

Origins of Cognitive Vulnerability to Depression

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Vulnerability has increasingly become the organizing construct around which much research in psychopathology is organized. This is particularly the case for depression, where researchers have begun to focus considerable attention on the variables that may predispose some individuals to this disorder. Much of this attention has been directed toward understanding the origins of these presumed vulnerability processes. In line with this interest, vulnerability origins stemming from schema models, hopelessness models, and attachment theory are discussed, as is the idea of disrupted parent-child interactions in the creation of vulnerability. Within this latter category the link between abuse, maltreatment, cognitive factors and vulnerability is examined. Possible directions for future theory and research in cognitive vulnerability and depression are then discussed.

KEY WORDS: cognitive vulnerability; risk; depression; cognition; attachment; schemas.

Nothing brings researchers closer to understanding the essential features of depression than does the idea of vulnerability (Ingram & Price, 2001). Indeed, Ingram, Miranda, and Segal (1998) have argued that research on vulnerability has begun to emerge as a focal point in efforts to understand, treat, and prevent affective disorders. Not surprisingly, research on vulnerability dimensions and processes in depression has increasingly appeared in *Cognitive Therapy and Research*, with special issues devoted to various aspects of cognitive vulnerability appearing in 1992 and 2001. In fact, it is a rare issue of the journal that does not have an article that, if not explicitly devoted to vulnerability, presents data and ideas that pertain to vulnerability. Although there are a number of directions from which cognitive vulnerability can be understood, a considerable amount of recent work has been directed toward elucidating the origins of vulnerability. Thus, in recognition and commemoration of the fact that vulnerability has been an increasingly important theme in *Cognitive Therapy and Research*, the purpose of this paper is to examine concepts and data on the possible origins of cognitive vulnerability.

An exhaustive review of theory and research pertaining to cognitive vulnerability would far exceed the page limits that even the most generous editor would allow,

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even in a special issue. Hence, the focus of this paper is on several basic themes in cognitive vulnerability concepts and the data that speak to these themes. In particular, several important theoretical perspectives on cognitive vulnerability origins are briefly noted: self-schema, hopelessness, and attachment models. Possible origins are next examined with an eye toward understanding the effect of early experiences, and parent-child interactions, as they pertain to the possible development of cognitive vulnerability. These conceptualizations and data conclude with some proposals for integrative ideas on cognitive vulnerability.

ORIGINS OF VULNERABILITY IN COGNITIVE SCHEMA MODELS

Theories focusing on cognitive schemas in depression (e.g., Beck, 1967) suggest that these schemas develop in response to stressful events in childhood. Once such events are cognitively encoded, schemas sensitize individuals to respond in a dysfunctional fashion to circumstances that resemble those experienced in childhood. In this regard, Beck (1967) argues that

In childhood and adolescence, the depression-prone individual becomes sensitized to certain types of life situations. The traumatic situations initially responsible for embedding or reinforcing the negative attitudes that comprise the depressive constellation are the prototypes of the specific stresses that may later activate these constellations. When a person is subjected to situations reminiscent of the original traumatic experiences, he may then become depressed. (p. 278)

Beck's theory thus locates the nexus of cognitive vulnerability in childhood experiences. Although differing in some details, other cognitive theories also focus on early experiences (Goodman & Gotlib, 1999; Ingram et al., 1998).

VULNERABILITY ORIGINS IN THE HOPELESSNESS MODEL

In one of the earliest statements specifically focusing on vulnerability origins, Rose and Abramson (1992) suggested several developmental factors that may underlie hopelessness. In general, they argue that children who encounter negative events (e.g., maltreatment) attempt to find the causes of these events so that they can attach meaning to them. They further suggest that children evidence a tendency to make internal attributions for *all* events, and thus tend to see themselves as the cause of maltreatment. In some cases, Rose and Abramson suggest that this internalizing process precipitates the development of the negative attributional style that in turn creates depression risk. For instance, negative events affect the child's self-concept, and in so doing may lead to generalized tendencies to internalize these negative events. Such tendencies alone, however, are not sufficient to produce a hopelessness attributional style. Rather, if negative events are repetitive and occur in relationships with caregivers, these events will undermine the child's positive self-image as well as his or her optimism about future positive events. Moreover, persistent negative events will produce a pattern of attributions for these events that, over time, also become global and stable. These patterns thus become trait-like and serve as the foundation for hopelessness in the face of stressors in the future; a process that produces hopelessness depression.

COGNITIVE VULNERABILITY ACCORDING TO ATTACHMENT THEORY

Although not originally proposed as a model of the cognitive processes that produce depression vulnerability, attachment theory is widely recognized as providing important theoretical insights into these processes (Ingram et al., 1998). Attachment theory addresses factors that shape the capacity of people to form meaningful emotional bonds with others throughout their lives (Bowlby, 1969, 1973, 1980). Even though attachment begins in infancy, theorists suggest that the effects of attachment extend far beyond childhood. Indeed, several investigators have argued that once developed, attachment patterns persist into adulthood and affect numerous relationships with others (Ainsworth, 1989; Bartholomew & Horowitz, 1991; Doane & Diamond, 1994; Ricks, 1985). Bowlby has summed this up nicely by suggesting that attachment is a process that stretches from “cradle to grave.”

