwab, Warheit, & Holzer, 1972; Ramsay & Bagley, 1985; Mosciki, OCarroll, Rae, Locke, Roy, & Regier, 1988; Paykel, Myers. Lindenthal. & Tanner, 1974; Mosciki, 1995).

Women were found to have a higher lifetime prevalence rate of suicidal ideation and suicidal attempts than men. However, gender differences were less pronounced for suicidal items experienced within the last year. Consistent with the findings of others (Andrews & Lewinsohn, 1992; Petronis, Samuels, Mosciki, & Anthony, 1990), there was no observed gender difference in the prevalence of suicide

attempts experienced in the last year. As Canetto and Lester (1998) point out, while men and women do differ in suicidal behavior it may not be as extreme or consistent as is believed.

It has been suggested that suicide behavior is on a continuum from thought to action. Suicidal ideation may progress to self-injurious behavior, then to suicide attempts and finally to suicide completion (Andrews & Lewinsohn, 1992; Garland & Zigler, 1993; Mosciki et al., 1988; Paykel, Myers, Lindenthal, & Tanner, 1974). The data from this study found that suicide attempts were accompanied by suicidal ideation. All respondents that had attempted suicide in the last year had also experienced suicidal ideation within the last year. These results are consistent with clinical practice in which suicidal ideation is considered an important risk factor for suicide.

Researchers have generally found that the rates of completed suicide increase with age. However, consistent with the findings of others (Mosciki, et al., 1988; Schwab et al., 1972), in this sample suicidal ideation and suicidal attempts were found to decrease with age. While younger individuals think more about suicide than older individuals, suicide ideation and suicide attempts may be more likely to lead to a lethal suicidal act in older individuals. Thus among the elderly, suicidal ideation may be an even stronger risk factor for suicide than among younger individuals. In their review of the literature Mensh and Hecht (1982) report that with age there is a decrease in the ratio of attempts to completed suicides. However, age related research is vulnerable to several methodological shortcomings. The elderly may experience memory impairment leading to the under reporting of symptoms. Moreover, in this study the observed decline in suicidal ideation and attempts with age may be an artifact of the study's cross-sectional design. (For a discussion of these issues see Leaf Weissman, Myers, Holzer, & Tischler, 1986; and see Blazer, Crowell, George, & Landerman, 1986).

Social Role Theory and Suicide

Theorists have argued that the social roles that individuals occupy impact suicidal behavior. Generally these researchers have argued that women have more difficulty than men in occupying specific roles (role gender interaction theory), have more conflict than men integrating the responsibilities of multiple goals (role configuration theory) or have fewer social roles available to them (role accumulation). In the present study these three theories were examined in relation to suicide ideation and attempts.

The role gender interaction theory (role strain) contends that women have greater distress because they have less positive experiences within any given role than men, particularly for the role of marriage. In the present study married subjects were found to have lower rates of suicidal ideation and attempts than unmarried subjects. This was true for both men and women. However, rates of suicidal ideation and suicidal attempts were found to be lower for married men compared to married women. Does this mean, as some researchers have suggested, that marriage is bad for women? Why are rates of suicidal ideation less for married subjects in general but lower for married men compared to married women?

Marriage may provide emotional, social and economic support to both men and women, serving as a buffer against psychological distress. Other researchers

have concluded that both men and women are protected against suicidal ideation and attempts by marriage but to different degrees. Gerstel, Riessman, and Rosenfield (1985) suggests that marriage protects men and women against psychological distress for different reasons. Women gain most from improved economic status while men gain in social support. Thus if suicidal ideation and suicidal attempts are related to social integration, marital status of men will be more enhanced by marriage than will women, A study of suicide rates in Canada spanning a 30 year period found that marriage was a protective factor for both men and women, however the transition from being single to being married entailed a greater reduction in suicide risk for men (Trovato, 1991). The author concluded that his findings are consistent with Durkheim's theory of anomie, suicide, and marriage (Durkheim, 1951) in that remarriage for men brings them back into the kinship system, whereas women are generally integrated into kinship affiliation before, during and after marriage.

The data from this study found marriage to be associated with lower rates of suicidal ideation and attempts in both men and women. However the association found in this study is correlational and inferences regarding causation must be made cautiously. It may be that "healthier" individuals are more able to maintain a relationship than "unhealthier" individuals and thus there are a higher proportion of individuals with suicidal ideation and attempts among the unmarried population.

As early as the nineteenth century, observed increases in suicide among women were attributed to their adopting social roles that 'nature had assigned to men', especially those related to vocational roles (Kushner, 1989). The role configuration theory contends that conflicting demands of roles, particularly that of marriage and employment, lead to higher rates of suicidal ideation and attempts in women. Is there evidence that employment is bad for women? Data from this study did not support this hypothesis. First, there were no differences in the suicide scores of married women with children who were employed compared to married women with children who were unemployed. Secondly, among married women who were not parents there was no difference in the suicide scores of those who were employed compared to those who were unemployed. Despite the numerous theories as to why the employment of women is bad for women, bad for men, and bad for society, the present study found no association between employment and rates of suicidal ideation and attempts in either women or in men.

Finally the role accumulation hypothesis suggests that roles add meaning to one's life and facilitates integration into the community making the individual less vulnerable to suicide. If women have higher rates of suicidal ideation or behaviors it is because there are less roles available for women than for men. In the present study multiple roles were generally found to be associated with lower rates of suicidal ideation and attempts for both men and women. Results showed that as the number of roles increased, the overall rate of suicide ideation and attempts decreased. However, this decrease was found to be due, for the most part, to the marital status of the subjects. Thus the data from this study were not consistent with the role accumulation hypothesis.

The results of this study failed to support any of the three social role theories examined. To a great extent these theories were first developed as a way to explain why women had higher rates of mental illness than men. But is this even true? Previous researchers have concluded that women have higher rates of mental illness than men (Gove, 1972a; Gove & Tudor, 1973; Gove, 1979; Fox, 1980).

These findings are commonly accepted even though they have been highly criticized for their methodological shortcomings (see Dohrenwend & Dohrenwend, 1974; Busfield, 1982; Al-Issa, 1982). Specifically, these studies were predominantly based on clinical service utilization samples which are seldom representative of the general population. The use brief symptom scales and the omission of substance related disorders in community surveys of mental illness have biased the estimates of psychiatric disorders showing higher rates in women as a consequence. In epidemiological samples in which a comprehensive assessment of psychiatric disorders has been performed overall rates of disorders of men and women have been found to be similar even though specific disorders have differed by gender. The Epidemiological Catchment Area Studies (ECA; Reigier, Myers, Kramer, Robins, Blazer, Hough, Eaton, & Locke, 1984) found that the lifetime prevalence rates of psychiatric disorders to be even greater for men than for women, moreover they found no gender differences for active disorders (Robins, Locke & Reiger, 1991). Similarly, in terms of suicide, Kushner (1989) suggests there is really more homogeneity in male and female behavior when completed suicide and attempted suicide are combined.

The differences in the way men and women express distress may have more to do with gender socialization than the social roles they occupy as adults. Researchers have theorized that girls are encouraged to internalize their distress while boys are encouraged to act out their distress. Internalization leads to disorders associated with depression and suicidal ideation while externalization leads to anti-social behavior, substance use and suicide completions (Canetto, 1997a, Canetto, 1991). In her presidential address to the American Association of Suicidology, Sanborn (1990) proposed that we have socialized our children according to gender making boys more vulnerable to suicide completion and girls to suicidal rumination. She suggested that women have been cut off from the outer world and deprived of the working self, while men have been cut off from their inner world and are deprived of the feeling self. Canetto (1997a) suggests that in our gender socialization of adolescence, we are telling men that it is masculine to kill themselves and not masculine if they do not have a "successful" suicide. At the same time we are conveying to women that suicidal ideation and acts is a feminine and an appropriate manner to deal with stress. Canetto (1997) points out that adolescents and young adults are particularly vulnerable to these messages as they are still in the process of forming their gender identity.

Early socialization of gender-appropriate behavior may affect the manner in which men and women differently experience, interpret, and respond to stress. Nolen-Hoeksema (1987) suggests that gender differences in rates of depression are due, in part, to how men and women are socialized to respond to distress. The learned helplessness hypothesis proposes that sociological inequities faced by women at an early age lead young girls to believe the stereotype of femininity is expected and valued. Identifying with these sociologically endorsed feminine values leads young women to develop a specific cognitive set and limited behavioral response set when faced with later challenges. This stereotype of femininity and specific coping style lead to an increased vulnerability to suicidal ideation and attempts in young women. Gender Merences in suicide attempts are particularly pronounced in adolescents. Andrews and Lewinsohn (1992) found the lifetime prevalence rate of attempted suicide among high school students to be far greater for females than for males (10.1 vs. 3.8).

The manner in which therapists evaluate and intervene with suicidal clients may also be gender biased, Beliefs that suicidal ideation and suicidal attempts axe feminine, manipulative, and undeserving of resources need to be challenged (Canetto, 1995). Assumptions by health care workers that women attempt suicide for relationship problems and men attempt suicide for career related problems may lead therapists to fail to fully evaluate an individual's suicide potential. Canetto (1997b) suggests that our gender bias towards suicide affects the type of interventions we suggest for women and for men. Women are told to make personal changes while men are encouraged to pursue social change and improve men's access to resources (Canetto, 1997b). She suggests that introspective psychotherapy, often prescribed for suicidal women, may in fact enhance suicidal rumination and interfere with instrumental behavior and problem solving. On the other hand she suggests that as men's suicidal behavior is often viewed as a response to external circumstances, men are encouraged to take action rather than be introspective. Reliance solely on either introspection or on problem solving to the exclusion of the other may be non-adaptive. Rather an effective combination of both approaches may be necessary for effecting change.

In their extensive review of the literature of controlled studies that target suicidal clients, Rudd and Joiner (in press) found that interventions that integrated a core problem solving component had the most consistent positive results including a reduction of suicidal ideation, depression and loneliness. In their comprehensive protocol for treating suicidal clients Rudd and Joiner stress the importance of systematically indentifying the client's core cognitive distortions regarding suicide, challenging the distortions in these assumptions, restructuring the belief to a more effective alternative, and executing the new belief as if it were true. The authors suggest that acting on this belief provides an emotional experience to counter their negative core beliefs which will form the basis for new experiences. This type of intervention may be successful for both male and female clients by linking changes in internal processes to instrumental changes in the individual's environment.

CONCLUSION

Women were found to have higher lifetime prevalence rates for suicidal ideation and suicidal attempts compared to men. However, gender differences were less pronounced for one year prevalence rates. No relation was found between the three social role theories examined and suicidal ideation and suicidal attempts. Only one social role, that of marriage, was found to be associated with decreased suicidal ideation and attempts in the general population sample.

Differences in the manner in which men and women express suicidal ideation and behavior may have important implications in our understanding of the etiology and treatment of suicide. The gender socialization of children may strongly influence the development of suicidal ideation and behaviors. Women axe encouraged to internalize distress leading to rumination and suicidal ideation. Suicide attempts are characterized as feminine and are portrayed as an appropriate manner for women to communicate their distress. In contrast, men are encouraged to externalize their distress. Suicidal ideation and suicide attempts are seen as unmasculine while completed suicide is seen as decisive. Men are discouraged from examining and indentifying internal processes related to suicide feelings and thus

may be inhibited from seeking help for suicide.

How we communicate gender beliefs about suicide in our culture, especially to children, needs to be better understood and hopefully changed. Interventions must seek to uncover gender related suicidal beliefs in clients. Moreover, healthcare workers must be encouraged to examine their own beliefs regarding gender and suicide and understand how such beliefs may impact the treatment of suicidal clients.

Notes

1. Rates of suicidal scores for women and men whose only role was marriage **(.26** and **.25,** respectively) were relatively high in comparison to women and men who were married, employed, and without children **(.13** and **.07,** respectively). However, the average age difference between these two groups **(52** and **30) is** so discrepant that any such comparison is probably inappropriate.

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SUICIDAL BEHAVIOR IN AFRICAN AMERICAN WOMEN WITH A HISTORY OF CHILDHOOD MALTREATMENT

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This chapter explores the link between women's experiences of maltreatment in childhood and their subsequent vulnerability for suicidal behavior in adulthood, with particular focus on this association for African American women. First, suicidal behavior in the form of non-lethal suicide attempts will be discussed, as suicide attempts are the element of the suicidal behavior continuum that are the focus of our research. Next, the prevalence (current and historical), as well as risk and protective

factors of suicidal behavior in African Americans will be reviewed, with specific attention paid to women. We will then present the epidemiology and risk and protective factors for childhood maltreatment, with an emphasis on this phenomenon within the African American community. Finally, our attention will turn to a review and discussion of empirical data regarding the link between childhood maltreatment and suicidal behavior in women. Particular emphasis will be paid to the link between childhood maltreatment and suicidal behavior among African American women using data from our own systematic line of research in this area

SUICIDAL BEHAVIOR

Suicide Attempts

Whereas the primary source of information regarding rates of suicide completions (suicide mortality) in the United States is death certificate data provided by each state to the National Center for Health Statistics, there exists no single primary data source on suicide attempts (suicide morbidity) (Jacobs, 1999). In addition, systematic data are difficult to collect on rates of suicide attempts due to the lack of commonly accepted, standard definitions that can be used reliably and consistently. Further, because standard definitions are lacking, collection of reliable national data on suicide morbidity has been challenging. Recently, there has been a growing consensus to support the definition of suicide attempts as potentially self-injurious behaviors with a nonfatal outcome for which there is explicit or implicit evidence that the person intended to kill him or her self (O'Carroll, Berman, Maris, & Moscicki, 1996).

Despite the paucity of national data on suicide attempt rates, epidemiological surveys have yielded population-based lifetime estimates of suicide attempt prevalence ranging from 1.1 - 4.3 per 100 persons, and twelve-month estimates of suicide attempt prevalence ranging from 0.3 - 0.8 per 100 persons (Moscicki et al., 1988; Mosckicki, 1989; Ramsay & Bagley, 1985). From the limited data gleaned from population-based, prospective studies of suicide attempts, incidence rates of attempted suicide range from 0.2 - 2.2 per 100 persons (Petronis, Samuels, Moscicki, & Anthony, 1990). Lifetime prevalence data have revealed that women make significantly more suicide attempts than do their male counterparts (Moscicki et al., 1988). However, these gender differences have not been found in data with regard to incidence rates of attempts (Beautrais et al., 1996; Petronis et al., 1990).

Retrospective studies reveal that 18-50% of people who kill themselves had made a previous attempt, suggesting that suicide attempts are a significant risk factor for suicide completion (Maris, Burman, Maltsberger, & Yufit, 1992). Consistent with this. findings from long-term, prospective studies of suicide attempters suggest that 10-15% of these individuals ultimately choose to end their own lives (Cullberg, Wasserman, & Stefansson, 1988; Maris et al., 1992). Cullberg and colleagues (Cullberg et al., 1988) report a mean of 3.5 attempts prior to a suicide completion.

Suicidal Behavior Among African Americans

Epidemiology

Historically, rates of completed suicides have been lower in the African American community than in other ethnic minority and majority groups (Earls, Escobar, & Manson, 1990; Griffith & Bell, 1989). Partly because suicide has not been one of the top ten leading cause of death among African Americans of both sexes and all ages combined, there are no available statistics on overall suicide completion rates within the African American community (Anderson, Kochanek, & Murphy, 1997). However, in 1995, suicide was the third leading cause of death in African Americans ages 15-24 (10.1 per 100,000) and the seventh leading cause of death among African Americans ages 25-44 (10.5 per 100,000) (Anderson et al., 1997). In general, suicide rates in the African American community peak between the ages of 25 and 34, whereas suicide rates among European Americans steadily increase with age (National Center for Health Statistics, 1994).

Sex Differences

Consistent with findings noted in other cultural groups, significantly more African American females than males attempt suicide and African American males are four to six times more likely than females to complete suicide (Chance, Kaslow, Summerville, & Wood, 1998; Gibbs, 1997; Gibbs & Hines, 1989; Griffith & Bell, 1989). Studies comparing African American male and female suicide attempters reveal that females are younger, more likely to live with others, unemployed, attempt suicide at home, and have a history of prior attempts (Baker, 1984; Lester & Beck, 1975). In addition, femalesevidence fewer psychiatric disturbances than their male counterparts, yet are more likely to meet criteria for a mood disorder diagnosis (Baker, 1984; Lester & Beck, 1975). Further, male attempters are more likely to have a prior psychiatric history and to evidence aggressive and psychotic symptoms (Baker, 1984; Bettes & Walker, 1986). Finally, females' attempts more often are precipitated by conflicts with friends or family members (Schreiber & Johnson, 1986).

Racial Differences

Although suicide completion rates are higher among European Americans than African Americans, the reverse trend has been found with regard to suicide attempts in some studies (Nisbet, 1996). For example, a study conducted with a sample of over 200,000 emergency room patients at Strong Memorial Hospital revealed that African American males had twice the rate of suicide attempts as their European American counterparts and African American females had three times the rate of suicide attempts than their European American counterparts (Pedersen, Awad, & Kindler, 1973) . However, a more recent study conducted with college students revealed comparable rates of suicide attempts between African American and European American individuals (Molock, Kimbrough, Lacy,

McClure, & Williams, 1994).

Compared with their European American counterparts, African American suicide attempters are more likely to be Protestant, live alone or in a "nonofficial" living situation (i.e., cohabitating or separated), report less formal education, have a history significant for early parental separation, endorse more frequent alcohol use, and report fewer previous suicide attempts (Lester & Beck, 1975). In addition, increased income has been shown to increase the risk for attempted suicide in African American females, whereas it reduces the likelihood for European American females (Nisbet, 1996). Further, African American women who attempt suicide are significantly more likely than European American women to have a history significant for partner abuse (Stark & Flitcraft, 1996).

Risk and Protective Factors

The available research suggests some risk and protective factors for suicidal behavior in the African American community. Risk factors include male gender, age 25-34, psychiatric disorders (particularly depression and substance abuse), frequent mobility, family dysfunction and violence, interpersonal discord/marital conflict, delinquency, homosexuality, and AIDS (Gibbs, 1997; Juon & Ensminger, 1997). Protective factors include strong social support, residence in the Southern region of the U.S., older age, and church attendance/affiliation (Gibbs, 1997).

Suicidal Behavior in African American Women

Epidemiology

Historically, African American women have had the lowest suicide completion rates of all racial and gender groups in the United States (Chance et al., 1998; Gibbs, 1997; Nisbet, 1996). Examination of official African American suicide rates from 1980 to 1992 revealed increasing rates for African American males (from 11.1 to 12.3 per 100,000) and decreasing rates for African American females (2.4 to 2.0 per 100,000) (Centers for Disease Control and Prevention, 1995; Gibbs, 1997). Furthermore, during this period, African American female suicide rates showed a slight downward trend in all age groups except those in the 65 to 74 year old age group. Recent national data indicate a suicide completion rate for African American women 4.5 times lower than that for African American males (National Center for Health Statistics, 1997). Suicide is the third leading cause of death in African American males ages 15-24 (18 per 100,000), but only the sixth leading cause of death among African American females in this same age group (2.2 per 100,000) (Anderson et al., 1997). Suicide is the sixth leading cause of death among African American males ages 25-44 (18.6 per 100,000) but is not in the top ten leading causes of death for women in this age group (Anderson et al., 1997). Similar to their non-African American counterparts, these differences largely are attributable to the lethality of the methods employed (Centers for Disease Control and Prevention, 1995; Molock et al., 1994).

Despite these consistent data, concluding that African American women are protected from completing suicide is problematic due to the methodological

problems associated with official suicide statistics. For example, examinations of official suicide statistics have revealed that the highest rates of misclassification of cause of death are for women and African Americans (Phillips & Ruth, 1993). This suggests that actual suicide completion rates for African American women are probably higher than previously thought. The tendency to under-report completed suicides may be particularly characteristic of those African Americans raised in religious families in which suicide is considered unacceptable (Chance et al., 1998; Early & Akers, 1993; Gibbs, 1988; Gibbs & Hines, 1989). Further, under-reporting of suicides within the African American community may be due, in part, to the heightened stigma associated with suicidal behavior in this population.

Risk and Protective Factors

Recently, efforts have been made to ascertain risk and protective factors for suicidal behavior among African American women. In a prospective study of the childhood, adolescent, and adult predictors of suicidal behaviors, residential mobility, low family involvement, high alcohol use, and assault behavior measured in adolescence were related to later suicidal ideation; whereas, adolescent depression, hard liquor use, and assault behavior were related to later suicide attempts (Gibbs, 1997; Juon & Ensminger, 1997). Research conducted by Kaslow and colleagues found numerous risk factors for suicidal behavior among African American women. Specifically, compared to nonattempters, female suicide attempters were 6.5 time more likely to report psychological distress, 3.8 times more likely to report post traumatic stress disorder (PTSD) symptoms, 7.7 times more likely to endorse feelings of hopelessness, 4.2 times more likely to acknowledge significant drug abuse, 4.0 times more likely to endorse relationship discord, 2.5 times more likely to report physical intimate partner violence, 2.8 times more likely to report nonphysical partner violence, 2.6 times more likely to endorse low levels of social support, 3.6 times more likely to indicate maladaptive coping skills, and 2.4 times more likely to manifest poor interpersonal conflict resolution skills (Kaslow et al., 1998a) . A multivariate logistic regression model identified four variables that were independently associated with an increased risk for suicide attempts: psychological distress, hopelessness, drug abuse, and relationship discord. This model predicted suicide attempt status correctly 77% of the time. Further, for those African American women in this sample with a history of alcohol problems, the following variables were found to be risk factors for suicide attempts: global psychological distress, drug abuse, interpersonal loss, hopelessness, low social support, and poorly developed skills for dealing with interpersonal conflict (Kingree, Thompson, & Kaslow, in press).

Kaslow and colleagues (Kaslow et al., 1998b) also found that among African American women, the link between intimate partner violence and suicidal behavior was mediated by psychological distress, hopelessness, and drug abuse, and moderated by social support. Consistent with the finding that social support moderates the intimate partner violence-suicidal behavior link, Nisbet (Nisbet, 1996) applied LISREL modeling to the data from the Epidemiologc Catchment Area Study to examine protective factors for suicidal behavior among African American women and found that seeking and finding emotional and

psychological support in friends and family members helps to safeguard these women against suicidal behavior.

While the research on risk and protective factors for suicidality in African American women has begun only recently, one risk factor for suicidality found for samples of both African American and Caucasian women has been history of childhood maltreatment (Kaslow et al., 1998b; Moeller, Bachmann, & Moeller, 1993). Thus, we now turn our attention to a discussion of childhood maltreatment in general, as well as specifically within the African American community. This will set the stage for our review of the literature on the link between childhood maltreatment and suicidal behavior.

CHILDHOOD MALTREATMENT

Definition and Epidemiology

The National Center for Child Abuse and Neglect defines childhood maltreatment as the physical or mental injury, sexual abuse, negligent treatment, or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare, under circumstances that indicate that the child's health or welfare is harmed or threatened (Sedlak, 1995). Childhood maltreatment can be divided into two broad categories: abuse and neglect (Oates, 1996). The abuse category can be further subdivided to include three forms of abuse: physical, sexual, and emotional. The neglect category can be further subdivided to include two types of neglect: physical and emotional. Typically, maltreated chldren experience two or more forms of abuse or neglect; only 5% of cases involve only one type of maltreatment (Ney, Fung, & Wickett, 1994).

Epidemiological data on childhood maltreatment from the most recent National Incidence Study (NIS-3), a congressionally mandated, periodic attempt on the part of the National Center on Child Abuse and Neglect (NCCAN to gather incidence and prevalence data on childhood maltreatment, reveal that the estimated incidence rates for all forms of childhood maltreatment (abuse and neglect combined) are 23 per 1000 children (Sedlak, 1995). Other data suggest that the reported incidence of all forms of childhood maltreatment in the United States was close to 3 million in 1993 (Daro & McCurdy, 1993). Of those reported cases, over 1 million were substantiated and over 1400 resulted in death (Daro & McCurdy, 1993). When particular forms of abuse and neglect are considered, data from the NIS-3 study reveal that substantiated cases per 1000 are 5.7 for physical abuse, 3.2 for sexual abuse, 3.1 for emotional abuse, 5.1 for physical neglect, and 3.2 for emotional neglect (Sedlak, 1995). Due to the fact that abuse and neglect typically occur within the privacy of the child's home and that most abusers provide false explanations of injuries, the aforementioned rates of reported childhood maltreatment are likely to be underestimates. However, despite these underestimates of childhood maltreatment, the national statistics do indicate that childhood maltreatment is a serious public health problem.

Research generally has shown that childhood maltreatment has both short and long-term consequences on mental health (Beitchman et al., 1992; Boudewyn & Liem, 1995; Briere & Zaidi, 1989; Fox & Gilbert, 1994; Gauthier, Stollak, Nesse, & Aronoff, 1996; Martin & Elmer, 1992; McCauley et al., 1997; Mullen,

Romans-Clarkston, Walton, & Herbison, 1988; Perez & Widom, 1994; Polusny & Follette, 1995; Rowan & Foy, 1993; Saunders, Billeponteoaux, Lipovsky, Kilpatrick, & Veronen, 1992; Silverman, Reinherz, & Giaconia, 1996; Wyatt & Powell, 1988; Zlotnick et al., 1996). Commonly reported psychological symptoms in survivors of childhood maltreatment include: depression, PTSD symptoms, anxiety, somatization, low self-esteem, dissociative disorders, substance abuse/dependence, and borderline personality disorder. In addition, individuals abused and/or neglected as children are more likely to evidence a broad array of psychosocial difficulties, including academic and occupational performance difficulties and problems with interpersonal and sexual relations. Further, individuals maltreated as children often manifest a variety of physical problems and somatic complaints. Finally, although the data are quite controversial, there is evidence to suggest that individuals of various ethnic backgrounds maltreated as children are at increased risk for being involved in violent relationships in adulthood, as victims/survivors (a phenomenon referred to as revictimization) and/or as perpetrators (Appel & Holden, 1998; Kaufman & Zigler, 1987; Mayall & Gold, 1995; Mesman & Long, 1996; Urquiza & Goodlin-Jones, 1994; Wyatt, Guthrie, & Notgrass, 1992).

Childhood Maltreatment in the African American Community

There is a dearth of literature on the epidemiology and effects of childhood maltreatment among African Americans (Hampton, 1991a). Given the paucity of data, there is a general agreement that more systematic data are needed to determine incidence and prevalence rates of childhood maltreatment within different ethnic, racial, and cultural groups (Piasecki et al., 1989).

The limited available data gleaned from the national tabulation of official child abuse and neglect reports suggest there is an over representation of ethnic minority (including African American), low income, less educated families among substantiated cases of childhood maltreatment within the child protection system and in foster care (American Association for Protecting Children, 1987; American Humane Association, 1979; Gil, 1970; Levine, Doueck, Freeman, & Compaan, 1996). Conclusions based on examinations and analyses of official statistics must be considered with caution, because these data are subject to a labeling bias (Gelles, 1975) and differences in the incidence and prevalence of childhood maltreatment may be due more to social class distinctions than to cultural or ethnic factors (Garbarino & Ebata, 1983). In a related vein, lower income and minority children who present with injuries in medical settings are more likely to be labeled abused than are middle and upper income children (Hampton, 1991a). It is important to note that not all national surveys of recognition and reporting of childhood maltreatment reveal an overrepresentation of Mean Americans (Ehrgdorf, 1980; National Center for Child Abuse and Neglect, 1988).

Survey data have provided mixed support for the contention derived from official childhood maltreatment report data that African American parents are more violent and abusive than their Caucasian counterparts. On the one hand, data from the First National Family Violence Survey conducted in 1975 which included a nationally representative sample of 2,146 households, including 147 African American households, found virtually no difference between African Americans and

Caucasians in the rates of severe violence toward children (15% versus 14%) (Cazenave& Straus, 1979; Straus, Gelles, & Steinmetz, 1980). When income and husband's occupation were controlled, African Americans were less likely to use abusive violence toward their children. Cazenave and Strauss (Cazenave & Straus, 1979) suggested that the aid and support (e.g., child care) that African American families received from extended kinship networks and other members of their community may serve to Educe the risk of intrafamilial violence toward African American children. On the other hand, the Second National Family Violence Survey conducted in 1985, which involved a larger sample (6,002 households) and an oversampling of African American families (Gelles & Strauss, 1988) revealed that African American children were more likely to experience childhood maltreatment, including severe and very severe violence, than were Caucasian youth (Hampton, Gelles, & Harrop, 1989). Further, the rate of abusive violence toward African American children in two caretaker households increased between 1975-1985 (Hampton et al., 1989). Data from this survey indicated that 64% of the African American respondents reported that they used some form of violence at least once toward the referent child during the prior twelve months and 76% endorsed using some form of violence at least once during the course of the child's lifetime (Hampton, 1991a). Projecting the rate of very severe violence toward African American children from this survey (40 per 1,000), an estimated 379,000 AfricanAmerican youth were severely assaulted in 1985 and an estimated 480,000 African American youth had been severely assaulted at some point during their childhood (Hampton, 1991a). Elevated rates of child abuse were most often observed in families with younger children, in poor families, in families who have lived in their community for less than two years, and in single parent households (Hampton, 1991a).

Wyatt (Wyatt, 1990) compared African American and Caucasian women's abusive sexual experiences throughout their lifetime, including during childhood. Results revealed few ethnic differences with regard to the short-term effects of abusive sexual experiences. This finding is comparable to that reported by Urquiza and Goodlin-Jones (Urquiza & Goodlin-Jones, 1994). In addition, consistent with the data from nonminority samples, the limited available data with African Americans generally support the hypothesis that maltreatment during childhood has adverse consequences on psychological functioning in adulthood (Becker et al., 1995; Hampton, 1991b; Mtezuka, 1996; Urquiza & Goodlin-Jones, 1994; Wyatt, 1985). Urquiza and Goodlin-Jones (Urquiza & Goodlin-Jones, 1994) found that African American women who had been sexually abused as children were more likely to be raped as adults than Caucasian women who had been sexually abused as children. Further, Wyatt (Wyatt, 1985) found that African American, but not Caucasian, women who were sexually abused as children indicated that they avoided men who resembled the offender.

CHILDHOOD MALTREATMENT AND SUICIDAL BEHAVIOR

The association between different types of childhood maltreatment and suicidal behaviors has been well documented across a variety of populations including psychiatric inpatients, psychiatric outpatients, college populations, community samples, and individuals from different nationalities (Mina & Gallop, 1998). For

organizational purposes, these studies will be divided separately by abuse and neglect.

Child Abuse and Suicidal Behavior in Adulthood

Sexual Abuse

Several investigations have focused specifically on the effects of sexual abuse during childhood and later suicidal behavior among women. Overall, empirical examinations have revealed rates of suicidal behaviors in outpatient adult survivors of childhood sexual abuse (33%-55%) that are significantly higher than rates of previous attempts in their nonsexually abused counterparts (Bagley & Ramsay, 1986; Briere & Runtz, 1986, 1988b; Herman & Hirschman, 1981). Depressed female outpatients and inpatients with a history of childhood sexual abuse are more likely to have made a suicide attempt during their current depressive episode and to have a history of prior attempts than those women who did not report any history of childhood sexual abuse (Gladstone, Parker, Wilhelm, Mitchell, & Austin, 1999). In a random community sample of women who reported sexual abuse as children, there was a clear association between sexual abuse in childhood and deliberate self-harm (Romans, Martin, Anderson, Herbison, & Mullen, 1995). Similarly, in a sample of female college students, 16% of those who reported childhood sexual abuse experiences (as compared to the 6% who reported no such encounters) reported at least one prior suicide attempt (Sedney & Brooks, 1984). In a related vein, female and male college students sexually abused as youth reported higher levels of suicidal ideation than their peers without sexual abuse histories (Peters & Range, 1995). College women who reported a history significant for childhood sexual abuse were more likely than those who reported a childhood history of physical abuse and punishment or no physical abuse or punishment to endorse suicidal ideation (Bryant & Range, 1995). In addition, among obstetrics patients in a hospital-based urban prenatal clinic, women with a history of sexual abuse were significantly more likely to report a prior suicide attempt plus current suicidal ideation than were their nonabused counterparts (Farber, Herbert, & Reviere, 1996). Finally, sexually abused women awaiting treatment at a university-based family practice clinic were 4.1 times more likely to report past suicide attempts as compared to nonsexually abused women (Gould et al., 1994).

A number of factors related to the nature of the sexual abuse experience appear to impact subsequent risk for suicidal behavior. Some research has revealed that a greater number of suicide attempts are undertaken by individuals who have experienced sexual abuse with intercourse as opposed to those who reported sexual abuse experiences without penetration (Mullen, Martin, Anderson, Romans, & Herbison, 1993). Similarly, individuals who experienced severe and forceful sexual abuse subsequently made more suicidal attempts (Stepakoff, 1998).

Physical Abuse

In general, the effect of physical abuse on later psychological functioning has received less attention than the consequences of childhood sexual abuse. One of the few studies that focused specifically on the long term effects of physical abuse in a community sample of women found that women who reported subjective experiences of physical abuse and who met criteria for objective physical abuse were significantly more likely than nonabused women to report previous suicidal behavior (Carlin et al., 1994). In addition, women who met objective criteria for physical abuse, but who denied subjective experiences of physical abuse, were more likely to report a history of suicidal behavior than their nonphysically abused counterparts (Carlin et al., 1994). In another study of women seeking services in a university-based family practice clinic, self-report histories revealed that women who reported physical abuse during childhood were 1.2 times more likely to report past suicide attempts as compared to nonphysically abused women (Gould et al., 1994).

Sexual and Physical Abuse Combined

The majority of investigators have examined the long term effects of sexual and physical abuse samples combined. Psychiatric inpatients with reported histories of childhood physical andor sexual abuse have been shown by several researchers to have higher rates of suicidal ideation, gestures, and attempts as compared to nonabused patients (Brown & Anderson, 1991; Bryer, Nelson, Miller, & Kroll, 1987). In research examining suicidal behavior in psychiatric patients with a diagnosis of either personality disorder or bipolar disorder, histones of childhood physical and sexual abuse were found to be significantly predictors of suicide attempts (van der Kolk, Perry, & Herman, 1991).

Several researchers have demonstrated that the associations between childhood sexual and physical abuse and suicidal behavior hold true in community samples. In a sample of women who presented to a primary care community clinic, compared to their nonabused counterparts, women with abuse histories were more likely to have made a suicide attempt (McCauley et al., 1997). Additionally, in a longitudinal community investigation of young adults interviewed at age 15 and then again at age 21, females with an abuse history were six times more likely to have made a suicide attempt when compared to their nonabused peers (Silverman et al., 1996). More specifically, in this sample, one in four physically abused females compared to one in 25 nonphysically abused females reported making at least one suicide attempt by age 21, and one in four sexually abused females compared to one in 42 nonsexually abused females reported prior suicidal behavior (Silverman et al., 1996). Finally, there are data that indicate that individuals with a history of sexual and/or physical abuse are more likely to make multiple suicide attempts (Angst, Degonda, & Ernst, 1992).

Emotional Abuse

The data on the links between emotional abuse during childhood and later suicidal behavior are sparse. Gould and colleagues (Gould et al., 1994) in a study noted

earlier, examined the associations between suicide attempts and self-reported childhood experiences of abuse (emotional, sexual, physical) in a sample of predominantly Caucasian females and males awaiting treatment in a university based family medicine practice. The findings revealed that emotional abuse was the form of abuse second most highly associated with suicide attempts. Specifically, patients who reported a history of emotional abuse were 3.7 times more likely to have made a past suicide attempt(s) that their nonabused peers, whereas the increased odds for the patients with histories of sexual abuse and physical abuse were 4.1 and 1.2, respectively.

Child Neglect and Suicidal Behavior in Adulthood

Due to the difficulty of defining the construct of neglect, there has been an apparent hesitance to investigate this phenomenon empirically. According to a recent review article (Trickett & McBride-Chang, 1995), no investigations have shown an association between neglect and suicidality. It is of note, however, that a four year study examining the childhood origins of self-destructive behaviors in bipolar and personality disordered psychiatric patients revealed that childhood histories of emotional and physical neglect were significant predictors of self-mutilation, but not of suicide attempts (van der Kolk et al., 1991).

Singular versus Multiple Forms of Childhood Maltreatment

Investigators recently have begun studying the association between single and multiple forms of abuse and negative outcomes in adulthood. For example, Schaaf and McCanne (Schaaf & McCanne, 1998) found that college women who had experienced both physical and sexual abuse were more likely to be physically or sexually victimized as adults than those who had expeirenced either form of abuse alone or no abuse. In a sample of middle class females, Moeller,Bhann, and Moeller (Moeller et al., 1993) found that multiple forms of child abuse were associated with poorer physical and mental health in adulthood. Finally, a recent survey (Felitti et al., 1998) found a strong dose response relation between negative childhood experiences (e.g., child abuse, substance-abuse parents, incarcerated parent, family member with mental illness) and health risk behaviors in adulthood (e.g., self-reported suicide attempt).

CHILDHOOD MALTREATMENT AND SUICIDAL BEHAVIOR AMONG AFRICAN AMERICAN WOMEN: PROGRAMMATIC LINE OF RESEARCH

Although the available data evidence strong associations between both sexual and physical abuse in childhood and suicidal behavior in adulthood and show these correlations across several populations, there is a dearth of research examining these associations in racial minority groups, in particular, African Americans. The majority of the research conducted to date on the link between childhood maltreatment and suicidal behavior among African American women has been

conducted in our laboratory and funded by the ASPH/CDC/ATSDR. Following a brief review of the study sample and procedures, we will review some of these findings related to childhood maltreatment and suicidal behavior among African Americanwomen.

The sample forthis case-control study was comprised of360 self-identified AfricanAmericanwomen ages 18-64 (Mean age= 32, S.D. = 10.38), who presented for medical care at Grady Health System, a large, public urban hospital affiliated with Emory University that serves a primarily indigent and minority population. The sample consisted ofwomen who presented to the hospital following a nonfatal suicide attempt (n=175) and women who presented to the hospital for non-emergency medical problems and reported no history of suicidal behavior (n= 185). Women were excluded if they had a We-threatening medical condition, significant cognitive impairments, or were acutely psychotic or delirious. Sixty-six percent of the participants had completed high school, 19% were married, and 40% were employed.

The women completed an extensive battery of measures of psychological and psychosocial functioning. Of particular relevance to the questions to be addressed in the following sections of this paper was the measure of childhood maltreatment, the Childhood Trauma Questionnaire (CTQ) (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bemstein et al., 1994). The CTQ, a 28-item Likert-type scale, assesses self-reported childhood experiences of abuse (emotional, physical, and sexual) and neglect (physical and emotional). The scale has high internal consistency reliability (Cronbach's alpha = .92 for current sample) (Bernstein et al., 1997; Bernstein et al., 1994) and has been validated using an external criterion, therapists' ratings (Bernstein et al., 1994, 1997; Fink, Bernstein, Handelsman, Foote, & Lovejoy, 1995). Good test-retest reliability over a 2- to 6-month interval has been found (Bernstein et al., 1994) . More recently, clinical cut-offscores have been established foreach subscale (D. Bernstein, personal communication, September 29, 1997). For more detailed information about the project, the reader is referred to Kaslow and colleagues (Kaslow et al., 1998b).

Based on data gleaned from this study, a series ofanalyses were undertaken to address the link between childhood maltreatment and suicidal behavior among African American women. These analyses address the following questions: (1) What are the rates ofthe five types of maltreatment and of revictimization in a sample of female, low income, African American suicide attempters and nonattempters? (2) Does a history of childhood maltreatment increase these women's risk for suicidal behavior? (3) Is there a dose response relation between number oftypes ofchildhood maltreatment experienced and risk for suicidal behavior? (4) Do current PTSD symptoms in combination with any of the five forms of childhood maltreatment increase a woman's risk for making a suicide attempt? (5) Do object relations mediate the link between childhood maltreatment and suicidal behavior in low income, AfricanAmerican women?

Rates of Childhood Maltreatment

In the study sample as a whole, a substantial number of both attempters and controls reported each of the five types of childhood maltreatment measured (Thompson, Kaslow, Bradshaw, & Kingree, in press). The percentage of women in

the control group who reported childhood histories of physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect were 53%, 32%, 35%, 33%, and 30%, respectively. The percentage of women in the attempter group who reported childhood histories of physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect were 65%, 57%, 64%, 63%, and 47%, respectively. Significant between group differences were found on each form of childhood maltreatment, such that low income, African American female suicide attempters are significantly more likely than their demographically similar nonattempter counterparts to endorse a history of child abuse (physical, sexual, emotional) and neglect (emotional, physical). Further, the two groups differed on rates of revictimization (i.e., reported histories of at least one abuse experience during childhood and one abuse experience during adulthood). More specifically, whereas 36% of the attempters reported a history significant for revictimization, only 13% of the nonattempters reported being revictimized.

Childhood Maltreatment: A Risk Factor for Suicide Attempts

When all forms of childhood maltreatment were considered together, women who attempted suicide were 3.2 times more likely than nonattempters to report a history of child abuse and neglect. In addition, women who reported each type of abuse and neglect were at increased risk for engaging in suicidal behavior. Specifically, compared to their nonattempter counterparts, low income African American women who attempted suicide were 1.6 times more likely to report a history of physical abuse, 3.0 times more likely to report a history of sexual abuse, 3.5 times more likely to report a history of emotional abuse, 3.8 times more likely to report a history of emotional neglect, and 2.2 times more likely to report a history of physical neglect.

Dose Response Relation

The question of whether or not there was a dose response relation with regard to number of types of childhood maltreatment exposure and suicide attempt status only considered data on abuse (physical, sexual, emotional). Data on neglect were not the focus of these analyses. Of the total sample, 46% reported no child abuse experiences, 27% reported one type of child abuse (3% emotional, 10% physical, and 14% sexual); 13% reported experiences with two types of child abuse (5% emotional and physical, 2% emotional and sexual, and 6% physical and sexual), and the remaining 14% experiences with all three types of abuse.

The prevalence of suicide attempts increased as the exposure to different types of abuse increased. Specifically, whereas 34% of the women who reported no child abuse experiences made a suicide attempt. 52%, 57%, and 82% of the participants who reported experiencing one type, two types, and three types of child abuse. respectively, made a suicide attempt.

Results of a logistic regression analysis used to test the hypothesis that there is a dose response association between the number of types of abuse experienced by women and subsequent suicide attempts revealed that women who had experienced one type of abuse were 1.8 times more likely to have made a

suicide attempt than women who had not experienced abuse. Women who reported two forms of abuse were 2.3 times more likely to have made a suicide attempt than women who reported no abuse. Finally, women who reported three types of abuse were 7.8 times more likely to have made a suicide attempt than women who reported no abuse. Thus, analyses revealed a significant dose-response association between the number of child abuse exposures and the outcome variable, suicide attempt status, such that the risk (adjusted odds ratios) for suicidal behavioral increased as the exposure to different types of child abuse increased.

Childhood Maltreatment and PTSD: Risk Factors for Suicide Attempts

Given the strong association between childhood maltreatment and the development of PTSD symptoms, we examined whether current PTSD symptoms in combination with any of the five forms of childhood maltreatment increase a woman's risk for making a suicide attempt. This was accomplished by comparing the risk for making a suicide attempt if the woman had experienced (a) PTSD symptoms plus each form of childhood maltreatment, (b) neither PTSD or childhood maltreatment, and (c) PTSD or childhood maltreatment but not both. Results from a series of logistic regression analyses revealed that PTSD in combination with any of the five forms of childhood maltreatment significantly increased a woman's risk for making a nonfatal suicide attempt beyond that attributable to childhood maltreatment or PTSD alone. Thus, the combination of childhood maltreatment experiences and PTSD symptoms in adulthood places an African American woman at particularly high risk for engaging in suicidal behavior (Thompson et al., in press).

Cognitive-Affective Schema as Mediators of the Link Between Childhood Maltreatment and Suicide Attempts

When considering the link between childhood maltreatment and suicidal behavior in adulthood, it is important to consider those variables that may mediate the association. One potential mediating influence is the individual's cognitive-affective schema of interpersonal relationships. One way to assess these schema is via the construct of object relations, internal mental representations of one's experience of self in relation to others (self representations) and one's experience of others in relation to self (object representations). There is empirical and theoretical evidence to suggest that adults with a history of childhood maltreatment evidence behaviors indicative of self- and object relations deficits, such as impaired interpersonal relationships, dysregulated affects, impaired self concept, and disturbed attachments (Carson & Baker, 1995/1996; Elliott, 1994; Gauthier et al., 1996; Ornduff, Freedenfeld, Kelsey, & Critelli, 1994). In addition, deficits in object relations have been found to be associated with a vulnerability to suicide in a few studies (Chance et al., 1996; Jessee, Chance, D'Orio, & Edelson, 1995/1996; Kaslow et al., 1999). Therefore, we examined object relations as a mediator of the link between childhood maltreatment and suicidal behavior in accordance with the criterion for mediation set forth by Baron and Kenny (Baron & Kenny, 1986).

Object relations were assessed with two measures: the Bell Object

Relations Inventory (BORI) and the Object Relations Inventory (ORI). The BOFU (Bell, Billington, & Becker, 1986) is a self-report inventory that assesses four dimensions of cognitive-affective schema about interpersonal relationships: (1) alienation - ability to establish basic trust and achieve stable and satifying relationships; (2) insecure attachment - sensitivity to rejection, longing for closeness, and ability to tolerate loss; (3) egocentricity - tendency to mistrust the motivation of others, regard oneself as existing only in relation to oneself, and manipulate others for one's own self-centered aims; and (4) social incompetence - shyness and the self-experience of being socially inept. The ORI (Blatt, Wein, Chevron, & Quinlan, 1979) asks the respondent to provide descriptions of self and other in response to the queries, "describe yourself" and "describe the person in your life with whom you have had the most positive relationship." Each adjective in all spontaneous descriptions is queried. Responses were coded using the Self-other Differentiation Scale coding schema which assesses the level of separation-individuation and intersubjectivity of the responses (Diamond, Kaslow, Coonerty, & Blatt, 1990).

Findings revealed that each object relations dimension fully, yet differentially, mediated the specific links between five types of childhood maltreatment and suicide attempt status (Twomey, Kaslow, & Croft, in press). That is, the results showed that it is the various dimensions of object relations development/pathology that account for the association between childhood maltreatment and suicide attempt status in women. Specifically, the alienation subscale of the BORI was the most robust mediator, fully mediating the links between all types of childhood maltreatment and suicide attempt status. For both childhood sexual abuse and physical neglect, the links with suicide attempt status were fully mediated by five of six object relations dimensions measured on the BORI and the ORI; whereas the other childhood maltreatment types (physical abuse, emotional abuse, and emotional neglect) were fully mediated by just one or two object relations dimensions.

DISCUSSION

While the association between different types of childhood maltreatment and vulnerability for suicidal behavior in adulthood has been well-documented, little systematic research has been undertaken with low income African American women. Therefore, this chapter provides some of the first empirical data substantiating that a history of maltreatment in childhood is a significant predictor of vulnerability for suicide attempts in adulthood for this population. Future research efforts should be aimed at examining, in a culturally and gender sensitive manner, those variables that mediate and moderate the link between childhood maltreatment and suicidal behavior in African Americans. Information about these mediators and moderators can be used in designing treatment and prevention efforts, as these mediators and moderators are likely to be effective intervention targets.

The findings gleaned thus far can inform clinical interventions with low income, African American women who exhibit suicidal behavior in the form of a non-lethal suicide attempt. Specifically, as part of a standard evaluation, African American women who make non-lethal suicide attempts should be assessed for history of childhood maltreatment. If such a history is revealed, therapeutic

interventions should include an emphasis on addressing the impact of these maltreatment experiences on the woman's current psychological and interpersonal functioning. In a related vein, the therapeutic focus should be on identifying and repairing maladaptive cognitive-affective schema or pathological object relations, since extant data indicate that these constructs mediate the link between childhood maltreatment and suicidality in adulthood.

In addition, the findings reported in this chapter highlight the need for preventative interventions with African American women who may be at-risk for future suicidal behavior due to a history of childhood maltreatment. Given the central role of the family and extended kin network within the African American community, such preventative interventions may be particularly effective if conducted in a group format. In addition, these programs should target bolstering the women's sense of efficacy and enhancing their social support networks.

While these findings highlight the need for primary, secondary, and tertiary prevention efforts with African American women with a history of childhood maltreatment, for such interventions to be effective they need to be theoretically-based, culturally competent, and gender sensitive. It behooves us to use the research findings provided in this chapter to develop such efforts. This in turn will serve to enhance the quality of life for African American women abused and/or neglected as children and reduce their risk for subsequent suicidal behavior.

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ISSUES IN THE EVALUATION OF YOUTH SUICIDE PREVENTION INITIATIVES

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Suicide consistently ranks as the second or third leading cause of death for adolescents. Between 1960 and 1990, the suicide rate for 15 to 19 year olds more than tripled from 3.6 to 11.3 per 100,000. From 1991 to 1996, the average suicide rate for this age group was 10.56. The suicide rate for 10 to 14 year olds has increased 120% from 1980 (0.8) to 1996 (1.7). This ominous increase in the rates for the younger age groups appears to be following the trends for substance abuse. Among youths aged 15-19, firearm-related suicides accounted for 81% of the increase in the overall rate since 1980. The incidence of suicide attempts is considerably higher, with around 10% of adolescent respondents reporting attempts in various surveys (Centers for Disease Control, 1995).

These trends spawned a variety of youth suicide prevention initiatives, the vast majority of which were school-based prevention and intervention programs. (Leenaars & Wenckstern, 1991). Most of these were grass-roots efforts, with little guidance or funding on a national level (Berman & Jobes, 1995). This exacerbated the growing pains associated with any emerging field, and thus the field of youth suicide prevention has been plagued by wide variations in and underreporting of emergent programs, a desultory evaluation pattern and reviews fraught with misperceptions of basic concepts of prevention and program evaluation. This chapter provides a brief overview of some of the relevant characteristics of effective

prevention programs and evaluation strategies as a framework for a subsequent review ofthe current status ofschool based youth suicide prevention programs.

EFFECTIVE PREVENTION

The characteristics ofeffectiveprevention programs have been described in an extensive literature fromwhich basic points can be distilled (Elias, 1997; Silverman & Felner, 1995). These include:

1. Conceptually and empirically grounded goals and objectives.
2. Clearly articulated and packaged components, including appropriate instructional principles. (1 & 2 taken together can be considered the program's logic or theory ofaction (Patton, 1990)).
3. Sufficientduration or dosage.
4. Comprehensive: address all levels oftarget organization.
5. Ecological: address the multiple contexts with which participants interact.
6. Conform to the culture/values ofthe target participants and organization.
7. Implemented with reasonable degree offidelity.
8. Institutionalized over sufficientperiod oftime to show effects.

There is also a literature that has identified specific strategies that enhance the implementation and institutionalization ofprograms (Kalafat & Ryerson, 1999). In addition, efforts have been made to clarify prevention methodology such as the typology presented in a report by the Institute ofMedicine (1994) which included:

1. *Universal* interventions, which are directed at an entire population rather than selected subpopulations or individuals, Such interventions may include efforts to enhance the supportiveness of populations such as their ability and inclination to provide a helpful initial response to a troubled youth; or, they may include teaching generic coping skills to an entire population; or, they may seek to enhance the sense of connection and participation among members ofan organization or community.
2. *Selective* interventions, which are targeted to subpopulations that are characterizedby shared exposure to some epidemiologically determined risk factor(s). For example, students at critical transitional periods, such as entering middle school or high school, can be at greater risk for a variety of adjustment and/or academic problems.
3. *Indicated* interventions are targeted to specific individuals who are already at preclinical levels of a disorder and who have been identified through screening procedures. For example, students who selfidentify or are identifed by others as having suicidal thoughts or plans are referred for an appropriatetreatment.

There is still confusion about these terms and approaches. For example, universal programs have been criticized as being inefficient because they focus on large numbers ofstudents when only a small percentage would be at risk for suicidal behavior (Shaer, Garland, Gould, Fisher, & Trautman, 1988). Such criticisms clearly display a lack ofunderstanding ofuniversal approaches, (or ofthe traditional category ofprimary prevention), which, by definition, are aimed at populations not evidencing conditions one wishes to prevent. In practical terms, it is important to identify the specific aims of a prevention intervention and which prevention approaches are most likely to be maintained in schools.

EVALUATION ISSUES

Most evaluation studies focus on summative outcomes which attempt to answer the oversimplified question, "did the program work?', or worse, with an implied generalization from one study, "does the program work?". Several other evaluation questions must be addressed in order to correctly interpret summative results. These include:

1. *Evaluabilily.* Program development involves an iterative cycle of piloting and adjustment (formative evaluation) before programs reach a certain level of maturity, stability, and specificity referred to as evaluability (Wholey, 1979). This process is rarely taken into consideration in reviews or meta-analyses of research in a given area. Thus, early or first-generation programs are lumped with later programs that often represent refinements born of experience and experimentation in the field. This can distort conclusions drawn from the literature.
2. *Implementation.* Studies indicate that programs are never implemented with perfect fidelity, and that varying outcomes are associated with variations in levels of implementation (Durlak, 1995; Kalafat, 1997). Programs must be flexible enough to be adapted to local contexts, but decisions must be made as to what the core (unchangeable) and adaptable features of a program are (Blakely, et al. 1987). Then, degree of implementation must be assessed as part of any outcome evaluation.
3. *Dissemination and Institutionalization.* Particularly with prevention programs that address low base rate phenomena such has suicide, programs must be widely disseminated and retained in a number of sites over a sufficiently long period of time in order to assess distal outcomes or epidemiological impact. Research has identified strategies and program characteristics associated with successful institutionalization of programs in schools (Kalafat & Ryerson, 1999).

In addition to formative and implementation evaluations, multilevel outcome evaluations can be carried out that assess (a) participants' responses to the program (is the program understandable and acceptable to the target audiences); (b) acquisition of relevant knowledge, skills, and attitudes, and/or relevant organizational changes (proximal outcomes); (c) the application or performance of what has been learned; (d) the impacts associated with the performances and organizational changes (distal outcomes) (Kirkpatrick, 1975).

This multilevel, multifaceted evaluation is a high standard that few programs achieve. No single school based suicide prevention program has reported all of these evaluation components. Instead, different components of this evaluation framework have been carried out by a class of similar programs. Like pieces of a puzzle, these evaluations form a body of evidence that provides tentative support for some preventive approaches. The field awaits comprehensive evaluation studies that can support stronger conclusions.

EVALUATIONS OF SCHOOL BASED PROGRAMS

Universal Interventions

Most universal programs consist of training school gatekeepers (faculty, staff, and administration), and/or students to more effectively identify at risk students, provide a supportive initial response to them, and obtain appropriate help for them. Some programs are comprehensive in that they include (a) consults to administration to ensure the presence of policies and procedures for responding to at risk students, suicide attempts, and completions; and to ensure coordinated working relationships with community gatekeepers; (b) training for all school personnel including custodians, bus drivers etc.; (c) three to five classroom lessons for students included in health or family life curricula; (d) presentations to parents; (e) sometimes added components such as establishment of school crisis teams, training of community gatekeepers, and/or media campaigns.

Controlled evaluations have mainly assessed changes in knowledge (about suicide and resources) and attitudes (toward suicidal students and/or intervening) on the part of school gatekeepers and/or student class participants. First generation school programs were characterized by attempts to address a variety of topics such as depression, stress, suicide dynamics and etiology, warning signs and help seeking. They lacked focus in that it was unclear who their target audience was-at-risk youth, suicidal youth's feelings and attitudes, or potential peer helpers; and what their instructional objectives were-changes in suicidal feelings, understanding suicide and depression, or intervention issues. Evaluation results were mixed. Program effects on student knowledge and attitudes toward suicidal peers and intervening on their behalf were either not found (Shaffer, Garland, Vieland, Underwood, & Busner, 1991); or, knowledge gains were found for both genders, while positive attitude changes were found only for female students (Spirito et al., 1988; Overholser et al., 1989). Implementation data were not presented in these studies.

Drawing on the experiences of initial programmatic efforts, many second generation programs were more focused on preparing students to respond to encounters with at-risk peers. and seeking adult help. The conceptual/empirical base for these programs is as follows:

- Most suicidal youths confide their concerns more often to peers than adults (Brent Perper, Kolko, & Goldstein, 1988; Dubow et al., 1989; Kalafat& Elias, 1992).
- Disturbed youth (e.g. depressed, substance abusers) prefer peer supports over adults

  more than their non disturbed peers (Naginy & Swisher, 1990;Offer, Howard, Schonert, & Ostrov, 1991).
- Some adolescents, particularly some males, do not respond to troubled peers in empathic or helpful ways (Norton, Durlak, & Richards, 1989; Wellman & Wellman, 1986).
- As few as 25% of peer confidants tell an adult about their troubled or suicidal peer(Kalafat& Elias, 1992; Kalafat,Elias, & Gara, 1993).
- Therefore, the inaccessibility of, and reluctance of adolescents to seek out, helpful adults is considered to be a *riskfactor* that contributes to destructive outcomes associated with a variety adolescent risk behaviors, including suicide.

(Conversely, research has shown that contact with helpful adults may be considered a *protective factor* for a variety of troubled youth (Jessor et al., 1995).

(There is also evidence that *provision* of help by youths may be beneficial to them: participation in helping interactions can shape prosocial behaviors and reduce problematic behavior; and is related to indices of social competencies that can carry over to other challenging situations (Allen, Aber, & Leadbeater, 1990).

Therefore, the specific goals of the current comprehensive universal school based suicide prevention programs are to increase the likelihood that school gatekeepers (administrators, faculty, and staff) and peers who come into contact with at-risk youth can more readily identify them, provide an appropriate initial response to them, will know how to obtain help for them, and are consistently inclined to take such action.

The small number of evaluations of these programs have been encouraging. Ciffone (1993) assessed the impact of health classes aimed at increasing understanding of the nature of suicide and increasing the number of students who endorse the option of taking suicidal threats seriously, and seeking help on behalf of a potentially suicidal peer. He found that exposure to the program resulted in shifts in responses from undesirable to desirable in all six items addressing help seeking for oneself or a troubled peer that were significantly greater than in comparison groups.

Kalafat and Elias (1994) evaluated a published curriculum (Kalafat & Underwood, 1989) using a Solomon four-groups design and found that students who participated in the four suicide response health classes, as compared to controls, showed significant gains in relevant knowledge about suicide and significantly more positive attitudes toward help seeking and intervening with potentially suicidal peers. No gender or pretesting effects were found. Student reactions to the curriculum were positive and emphasized the utility of the classes for helping them with friends' problems, as was the intent of the program.

These studies employed self-report questionnaires, while Kalafat, and Gagliano (1996) employed simulations to assess the responses of trained and untrained students as has been successfully done with simulations in the counseling and medical education fields. They assessed student responses in simulations of both suicidal and troubled (not explicitly suicidal) peers to evaluate a curriculum that aimed at destigmatizing mental health services and help seeking in general, and also included practice in responding to suicidal peers. They employed two vignettes (low ambiguity: peer saying "sometimes I think I might as well kill myself", and high ambiguity: peer writing essay entitled "(Final) Family Decisions") from the Kalafat, Elias, and Gara (1993) study. Participants, as compared to controls, showed significant increases in the "tell an adult" responses to the vignettes.

Drawing on the findings of impaired problem solving among suicidal youth, Orbach and Bar-Joseph (1993) evaluated a combined universal prevention program that included a session on suicide. Seven two-hour meetings were devoted to a wide range of topics: depression and happiness, family issues, feelings of helplessness, coping with failure, coping with stress and problem-solving, and coping with suicidal urges. The sessions emphasized sharing, universalizing of experiences, problem-solving alternatives, and self and peer help approaches. Students were randomly assigned to experimental and control classes in six high schools and

completed questionnaires on suicidal tendencies, hopelessness, ego identity and coping ability before and after the program. Significant positive changes were found for the class participants compared to controls in reduction of suicidal feelings, increased ego identity cohesion, and ability to cope with problems.

In regard to school gatekeeper training, one study (Shaffer, Garland, & Whittle, 1988) reporting on the same project as Shaffer et al. (1991), found that one two-hour presentation to educators resulted in signifcant increases in knowledge of suicide warning signs and community resources. Reisman & Scharfman (1991) reported positive effects on guidance counselors' knowledge, attitudes, and referral practices after a six session training program.

While programs provide training to school gatekeepers, they may not adequately address another issue concerning schools. That is, as previously noted, school personnel are consistently among the last choices of adolescents for discussing personal problems. Consistent reasons cited by students for reluctance to confide in adults in their schools include: confidentiality is not respected; adults function in evaluative and disciplinary roles which discourage student disclosure; and school schedules and other organizational characteristics prevent students from getting to know adults well enough to feel comfortable confiding in them. In addition, many school-based adults are perceived as insensitive to current adolescent culture and concerns (Lindsey & Kalafat, 1998).

From an ecological perspective, programs that address students' attitudes toward and skills for intervening with troubled peers and seeking adult help for them must also ensure the psychological, cultural, and temporal accessibility of adults in the school. This is particularly important as contact with a caring adult and a sense of involvement with one's school appears to be an important protective factor against a variety of risk behaviors (Jessor et al., 1995; McBride et al., 1995).

These studies provide encouraging initial data Concerning proximal outcomes for student curricula and staff training. The question remains as to whether this translates into performance in actual situations and whether that performance is associated with distal outcomes (reduction in suicide rates). To date, a number af programs have reported increased referrals (self and other) following program implementation, but there have been no controlled studies that systematically track such referral patterns.

Again, in order to detect distal program effects, comprehensive programs must be carefully implemented in enough schools and retained for a sufficient length af time. Results from two programs that meet these criteria are available.

Kalafat and Ryerson (1999) described the systematic implementation and dissemination of a comprehensive program in 33 public high schools in a populous Northeastern suburban county. A ten year follow up survey found that the program had been retained with sufficient fidelity in 3 1 schools. Suicide rates for the county as compared to state and national rates for the same time period are presented in Table 1.

Table 1. Suicide rates for 15-24 age group for the nation (N), state (S), and the county (C)

	N	*S*	*C*
Pre-implementation 1978-82	12.30	8.72	7.26
Implementation 1983-87	12.66	8.66	7.53 (6.98)*
Post-implementation 1988-92 (ongoing operation)	13.16	7.90	4.38

* This figure excludes a cluster of4 suicides ofadolescents who had *dropped out of a school that did not have a suicide prevention program.*

Zenere and Lazarus (1997) also described the implementation and dissemination of a comprehensive program in all of the high schools of a populous Southeastern county. They reported decreased suicide rates for the county following program dissemination. They did not report state and national data for the same time period, but this author obtained these data and they are depicted in Table 2.

Table 2: Suicide rates for 15-19 age group for the nation (N), state (S), and the county (C)

	N	*S*	*C*
Pre-implementation 1980-88	9.40	9.74	9.70
Post-implementation 1989-95 *(ongoing operation)*	10.92	10.00	4.05

While these declines in suicide rates cannot be directly attributed to these programs, they are encouraging. In addition, they provide further evidence against the myth that talking about suicide with students will prompt suicidal behavior.

Indicated Interventions

Eggert and her colleagues have reported controlled studies that evaluated the implementation fidelity and proximal outcomes of a conceptually grounded school based 12 session coping and support intervention for suicidal youth who were identified through a screening procedure (Eggert, Thompson, Herting, & Nicholas, 1995). Interestingly, both the 12 session intervention and the comparison condition, which consisted of a two-hour assessment interview, a brief counseling interview, connection with a specific school based adult, and a parent contact were associated with reductions in suicide risk behaviors, depression, anger control problems, and family distress. This result is encouraging in that schools my be able to effectively intervene with identified suicidal students with a relatively brief, focused intervention.

SUMMARY

The field of school-based youth suicide prevention is currently characterized by scattered encouraging evaluations of conceptually grounded universal and indicated programs. Larger scale, long-term evaluations that systematically assess implementation as well as proximal and distal outcomes of adequately disseminated programs are needed. Recently, the Centers for Disease Control and Prevention and the Surgeon General have made suicide prevention a priority. A recent national conference brought together national researchers and produced reviews of the field and a draft of a national research agenda for suicide prevention that included school-based youth suicide prevention programs. It is hoped that these developments will

provide resources for researchers to expand the current evaluations to a more systematic empirical base for youth suicide prevention efforts.

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RECOGNITION AND TREATMENT OF SUICIDAL YOUTH: BROADENING OUR RESEARCH AGENDA

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Our knowledge of youth suicide risk factors has burgeoned during the past twenty years. In a cumulative effort, the scientific community has identified risk factors for suicide attempts and completed suicide among youth. National mortality data, psychological autopsy studies, community surveys, and clinic-based studies have been conducted; findings have been replicated, extended, and validated. The result is an empirically-based consensus concerning risk factors for suicide attempts and completed suicide. Unfortunately, as noted by Eggert and her colleagues several years ago (Eggert, Thompson, Herting, & Nicholas, 1994), our knowledge of how to identify at-risk youth and intervene lags substantially behind our knowledge of riskfactors.

Key risk factors for completed youth suicide are a past suicide attempt, mood disorder, alcohol or substance abuse, a pattern of aggressive or conduct disorder behavior, and availability ofthe means (e.g., King, 1997). Approximately ninety percent of youth suicide victims are known to have struggled with serious and identifable psychopathology or mental disorder prior to their death (Brent, Perper, et al., 1988; Brent et al., 1993a; Marttunen, Aro, Henriksson, & Lonnquist, 1991; Shaffer& Craft, 1999; Shafii Carrigan, Whittinghill, & Derrick, 1985). These same types ofpsychopathology have been associated with adolescent suicide attempts in a multitude of clinic-based (reviewed in King, 1997) and community-based studies (e.g., Lewinsohn, Rohde & Seeley, 1996), with depression being the most commonly diagnosed psychopathology among suicidal adolescents in treatment (deWilde, Kienhorst, Diekstra, & Wolters, 1993).

Thus, from a mental health perspective, the identification or *recognition and referral* of youth at risk -- those with serious psychopathology related to risk of suicidal behavior -- is central to suicide prevention efforts. Recognition and referral, however, cannot stand alone as a suicide prevention strategy. *Early intervention and treatment* are also essential components. This chapter will begin with a brief review of the status of our progress in these areas. This will provide background for a discussion of next steps and new directions. The emphasis is on broadening our research directions.

CURRENT STATUS OF RECOGNITION AND REFERRAL STRATEGIES

The recognition and referral of youth at risk requires an awareness of suicide risk factors, a willingness to attend to individual youth, and a willingness to take action. Many such recognition efforts are described in the guide to youth suicide prevention published by the Centers for Disease Control (CDC, 1992). This guide reviews prevention strategies, highlighting the status of development and evaluation efforts at the time of its publication. A number of suicide prevention specialists - many with well-established, longstanding programs of research on youth suicide prevention -- have summarized the status of recognition and referral efforts more recently (e.g., Eggert, Thompson, Herting, & Nicholas, 1994; Kalafat & Ryerson, 1999; Mazza, 1997; Shaffer 1999). The review in this chapter will be brief, and readers are referred to these other sources for additional information.

Gatekeeper Training and Student Education/Awareness Programs

Gatekeeper training involves efforts to teach gatekeepers -- those in regular contact with youth -- about youth suicide risk and the "how to" of recognition and referral. Student-focused education and awareness programs are a variant of gatekeeper training, and are often combined with gatekeeper training for teachers, counselors, and others in school settings. As reviewed by Garland Shaffer & Whittle (1989), these programs have generally been targeted for entire school populations. They teach students about suicide risk factors, facts and myths about suicide, suicide warning signs, help-seeking strategies, and mental health resources. Although they have been described as "first-generation" prevention efforts (Eggert, Thompson, Herting, & Nicholas, 1995), the systematic development of such programs has continued (e.g., Kalafat & Ryerson, 1999; Washington State Youth Suicide Prevention Program, 1997). Goals are to reduce stigma, increase awareness of suicide risk factors, and promote self-referral as well as the referral of peers at risk.

There have been relatively few evaluations of these efforts and findings have been mixed (as reviewed in Mazza, 1997). Some gatekeeper training efforts have resulted in an increase in both gatekeepers' knowledge of risk factors and in their likelihood of making referrals for mental health services. For instance, Kalafat and Elias (1994) evaluated the efficacy of a high school curriculum designed to increase the likelihood that the peers of potentially suicidal students will take appropriate action. In a comprehensive school-based suicide prevention program, education sessions were held for faculty, staff, and parents; procedures were shared for responding to at-risk students, and linkages were established with community

agencies. Following these activities, students were scheduled for suicide awareness lessons during health classes. Relative to controls, students who participated in these classes showed gains in knowledge about suicide and more positive attitudes toward help-seeking and intervening with potentially suicidal peers. As Kalafat and Elias note, these findings converge with those of previous studies (e.g., Angerstein, Linfield-Spindler, & Payne, 1991; Overholser, Hemstreet, Spirito, & Vyse, 1989; Shaffer, Garland, & Whittle, 1988; Spirito, Overholser, Ashworth et al., 1988) that demonstrated some positive outcomes in terms of knowledge, attitudes, or expectancies. Documenting the feasibility of sustaining such an effort, Kalafat and Ryerson (1999) demonstrated the long-term implementation and retention of such suicide prevention programs in schools.

Despite such positive results, these programs have not necessarily demonstrated changes in attitudes toward seeking help or in the proportion of students reporting that they knew how to get outside help (ShaBer, Garland, & Whittle, 1988). In an investigation of one such school-based effort involving high school students and controls, Shaffer, Garland, Vieland et al. (1991) found that many students knew some of the important information prior to program exposure. The program itself increased few areas of knowledge among the smaller group d students who did not already endorse helpful views or attitudes. It did, however, increase students' knowledge about where to get help for emotional problems and the proportion of students who stated that they would respond in appropriate ways to a hypothetical situation involving a suicidal peer. An 18-month follow-up study, however, found no clear evidence of a program effect on either self-reported help-seelung behavior or suicidal behavior (Vieland et al., 1991). It should be noted that the program evaluated consisted of a rather limited intervention -- only 1 1/2 hours of in-class student education. These findings, in combination with the concern that previous suicide attempters may not benefit from these programs, and, in fact, may actually be distressed by them (ShafTer, Vieland, Garland et al., 1990) indicate the need for further research in this area

Gatekeeper training for teachers is generally deficient or nonexistent. Teachers are routinely provided little if any information on risk factors, identification, and appropriate referrals for suicidal youth (McEvoy & McEvoy, 1994). Training for school counselors is also limited. In their survey of 60 school counselors, only one in two counselors received specific training regarding adolescent suicide (Peach & Reddick, 1991). A minority (20%) of school counselors surveyed reported working in schools with specified suicide prevention or intervention programs.

Although few in number, some teacher gatekeeper training efforts have been evaluated. The large-scale and systematic program development effort in the state of Washington is an excellent example. Eggert and other program staff have examined two gatekeeper training activities, training for trainers and suicide intervention workshops. Clearly specified process and outcome objectives were developed for each activity. Preliminary data document that program objectives were met for trainees' assessment and intervention knowledge, risk assessment accuracy, and self-reported beliefs about their comfort, ability, and commitment to intervene with youth at risk for suicide (Washington State Youth Suicide Prevention Program, 1997). As another example, Klingman (1990) investigated the effectiveness of two different gatekeeper training approaches for junior high school teachers. Facilitated

groups and didactic, instructional approaches addressing knowledge about suicide prevention were found to be equally effective in improving gatekeepers' knowledge.

Taken together, there have been relatively few controlled studies of suicide prevention programs aimed at increasing student, teacher, and other gatekeepers' awareness, recognition, and referral of suicidal youth in school or community settings. Preliminary results suggest that student and teacher education strategies may be effective in improving knowledge of risk factors and self-reported intentions to intervene and refer potentially suicidal youth. Questions remain concerning (1) the extent to which these strategies translate into reductions in suicidal behavior, and (2) the possibility of unintended negative effects for some youth. The research conducted thus far can inform the further systematic development of these prevention strategies.

Proactive Screening

Systematic, direct screening is also used to identify youth at risk (e.g., Shaffer & Craft, 1999). This is a proactive approach to finding youth at risk for suicide and providing them with treatment. Students are asked to respond confidentially to questions about their mood, symptoms of depression, suicidal thoughts or attempts, and alcohol/substance abuse problems. Rather than a primary prevention or more universal approach, this strategy aims to identify a high-risk group based on our empirically based knowledge of suicide risk factors. It is a proactive case identification approach. The goal is to refer identified youth for mental health services.

There are only limited data on the effectiveness of such proactive screening efforts. Preliminary findings do, however, support the accuracy and utility of efforts designed to identify youth at risk for suicidal behavior. Shaffer and Craft (1999) report sensitivity and specificity percentages of 88% and 76%, respectively, for positive suicide risk screens using their Columbia Teen Screen in a sample of over 2000 adolescents in the New York metropolitan area

A related proactive screening strategy is exemplified by the work of Eggert and her colleagues (e.g., Eggert et al., 1994). Rather than general school-wide screening for a broad range of suicide risk factors, Eggert, et al.'s approach involves targeted screening for a particular subgroup of youth -- potential school dropouts or failures -- who are known to be at-risk. Using a three-stage case identification process, Eggert et al. (1994) found that approximately 40% of youth at high-risk of school failure were at substantial suicide risk. Their suicide prevention strategy involves a well-specified and theoretically based preventive intervention for these youth. It takes case identification a step further than most other strategies, pairing it with a replicable intervention. Eggert et al. demonstrated reduced school deviance, drug involvement, and suicide potential following their 5 month school-based prevention program (Eggert, Thompson, Herting, and Nicholas, 1994). These positive results support the implementation of health-promotion programs that are built into the regular school curriculum and that target identifed high risk students.

CURRENT STATUS OF EARLY INTERVENTION AND TREATMENT EFFORTS

Recognition and referral are only the beginning steps in youth suicide prevention. From a mental health perspective, the second key to suicide prevention is effective early intervention and treatment, including appropriate crisis intervention, continuing care, and follow-up. This is no easy challenge. Successful intervention has been stymied by the relatively low levels of proactive (prior to crisis) help-seeking and treatment follow-through among suicidal adolescents and their families. A second major hurdle to successful intervention -- and challenge to the clinical and scientific communities -- is the almost complete absence of empirically validated, effective interventions for suicidal youth.

Help-Seeking and Treatment Follow-Through

Youth, particularly adolescents who make up the substantial majority of identified youth at risk for suicide, do not tend to seek out help from mental health professionals. Only a small proportion of children and adolescents with significant psychopathology receive any kind of mental health care (e.g., Cohen & Hesselbart, 1992; Costello, Burns, Angold & Leaf, 1993). In addition, only a small proportion of the treatment obtained is self-initiated. Rather, the family, school, and community play a larger role in the help-seelung process for children and adolescents. Those adolescents who turn to their family for help are those most likely to obtain professional mental health services (Saunders, Resnick, Hoberman, & Blum, 1994). This points to the substantial importance of parents in recognizing problems and seeking services.

In suicidal youth, the initial contact with a treatment provider is often precipitated by a suicidal crisis and arranged by a parent or guardian. The involvement of adults from families and other systems, however, creates strain or conflict for many adolescents. To some extent, help-seeking and the utilization of adult-provided services is inconsistent with the desire for greater autonomy, privacy, and independence from adults, a factor that is highly characteristic of adolescence (Dubow, Lovko, & Kausch, 1990; Garland & Zigler, 1994). There is often a preference among disturbed youth for the informal "help" of peers and friends (Offer, Howard, Schonert & Ostrov, 1991).

In addition, variables common to at-risk adolescents such as higher levels of suicidal ideation and parent-child conflict may be related to reduced help-seeking. Saunders et al. (1994) conducted a statewide study of variables influencing the help-seeking process in over 17,000 seventh through twelfth graders. They found that higher levels of suicidal ideation had a negative relation to professional help-seeking. Levels of parent-child conflict are high during adolescence (Paikoff & Brooks-Gunn, 1991), and such conflict may be particularly high in families of suicidal adolescents (Wagner, 1997). Considered together, these factors may seriously hinder the traditional link to treatment, i.e., contact with a treatment provider arranged by a parent or guardian.

Following resolution of a suicidal crisis, continued treatment may be neither prioritized by the family nor desired by the adolescent. Many of the suicidal adolescents who do seek help, at least initially, fail to comply with recommended

follow-up appointments (King, Hovey, Brand, Wilson, & Ghaziuddin, 1997; Litt, Cuskey, & Rudd, 1983; Spirito, Plummer, Gispert et al., 1992; Taylor & Stansfeld, 1984; Trautman, Stewart, & Morishima, 1993). For instance, Spirito and his colleagues found that 9% of suicidal adolescents treated in a psychiatric hospital failed to participate in any recommended outpatient treatment. At three-month follow-up, only 59% were participating in psychotherapy on a regular basis. In a study of outpatient follow-through among 10- to 18-year-old suicide attempters, Trautman, Stewart, and Morishima (1993) reported an overall dropout rate of 77%, with a median survival prior to drop-out of only three visits. Follow-through has been found to vary by type of outpatient intervention. King et al. (1997) found that follow-through with recommended parent guidance or family therapy was significantly less (33.3%) than follow-through with medication follow-up (66.7%) and individual therapy (50.8%). That is, the more time-consuming, complex, or psychologically demanding the intervention, the poorer the follow-through.

Early treatment drop out may be related to difficulty in establishing a therapeutic alliance with suicidal adolescents. Suicidal youth are often depressed and hopeless (e.g., Lewinsohn et al., 1996; Robbins & Alessi, 1985), have a long history of family relationship difficulties (e.g., Brent, et al., 1994), and may be prone to anger, aggression, or impulsive responding (e.g.. Pfeffer,Newcorn, Kaplan, Mimchi, & Plutchik, 1988). In addition, they may have a defensive style of denial, consistent with the presence of conduct disordered or substance abusing behaviors. Their participation in treatment may even have been coerced.

Specific predictors of suicidal adolescents' treatment follow-through have been identified. King et al. (1997) found that suicidal adolescents from the most dysfunctional families, and suicidal adolescents with the least involved and affectionate father-adolescent relationships, had the poorest follow-through with family treatments following hospitalization. Demonstrating the impact of parental psychopathology on treatment follow-through, these investigators also found that mothers' self-reported depressive and paranoid symptoms were linked with less adolescent follow-through with individual outpatient psychotherapy. Parents have substantial influence on the help-seeking process and, more specifically, on the treatment follow-through of suicidal adolescents.

Brent et al.'s (1998) recent clinical outcome study offers additional clues to the problem of poor treatment follow-through. In a study comparing the effectiveness of three psychosocial treatments for depression in adolescents, these investigators found that adolescent's self-reported hopelessness predicted both dropout and poor response to treatment for depression. Although they did not report the impact of hopelessness on change in suicidality specifically, their findings suggest the importance of reducing hopelessness early in the outpatient treatment of a potentially suicidal adolescent. Hopelessness has been associated with suicide risk in a number of empirical studies (e.g., Lewinsohn, Rohde, & Seeley, 1996; Morano, Cisler, & Lemerond, 1993). A "small win" or positive change experienced early in the course of treatment may develop or strengthen adolescents' beliefs that change is possible and outpatient treatment is worthwhile. This strategy may reduce hopelessness, and thereby enhance compliance with treatment.

Empirically Validated Treatments

Suicidal Behavior

We are also challenged in our prevention efforts by the almost complete absence of empirically validated effective treatments for suicidal behavior in youth. The limited state of our knowledge was highlighted in a recent review of randomized clinical trials of psychosocial and pharmacotherapy studies designed to reduce suicidal behavior (Linehan, 1997). It is also discussed by Rudd, Joiner, Jobes, and King (in press) in their presentation of guidelines for the outpatient treatment of suicidality. In truth, we have relatively little to go on -- in terms of a scientific basis -- and only tentative answers to some of the most fundamental questions concerning core interventions, their effectiveness, and their potential associated harm. Existing studies documenting the efficacy of treatments in reducing suicidal behavior have been primarily conducted with adult samples (e.g., Linehan, Armstrong, Suarezet al., 1991).

To our knowledge, there have been no randomized controlled studies targeting suicidality in youth that have demonstrated efficacyin terms of reductions in actual suicidal behavior (suicidal attempts). Only a few controlled studies have even included adolescents, and these have generally included older adolescents and young adults. Rudd and his colleagues (Rudd. Rajab, Orman et al., 1996) evaluated the efficacy of a brief cognitive-behavioral treatment and demonstrated reductions in suicidal ideation among older adolescents and young adults. Their cognitive-behavioral intervention incorporated a strong emphasis on problem-solving, which is consistent with other interventions demonstrating reductions in suicidal ideation, depression, and hopelessness (as reviewed in Rudd et al., in press).

Treatments targeting the family unit are often considered to be a key component of interventions with suicidal youth because of well-established correlations between youth suicide attempts and family conflict , parent-adolescent communication problems, and parental psychopathology (Keitner, Miller, Fruzzetti, Epstein, Bishop, & Noman, 1987; King, Segal, Naylor, & Evans, 1993), as well as family histories of suicidal behavior (e.g., Brent et al., 1994; Shafii, Carrigan, Whittinghill, & Derrick, 1985). A family therapy program called Successful Negotiation/Acting Positively or SNAP (Piacentini, Rotheram-Borus, and Cantwell, 1995) was developed to target family functioning in families of youth suicide attempters. The program's primary goal is to increase positive family communication skills and improve the family's ability to use effective problem-solving strategies during conflict. This is a promising approach that warrants furthersystematic study.

Other Treatment Targets

Despite our limited knowledge concerning efficacious treatments for reducing suicidal behavior, we do have some evidence to suggest that certain interventions can reduce the severity of suicide risk factors. Given the common presentation of comorbid conditions and social environmental problems among suicidal youth, there are often several appropriate targets for treatment or intervention, and any one

problem (i.e. depression) may benefit from more than one form of treatment. Because depression or mood disorders, alcohol/substance abuse, and aggressive or conduct disorder behavior have been commonly associated with youth suicide (e.g., Brent et al., 1993; Marttunen et al., 1991; Shafii et al., 1985), interventions and treatments for these conditions will be briefly reviewed.

Depression. Controlled outcome studies of psychosocial treatments for depression indicate that several well-defined interventions -- cognitive-behavioral therapy, self-control training, and relaxation training -- are effective in reducing depressive symptoms (as summarized in Kazdin & Marciano, 1998). In fact, the relatively minor differences in efficacy found between these treatments have generally disappeared after short follow-up periods (e.g., Wood, Harrington, & Moore, 1996). In addition, antidepressants are often recommended for these youth (e.g., Greenhill & Waslick, 1997), and the efficacy of fluoxetine in children and adolescents, in terms of reductions in depressive symptom severity, has been demonstrated in a double-blind, randomized, placebo-controlled trial (Emslie, Rush, Weinberg et al., 1997).

The Adolescent Coping with Depression Course (Clarke, Lewinsohn, & Hops, 1990) is perhaps the most systematically studied psychosocial intervention for depressed youth. Relative to waiting-list control cases, depression scale scores were significantly reduced among adolescents in treatment conditions following treatment, and fewer adolescents in treatment conditions met diagnostic criteria for depression following treatment (Lewinsohn, Clarke, Hops, & Andrews, 1990). A number of other controlled treatment studies (e.g., Fine, Forth, Gilbert, & Haley, 1991; Kahn, Kehle, Jenson , & Clark, 1990; Lerner & Clum, 1990; Reynolds & Coates, 1986; Stark, Reynolds, & Kaslow, 1987) have also documented the effectiveness of cognitive-behavioral treatments for depressed adolescents. Although specific interventions varied somewhat across outcome studies, they can be described in summary as focused, "here-and-now," short-term treatments aimed at (a) the modification of maladaptive cognitions and behaviors, and/or (b) the acquisition of more effective communication, problem-solving, and coping skills.

In a study of clinic-based psychosocial treatments for depressed adolescents, Brent, Holder, Kolko et al. (1997) found that cognitive-behavioral therapy (CBT) resulted in greater and more rapid reductions in depression than did systemic-behavioral family therapy and nondirective supportive therapy. All three of the psychosocial treatments, however, showed significant and similar reductions in suicidality. In another controlled treatment study comparing adolescent-only CBT, adolescent and parent CBT, and wait-list control conditions, adolescents in both CBT conditions improved more than those in the wait-list condition, reporting fewer symptoms of distress and depression (Lewinsohn, et al., 1990).

Less is known, however, about the long-term effectiveness of CBT for depression in adolescents. For example, findings from a recent clinic-based study suggest that brief CBT treatments may have no impact on comorbid conditions and may not have enduring positive effects (Wood et al., 1996). Wood et al. found that CBT was initially more effective than relaxation training in reducing depressive symptoms and improving adaptive functioning. Nevertheless, the CBT had no measurable impact on comorbid anxiety and conduct disorder symptoms, and differences between treatment groups were nonsignificant at six-month follow-up. In contrast, the study by Lewinsohn et al. (1990) demonstrated relative gains that were still evident at 2-year follow-up.

Some data are available on which depressed adolescents respond best to CBT (Brent et al., 1998; Clarke, Hops, Lewinsohn et al., 1992; Jayson, Wood, Kroll et al., 1998). In a sample of 50 patients with major depressive disorders, ages 10 to 17 years, Jayson et al.(1998) found that improvement was associated with lower levels of depression and functional impairment. Investigators at the Oregon Research Institute found that improvement was associated with lower levels of depression, less state anxiety, and lower levels of cognitive distortion at intake (Clarke et al., 1992). The most recently published study of predictors of poor outcome found that major depression at the end of treatment was predicted by clinical referral (rather than public advertisement), comorbid anxiety disorder, hopelessness, and higher levels of cognitive distortion (Brent, Kolko, Birmaher et al., 1998).

As summarized in a recently published review and meta-analysis of CBT and adolescent depression (Reinecke, Ryan, & Dubois, 1998), findings are positive concerning short-term effectiveness. Much less is known about the long-term stability of gains and the long-term impact of CBT on adolescent suicidality. Data suggest that CBT may not be as effective (at least in the relatively brief format studied) for more severely depressed and impaired youth. Further research is clearly needed that addresses the generalizability, long-term stability of gains, effectiveness relative to other interventions, and impact of cognitive-behavioral approaches on suicidal ideation and behavior among adolescents.

Conduct Disorder and Antisocial/Aggressive Behavior. Treatment contact with potentially suicidal, conduct disordered youth generally occurs following a serious rule violation at school or in the community, out-of-control or dangerous interpersonal behaviors, or a suicidal incident. That these youth are connected with treatment only after signifcant crises may be related to cognitive factors such as minimization of problems and social factors such as poor access to mental health resources. Youth with conduct disorders tend to minimize their problems (Kazdin, Bass, Siegel, & Thomas, 1989), which may reduce professional help-seeking and mental health service utilization among this group, making preventive interventions improbable.

As delineated in a recently published set of practice parameters for the assessment and treatment of conduct disorder (American Academy of Child and Adolescent Psychiatry, 1997), effective treatment for severe conduct and behavioral problems must be multimodal and continue over an extended period of time. Single treatment approaches, including psychiatric hospitalization, have been repeatedly found to be ineffective with these adolescents (e.g., Kazdin, 1989). This may be because conduct disorder behaviors are usually stable over time (e.g., McCord & McCord, 1969; Robins & Rutter, 1990) and associated with a variety of comorbid problems such as substance abuse and criminality, in addition to negative adult outcomes. One promising approach is Multisystemic Therapy (Borduin, Cone, Mann et al., 1995). This action-oriented intervention treats adolescents in their home and community environments, combining aggressive case management with individualized and targeted intervention.

Alcohol and Substance Abuse. Alcohol or other forms of substance abuse are frequently comorbid with conduct disorder (e.g., Milin, Halikas, Meller, & Morse, 1991; Greenbaum, Prange, Friedman, & Silver, 1991) and associated with impairment in multiple areas of functioning. Among adolescents treated in clinic settings, the substance abuse is usually also comorbid with one or more

internalizing or disruptive behavior problems (Bukstein, Glancy, & Kaminer, 1992). Although there have been few empirical studies of the effectiveness of specific treatment modalities for adolescent substance abuse, intervention has been found to be superior to no intervention (Catalano, Hawkins. Wells, Miller, & Brewer, 1990-1991).

Co-morbid Conditions. Problems with depression and alcohol abuse or conduct problems are frequently comorbid during adolescence (Bukstein, Brent, & Kaminer, 1989). Relative to adolescents in the community reporting only one of these problems, those with a comorbid condition are more likely to report a positive suicide attempt history (e.g., Wagner, Cole, & Schwartzman, 1996). Among adolescents seeking mental health services, these comorbid conditions have also been associated with an increased frequency and severity of suicidal behavior (Brent et al., 1993; Kovacs. Goldston, & Gatsonis, 1993; Pfefferet al., 1988). Because suicidal adolescents are a heterogeneous group (King, 1997), other forms of psychopathology, including but not limited to schizophrenia, bipolar disorder, social phobia, post-traumatic stress disorder, and comorbid oppositional-defiant disorder, are also appropriate intervention targets.

Psychological Characteristics. In addition to identifable mental disorders, suicidal adolescents are usually in pain or what has been referred to as psychache (Shneidman, 1993). They may have any of several psychological or behavioral characteristics such as a tendency toward impulsive responding, hopelessness, affect dysregulation, aggressive behavior patterns, impaired problem-solving skills. or notably low resilience to stress (Berman & Jobes, 1991). For instance, cognitive problem-solving deficits have been identified in suicide attempters (Patsiokas, Clum, & Luscomb, 1979) and have been one target of cognitive-behavioral interventions for suicidal young adults (e.g., Rudd, Rajab, Orman, Joiner, Stulman, & Dixon, 1996) and depressed adolescents (e.g., Reynolds & Coates, 1986). These psychological characteristics and deficits are appropriate targets oftreatment in suicidal youth whether or not depression has been diagnosed.

NEW DIRECTIONS: BROADENING THE RESEARCH AGENDA

It is time to take a freshlook at our youth suicide prevention efforts. The purposes of this section are twofold: (1) to identify next steps in the development and evaluation of prevention strategies currently in use; and (2) to broaden our perspective and address gaps in current recognition, referral, and intervention efforts.

The development of effective, empirically validated youth suicide prevention strategies has been seriously hampered by a number of factors. These include the preponderance of relatively small and unsustained pilot suicide prevention efforts, an inadequate commitment of time and resources to evaluation, and premature closure concerning the full range of possible suicide prevention strategies.

Recognition and Referral

Further progress in recognizing and referring at risk youth will require an honest appraisal of the relative strengths and weaknesses of each of the strategies outlined above, and efforts to evaluate them more fully. To some extent the field has become polarized with some prevention experts advocating proactive, systematic case identification through direct screening (e.g., Shaffer & Craft, 1999) and others advocating for gate keeper training and student education (e.g Kalafat & Ryerson, 1999). Based on the existing evidence, it is impossible to "call it" at ths time, and it is possible that some combination of recognition strategies may be most effective.

Gatekeeper Training

Gatekeeper training faces challenges on several fronts. It requires that gatekeepers - teachers, parents, students, counselors and others in the community-- are in regular contact with youth so that they can recognize signs of suicide risk. This may be problematic for the subset of suicidal youth who are largely disconnected hm others and not attending school (Eggert, Thompson. Herting, & Nicholas, 1994). Because the list of suicide risk factors is relatively broad and characterizes more than a small percentage of youth, there is also the problem of false positives. Will all youth with one or more suicide risk factors be referred for further evaluation? How will the judgment be made about which youth to refer? Is there a problem with the stigmatization of identified youth? Further, even when trained gatekeepers may not feel supported in the recognition and referral role. We must not assume that teachers or others who complete gatekeeper training will necessarily use their new skills effectively and sensitively. We also must not assume that recognition and referral will result in help-seeking and reduced suicide risk.

Gatekeeper training efforts have typically been limited to school personnel. However, in order to identify a broader population of youth, and particularly those youth who are alienated from the educational system, gatekeeper training must be broadened beyond the school environment. Community agencies broaden the support networks of multiple youth and offer perhaps the best chance for reaching a large number of youth who demonstrate risk factors for suicidal behavior. Several community agents, typically involved in the lives of youth, have great potential for accomplishing these goals:

Protective Services. Protective services has the unique position of being closely involved with abusive, neglectful, and otherwise dysfunctional families that are often isolated from other community contact. As such, they have access to youth who are at risk for suicidal ideation and behavior. They frequently provide a link to mental health services by referring children from problematic family situations for evaluation and treatment. Further, they often have the authority to mandate family therapy or parent training targeting abusive, neglectful, overly punitive or excessively critical parenting styles and family conflict, factors that are related to depression and suicidality in youth.

Law Enforcement Agencies. Police and probation officers work with a subpopulation of youth with high levels of impulsivity and antisocial behavior,

factors which are related to suicidality. As such, they have the potential to identify youth at risk for suicide.

Runaway and Homeless Agencies. Over the past 15 years, there has been a signifcant increase in the number of youth runaways, and these youth are at heightened risk for suicide (Rotheram-Borus & Bradley, 1991). Because they service a subpopulation of youth that is clearly at high risk for suicide, runaway and homeless agencies are crucial resources for the identification and treatment of at-risk youth.

Substance Abuse Services. The primary benefit of organizations such as Alcoholics Anonymous and Narcotics Anonymous is the maintenance of abstinence from alcohol and drug abuse, factors that are closely associated with decreased risk for suicidal behavior in youth. However, these organizations also provide a supportive network of concerned individuals beyond the family system. As such, group leaders and others involved in these organizations are important targets for gatekeeper training.

Community Recreation and Mentor Agencies. Staff, coaches, and volunteers of clubs such as Boys and Girls Clubs and community centers often have regular contact with youth and as such may be appropriate gatekeepers. For youth with problematic family situations or those without appropriate adult role models, Mentor Programs and Big Brothers/Big Sisters can be particularly invaluable resources.

Sustained Development of Gatekeeper Training and Student Education/Awareness Programs

The following questions and issues need to be addressed in the further development and evaluation of gatekeeper training and student awarenes/education efforts

(a) *Youth characteristics related to recognition.* Which youth at risk are being recognized by teachers? School counselors? Peers? Others? What youth characteristics lead to gatekeeper recognition? What are the characteristics of youth who are missed by recognition efforts-- i.e., those with attempts or completions?

(b) *Gatekeeper characteristics:* Which gatekeepers are most able to accurately identify youth at risk? What gatekeeper Characteristics are related to accurate recognition and referral of identified subpopulations of youth? For example, what characterizes the most effective gatekeepers for older adolescent males at risk -- those with conduct disorder or aggressive behaviors, alcohol/substance abuse, and perhaps depressive spectrum disorders?

(c) *Outcome of gatekeeper recognition:* What happens following gatekeepers' recognition of youth at risk? What are the outcomes of recognized and referred youth in terms of services offered, services obtained, satisfaction with services, perceived stigmatization, and functional status?

(d) *Feedback from gatekeepers:* What are gatekeepers' attitudes toward and perceptions of gatekeeper training programs and their effectiveness? Are they satisfied with the training? Do they feel inclined to refer youth for services? What factors hinder referral or the use of other attained skills? Do they obtain feedback concerning the outcomes of referred youth? Do they feel their efforts are supported in the schools with adequate continuing education, infrastructure support, and available services?

(e) *Parents as gatekeepers:* How might parents be effectively involved in gatekeeper training efforts through parent-primary care provider, parent-teacher, or parent coach partnerships?

(f) *Youth as gatekeepers:* Are student education efforts effective in enhancing accurate recognition of peers-at-risk, help-seeking behaviors, and referrals of peers-at-risk? What is a sufficient educational dose in terms of amount of information conveyed and amount of time dedicated to conveying it? What factors are important in translating students' increased knowledge of youth suicide into an increased likelihood of recognizing and referring peers-at risk?

Given the positive pretest sensitization effect documented in one school-based prevention program (Spirito et al., 1988), it would be useful to determine how much educational time is necessary to obtain maximal benefit. What are the outcomes of a brief school-based pre-assessment, educational presentation, and post-assessment? Do youth education and awareness programs cause significant distress among certain populations of youth?

(g) *Proximal and distal outcome variables:* There is substantial variability in the outcomes that have been measured by suicide prevention programs. Although a reduction in suicide attempts appears to be the most appropriate outcome variable, the relatively low base rate of completed suicide makes statistical comparisons nearly impossible given the size and scope of most investigations. Alternative outcome variables are based on each program's objectives. As discussed by Mazza (1997), studies of the efficacy and effectiveness of suicide prevention efforts ideally includes measurement of the extent to which the more proximal goals are successfully met as well as the more distal goal of reduced suicidal behavior.

Proactive Systematic Screening

The systematic screening of youth is most likely to reach those youth who are connected to social systems and attending schools. Those youth at risk for suicide who have dropped out of school or who are frequently truant may be unlikely to complete the screening questionnaires. A second potential drawback of this approach concerns its feasibility or perceived feasibility. Rather than the gatekeeper approach of using the current school infrastructure to couple teacher in-service training workshops with mental health support staff services, this approach requires establishment of a new system for large-scale screening. Although Shaffer and Craft (1999) argue that it is efficient and cost effective, schools must be willing to make such screening a priority. They also must have support services in place to handle the high number of false positives that result from stage one screening, follow-up evaluations, and referrals for services. In addition, systematic screening approaches must grapple with the fact that some small number of students at risk will not identify themselves on self-report questionnaires.

Sustained Development of Systematic Screening Strategies

The following questions and issues need to be addressed in this area:

(a) *Youth characteristics related to positive screens:* How do the profiles of youth identified by proactive screening compare to our knowledge of risk factors for attempted and completed suicide? In addition to the risk factors targeted by most screening efforts, can identification of other related variables, such as a tendency toward impulsive responding, hopelessness, aggressive behavior patterns, impaired problem-solving skills, notably low resilience to stress or affect dysregulation be used to improve the accuracy of screening efforts?

(b) *Outcome of proactive screening:* What are the outcomes of youth identified and referred through systematic screening efforts in terms of services offered, services obtained, satisfaction with services, perceived stigmatization, and outcome fictional status?

(c) *Screening in community settings.* What are levels of feasibility and effectiveness associated with the extension of systematic screening efforts to settings outside of schools to reach those youth who have dropped out of school or who are frequently truant?

Comparison of Recognition and Referral Strategies

(a) *Combined strategies.* If proactive, systematic screening of youth and gatekeeper training are combined, are more youth or different kinds of at risk youth identifed than when either approach is used alone?

(b) *Differential strengths of gatekeeper versus proactive screening strategies.* Do the two approaches -- gatekeeper training and systematic screening - differ in terms of "services" issues such as cost and feasibility? Do they differ in terms of the types of youth identified, the likelihood of youth follow-through with recommended services, or youth outcomes?

Early Intervention and Treatment

Further progress in our efforts to intervene successfully with youth at risk for suicide will require creative approaches to intervention --- perhaps new treatment models - that are characterized by higher rates of use and higher rates of treatment follow-through. It will require us to grapple with issues related to adolescent help seeking. It will also require sustained research on the effectiveness of our interventions and treatments. Next steps in the development and evaluation of early intervention and treatment efforts include the following:

Helpseeking and treatment follow-through

(a) *Attitudes toward helpseeking and available services.* What are the attitudes of suicidal youth and their families toward help-seeking and available services (including specific attention to various subgroups of suicidal youth such as older adolescent males with serious behavioral problems)? In suicidal youth for whom attitudes are a barrier to help-seeking, can we develop effective strategies to change these attitudes?

(b) Predictors offollow-through for subgroups of suicidal youth: What are predictors (e.g., youth characteristics, provider and service characteristics, family characteristics, socioeconomic factors) of follow-through with different types of intervention for subgroups of suicidal adolescents? Such research may be expected to guide the development of interventions that are most likely to be accessed by these subgroups.

Early Interventions and Treatment

(a) *Effective interventions and treatments.* What psychopharmacologic and psychosocial treatments are effective for suicidal youth? Research must be characterized by relatively large samples of youth, enabling researchers to draw conclusions and conduct subgroup analyses. For instance, what interventions are most effective, or differentially effective, for subsets of suicidal adolescents, including those with chronic, severe forms of depression and comorbid behavior disorders? Are interventions specifically targeting reduced suicidal behavior more effective than those addressing risk factors?

(b) *Range of interventions.* Can we develop a broader range of intervention and treatment strategies that move beyond traditional office-based, services and take into account developmental issues of adolescence and the social contexts of youths' lives?

(c) *Parent-focused interventions.* Are treatments that address parental factors, and assessment and treatment of parental psychopathology when present, more effective than those that focus solely on youth characteristics?

(d) *Importance of hope.* What intervention strategies, or perhaps targets of treatment, most effectively increase hope early in the course of treatment? Are these strategies also related to increased treatment compliance or follow-through?

(e) *Special populations of at risk youth.* What interventions are most effective for Mexican-American students with high levels of acculturative stress? What interventions are most effective for young, African-American males? Gay and lesbian youth?

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A CONCEPTUAL SCHEME FOR ASSESSING TREATMENT OUTCOME IN SUICIDALITY

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What works in treating suicidality and how do we know it works? From a scientific standpoint, this is a difficult question to answer. It is arguable that we simply do not know. To date, we have very limited scientific proof of what works in the treatment of this challenging population. Rudd, Joiner, Jobes and King (1999) recently provided a review of the extant literature, offering a few conclusions that establish an empirical foundation to emerging practice guidelines and essentially a reformulation of the standard of care based on the recognition that the current science of suicidology is seriously limited. The scientific limitations are, perhaps, no more glaring than in the area of treatment outcome studies.

Treatment outcome studies in suicidality are hampered for many reasons. First, the advent of managed care has changed the very nature of treatment, restricting the availability of both inpatient and outpatient alternatives for those with severe problems such as suicidality (Nathan, 1998; Seligman, 1996; Seligman & Levant, 1998). This makes it not only more difficult to implement innovative and experimental programs but also locate adequate comparison or control groups. Second, clinicians have become hesitant to take on seriously suicidal patients in outpatient settings due to escalating malpractice claims and general anxiety and fearfulness (Jobes & Berman, 1993; Pope & Tabachnick, 1993). Actually, some

studies targeting suicidality excluded those considered to be high risk for suicidal behavior, raising questions about the representativeness of the study samples (see Rudd, Joiner, Jobes, & King, 1999 for review). Third, the increasingly complex diagnostic picture presented by those with chronic suicidality makes psychotherapy difficutl resulting in escalating costs and more intensive treatment (Rudd, Joiner, & Rajab, 1996). Fourth, treatment compliance and follow-up rates are almost uniformly poor resulting in small sample sizes (e.g., Rudd, Joiner, Jobes, & King, 1999 for a review). Fifth, there is little consensus on a common nomenclature (O'Carroll, Berman, Maris, Moscicki, Tanney, & Silverman, 1996). This makes comparison across studies very diffucult, if not impossible, since inclusion and exclusion criteria are often relatively ambiguous. Even simple and straightfoward questions like what is a suicide attempt from study to study are not always easy to answer.

As mentioned above, identifying adequate control groups is difficult not only because of restricted treatment alternatives but also the complex ethical and legal issues involved in treating suicidality (e.g., Bongar, 1991). Obviously, treatment cannot be withheld nor delayed. As a result, many studies simply default to treatment as usual comparisons (e.g. Rudd, Joiner, Jobes, & King, 1999 for review). A precise definition and monitoring of treatment as usual is actually quite complex. Treatment as usual (TAU) comparison groups often incorporate a mixture of individual and group alternatives, with little information or data offeredabout the precise nature (i.e., theoretical orientation), frequency, intensity, or duration of care. TAU designs seldom utilize a standardized protocol and assessing treatment fidelity is a challenge. Similarly, an accurate definition of treatment completion or treatment withdrawal is impossible if there is no clear agreement as to what constitutes treatment us usual. The potential for between-group differences in outcome measures that are simply a function of incomplete treatment in the control or comparison group are substantial in TAU designs. Experimental treatments, in contrast, are more often theoretically specific, time-limited, and well defined in terms of completion criteria, frequency of contact, and overall duration of care. Given that many experimental treatments are manual-driven, it is easier to identify who successfully completed treatment and those that withdrew.

Finally, there has been little discussion and debate of the issue of conceptualizing treatment outcome. Little has also been said about the need to develop a core assessment battery in suicidality, a step that would provide for at least some comparability across studies, making it easier to perform meta-analyses on similar intervention/treatment approaches. Before a core assessment battery could be recommended, though, there is a need to come to some agreement as to how best to conceptualize treatment outcome.

The goals of this chapter are threefold. First, I will discuss a conceptual scheme that can be applied to treatment outcome studies in suicidality; one that is simple and straight forward and is not bound by theoretical constraints. Second, the conceptual frameworkoffered will be used to discuss the need for a core assessment buttery. Finally, I will comment on normative comparisons in treatment outcome studies with suicidal patients and offer a few recommendations for how they can best be handled.

CONCEPTUALIZINGTREATMENT OUTCOME: DEFINING TREATMENT SUCCESS AND FAILURE

Although most suicidologists would readily agree that a standard nomenclature is critical to the field (e.g. O'Carroll et al., 1996), there has been no apparent debate about the need to conceptualize treatment outcome in coordinated fashion. It is critical that we define suicide attempt or suicidal ideation in precise fashion for the study inclusion criteria. Similarly, though, we need to be equally cautious and rigorous in conceptualizing markers of suicidality for treatment outcome. How do we know that a patient has successfully responded to treatment? What changes are expected? What changes are common regardless of treatment type? What changes are treatment-specific? How long should observed changes endure for a given patient to be considered recovered? Will a successfully treated patient be considered normal? These are just a few of the questions we need to ask when assessing treatment outcome for suicidality.

A clear conceptual scheme for assessing treatment outcome for suicidality is furthercomplicated by three central problems. First, suicide and suicide attempts are low base rate phenomena and of limited value as markers of success in treatment studies (e.g., Clark, Young, Scheftner, Fawcett, & Fogg, 1987; Mackinnon & Farberow, 1975; Motto, Heilbron, & Juster, 1985; Murphy, 1972, 1983, 1984; Pokorny, 1983, 1992). Accordingly, there is a need to monitor associated or more peripheral symptoms and constructs that have, in some fashion, proven to be related to suicidality. Second, suicidality is also a time-limited phenomenon. This is not to say that some people are not chronically suicidal or that multiple attempters are not a distinctive group. Consistent with Litman's (1990) idea of the suicide zone, even those manifesting chronic suicidality are only at extreme risk for limited periods of time. As a result of the time-limited nature of suicidality, symptomatic improvement and some level of recovery are expected. At least at an observable symptom level, the majority of suicidal patients will recover in relative terms. This is consistent with what Rudd, Rajab, Stulman, Oman, Joiner, and Dixon (1996) described as a possible ceiling effect at intake with most acutely suicidal individuals. The normal course for those presenting with suicidality is symptomatic recovery. The timeframe may vary from individual to individual but, more than likely, the vast majority will improve in relative terms simply because they were originally assessed at their worst. That is, they completed the initial assessment while actively suicidal. If symptomatic recovery is the norm for this group, then the question of clinical significance becomes paramount. Finally, treatment outcome measures are theoretically dependent. The outcome measures selected will depend on the theoretical orientation of the particular treatment being investigated. As a result, some of the outcome measures chosen may well be so theoretically specific as to prevent meaningful comparisons across studies.

Figure 1 provides a broad conceptual scheme for assessing treatment outcome in suicidality. Consistent with the nomenclature offered by O'Carroll et al. (1996) suicide and suicide attempts fall under the rubric of suicide-related behaviors, along with instrumental behaviors. The only direct marker of suicidality, then, is a behavioral outcome such as a completed suicide, suicide attempt, or instrumental behavior. Although the expressed intent of the behavior is often questioned for those engaging in instrumental behaviors, treatments

specifically targeting this group can use this as a direct marker of treatment success. Given the previous issue raised about the low base rate nature of completed suicides, suicide attempts, and instrumental behaviors, however, they have limited value in determining a given treatment program's success. The routinely small sample sizes for most studies make it even more difficult to detect significant differences using direct markers of treatment outcome.

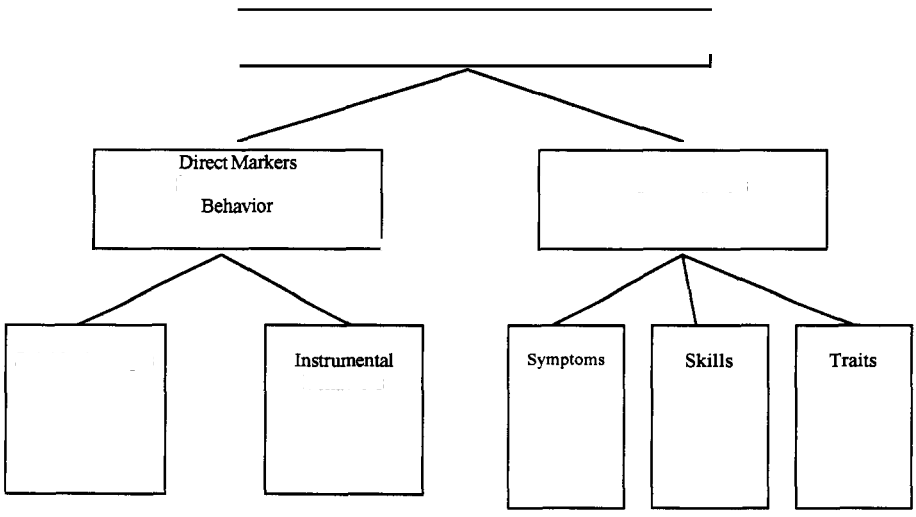

Figure 1. Conceptualizing treatment outcome for suicidality.

Indirect markers encompass associated symptoms, identified skill deficits, and specific personality traits. For the most part, indirect markers tap into the individual's level of day to day functioning, emphasizing those variables with consistent empirical support in the existing literature (e.g., Maris, Berman, Maltsberger, & Yufit, 1992). The vast majority of treatment outcome studies have incorporated measures that fall within the three domains identified (see Rudd, Joiner, Jobes, & King, 1999 for review). As illustrated, the symptom factor is the most inclusive. Symptom measures incorporate outcome indices such as suicidal ideation, depression, anxiety, panic, guilt, anger, and insomnia among many others.

The skill factor addresses specific skill deficits that are targeted in treatment. In other words, what specific skill area is it that the treatment is trying to change? Regardless of theoretical orientation, the psychotherapeutic treatment of suicidality attempts individual change in some form or fashion. Many psychotherapeutic approaches to suicidality have been couched within a diathesis-stress model with the focus of change ranging from problem-solving skills, to interpersonal assertiveness, to distress tolerance and emotion regulation ability, to anger management (e.g., Linehan, 1993; Schotte & Clum, 1982; 1987).

The final domain addresses maladaptive personality traits. This is a fairly broad category that incorporates both self-image and interpersonal functioning consistent with the diagnostic scheme of the Diagnostic ana' Statistical Manual of Mental Disorders, 4 Edition DSM-IV, 1994). Both personality traits and disorders can be conceptualizedwithin this domain, as well as a host of markers of interpersonal functioning such as social support. Less frequently referenced constructs such as perfectionism, neuroticism, introversion, extraversion, among others would fall under this category as well. Consistent with the DSM-IV, maladaptive personality traits address the individual's degree of impairment in social and occupational functioning and, accordingly, are of critical importance in assessing treatment outcome.

Using the conceptual framework detailed in Figure 1, how do we identlfy those that have been successful in treatment? That is, how do we categorize them for comparison and more refined analysis? Do we use direct markers and only consider those that make no additional attempts or engage in no instrumental behavior during the follow-up period as having experienced treatment success? Or do we consider those that experience symptom remission to have been successful, particularly given the very nature of suicidal crises and the expectation that symptoms will eventually subside or improve to some degree? Consistent with the above discussion, the following three categories are recommended:

1. **Full Treatment Response (Full-responders):** characterized by a significant reduction in both direct and indirect markers of suicidality. More specifically, there will be a significant reduction in subsequent attempts and instrumental behaviors (depending on what was targeted by the treatment program), as well as symptom remission as indicated by primary symptom measures (e.g., depression, anxiety, suicidal ideation).
2. **Partial Treatment Response (Partial-responders):** characterized by a significant change only in symptom measures, skills, and/or maladaptive personality traits without a corresponding reduction in direct markers of suicidality.
3. **No Response (Non-responders):** characterized by isolated symptom recovery, without any significant change in targeted skills and/or maladaptive personality traits. Consistent with the argument detailed above, limited symptom recovery is expected for most acutely suicidal individuals.

Treatment success can be further classified as: a) immediate (less than 6 months), b) short-term (6-12 months), or c) enduring (greater than 12 months). Immediate gains are to be expected. As mentioned above, when an individual enrolls in a study and is actively suicidal, they can only improve. Short-term effects endure for up to twelve months. The vast majority of treatment outcome studies have addressed only short-term effects. As reviewed previously, the inherent complexity of outcome studies for suicidality have necessitated short-term follow-up. The severe psychopathology of the target group makes long-term follow-up difficult. To date, only a few studies have explored enduring treatment effects, with the vast majority of studies finding immediate improvement with subsequent deterioration (e.& Linehan et al., 1991; Rudd et al., 1996). Ideally, treatment success would be enduring, full treatment response with evidence of change as

indicated by both direct and indirect markers. The reality, though, is that we have only been able to demonstrate isolated indirect gains, none of which have endured over the long-term (Rudd, Joiner, Jobes, & King, 1999).

I have provided a conceptual scheme for assessing treatment outcome in suicidality that is simple and straightforward, a model that will hopefully provoke questions and further refinement. One of the primary benefits of such a broad conceptual framework is in the implicit recognition that suicidality is a complex phenomenon, one that is difficult to study over any timeframe. Without a broad framework that accurately presents this complexity, we lose some of the explanatory power. Regardless of the specific theory driving the treatment program, if lasting change is to occur, then we would expect comprehensive change as reflected by the individual's symptom presentation, identified skills, and ultimately personality traits and extreme behaviors such as suicide attempts or instrumental behaviors. However, treatment success may not always translate to fewer attempts. As was reviewed previously, few studies found short-term gains when the outcome measure was actual attempts. Even if an effect was noted, it did not endure for a meaningful period of time. The failure of treatment outcome studies to document direct effects or enduring gains may actually be more a problem of conceptualizing outcome, rather than a shortcoming of the specific treatment approach under investigation. More likely than not, behavioral or direct markers of suicidality will be the last changes to occur. Short-term gains are likely to be indirect, such as with symptom remission and improved targeted skills. A reduction in subsequent attempts and instrumental behaviors will probably parallel lasting changes in prominent maladaptive personality traits.

NORMATIVE COMPARISONS IN TREATMENT OUTCOME FOR SUICIDALITY

What types of comparisons are meaningful when studying suicidality? As mentioned above, given the very nature of suicidality, symptomatic recovery should be expected. Accordingly, between group comparisons may well have little value. We would expect both groups to recover, regardless of the specific treatment or intervention. This is purely a function of the nature of suicidality. Refer back, however, to the conceptual scheme reviewed. Although symptomatic recovery might well be expected, other indirect markers of suicidality would likely endure without adequate treatment. More specifically, if treatment were not effectwe, we would not anticipate changes in targeted skills or personality traits and related makers of interpersonal functioning. Therefore, treatment-specific comparisons are critical. Similarly, little progress has been made in reducing the actual rate of attempts. Accordingly, between group differences with respect to attempt rates will always be useful.

Consistent with the discussion provided by Kendall, Mans-Garcia, Nath, and Sheldrick (1999), normative comparisons are important. If recovery is to be expected, then the magnitude of recovery becomes increasingly meaningful. In other words, we need to ask the question of how do suicidal patients compare to normals? Not only are normative comparisons important to accurately understand the efficacy of a given treatment approach, the nature of the comparisons are also important. As Kendall et al. (1999) have recommended, it is wise to make

nonnative comparisons across a range ofmeasures and constructs. Not only does it speak to the comprehensive impact ofthe treatment, it also provides a method to explore the relative impact ofvarious treatment components.

TOWARD A CORE ASSESSMENT BATTERY: A LONG TERM GOAL

The most obvious implication ofthe conceptual scheme offered is the possibility of developing a core assessment battery in suicidality. The need for core assessment batteries in treatment outcome have been discussed for other targeted problems, particularly in mood, anxiety, and personality disorders (e.g., Strupp, Horowitz, & Lambert, 1997). A core assessment battery would incorporate measures that cut across the three domains identified above, as well as encompassing both direct and indtrect markers of suicidality. Although not extensive, a core assessment battery would allow for greaterease in comparisons across studies. Without question, we have a long way to go before discussing a core assessment battery. Hopefully, the current chapter will stimulate that process and raise questions about how we currentlyconceptualizetreatmentoutcome.

SUMMARY

This chapter provides a simpIe framework for conceptualizing treatment outcome, distinguishing between direct and indirect markers of treatment success. Additionally, normative comparisons and the need for a core assessment battery are discussed.

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