The quality of contact with caretakers is an important determinant of the individual's attachment patterns (Ainsworth, Blehar, Waters, & Wall, 1978). Specifically, consistently nurturing, affectionate, and protective interactions with parents promote the development of the child's ability to form normal bonds with others throughout life. However, deviations from secure attachment result when bonding processes are disrupted in some fashion; such dysfunctional attachment patterns in children are thought to be related to risk for depression (Bemporad & Romano, 1992; Cummings & Cicchetti, 1990). Moreover, the vulnerability that appears to stem from dysfunctional attachment patterns may originate with cognitive processes. In particular, attachment theory has highlighted the idea of internal working models, which are quite similar in some respects to schema models. In particular, working models are suggested to reflect the cognitive representation of relationships that have been generalized through interactions with important figures early in the individual's life. Moreover, once developed, working models influence the thoughts and beliefs individuals experience about relationships with important others. In the case of insecure attachment, the functioning and organization of the individual's working models will lead to distorted perceptions about interpersonal interactions, and thus to heightened risk for maladaptive relations with others (Bowlby, 1988). Considering the importance of interpersonal relationships for buffering against stress and providing support, dysfunctional relationships that are caused by maladaptive cognitive processing are seen as providing the basis for vulnerability to depression.

PARENT-CHILD INTERACTIONS IN THE PRODUCTION OF COGNITIVE VULNERABILITY

Several reviews of the literature have compellingly demonstrated the link between certain types of parental characteristics and depression (e.g., Gerlsma, Emmelkamp, & Arrindell, 1990; see also Ingram et al., 1998). With specific regard to risk, although differing in some aspects, each of the major cognitive approaches to depression suggest that early interactions with parents (or parental substitutes) figure

in prominently to the processes that create this risk.² In this section, data illustrating the association between these processes and depression are examined, starting with processes linked to attachment, and then focusing on abuse and maltreatment experiences.

Attachment and Vulnerability

The idea that problematic parent–child interactions produce vulnerability to depression is a theme that occurs across cognitive models. In an early study examining this idea, McCranie and Bass (1984) reported that among women nursing students, an overcontrolling mother was associated with dependency needs, whereas a greater tendency toward self-criticism was found for students who reported both a mother and a father who were overcontrolling. Likewise, Brewin, Firth-Cozens, Furnham, and McManus (1992) found that higher levels of self-criticism were related to reports of inadequate parenting, which was especially true for individuals who consistently reported high levels of self-criticism. Similar results were reported by Blatt, Wein, Chevron, and Quinlan (1979). From a somewhat different perspective, studies by Roberts, Gotlib, and Kassel (1996), Whisman and McGarvey (1995), and Whisman and Kwon (1992) examined current attachment levels in adults, and found that insecure attachment was related to higher levels of depressive symptoms. More importantly from a cognitive vulnerability perspective, they also found that this relationship was mediated by depressotypic attitudes and dysfunctional attributions. These studies thus provide empirical evidence that disturbed parent–child interactions may not only produce risk factors for depression, but that at least some of these risk factors are cognitive.

Other studies have also suggested that disruptions in the parent–child bonding process may be associated with cognitive vulnerability to depression. For example, Manian, Strauman, and Denney (1998) found that self-discrepancy patterns thought to be related to emotional regulation are associated with recollections of parenting rejection and warmth—dimensions that are considered to be quite important in attachment and bonding (Parker, 1979, 1983). Such data thus indicate that parental rejection may be an important factor in not only the development of depression, but in the origin of cognitive vulnerability. Likewise, Parker (1979) showed that recollections of diminished maternal care were associated with the kind of cognitive deficits that are seen in depression. Echoing this finding, Ingram, Overbey, and Fortier (2001) found that recollections of maternal care were linked to deficits in positive cognition and excesses in negative cognition. Cognition of this type has been specified by depression theories to represent an important causal agent in the onset and maintenance of the disorder. In another study assessing the possible childhood antecedents of cognitive vulnerability to depression, Ingram and Ritter (2000) found that vulnerable individuals displayed negative errors on an information processing task when they experienced a sad mood, and that prior ratings of maternal care were negatively

²Interactions with others may also produce vulnerability in some cases (Ingram, 2001), but data clearly suggest that various kinds of parent–child interactions are a primary source of cognitive vulnerability to depression.

associated with these negative errors. These data suggest that a perceived lack of caring by mothers in particular may set the stage for the development of a cognitive self-schema that is activated in response to a sad mood, and that may eventually lead to depression.

Abuse and Maltreatment Experiences

A different kind of parent-child interaction has been examined in studies assessing abusive experiences. In one of the few studies that specifically investigated cognitive variables within the context of abuse and depression, Kuyken and Brewin (1995) examined memory retrieval in depressed patients, some of whom had experienced sexual and/or physical abuse as children. Kuyken and Brewin (1995) found that depressed women who had been sexually (but not physically) abused evidenced a failure to recall specific memories in response to both positive and negative cues, thus suggesting that such abuse may lead to the disruptions in working memory, which may then play a role in mediating the relationship between abuse and depression.

Rose, Abramson, Hodulik, Halberstadt, and Leff (1994) also assessed the mediational effect of cognitive variables on the relationship between sexual abuse and depression, albeit from a very different perspective. They found that one subgroup of depressed individuals who had experienced childhood sexual abuse also evidenced negative cognitive styles. They speculated that these adverse experiences led to the development of negative cognitive processing patterns that were linked to vulnerability to depression. This speculation was further supported by Rose and Abramson (1995), who showed that degree of maltreatment was correlated with degree of dysfunctional cognition. Together, these data suggest that a history of early adverse experiences may produce the early cognitive patterns that lead to the later development of depression.

Cognitive Factors in Children

The research just reviewed suggests that disrupted interactions with parents pose a risk factor for later depression as a function of the development of cognitive vulnerability mechanisms. Such disruptions may take the form of poor parenting as in a lack of care or overcontrol, or may be more malevolent as in the sexual abuse of children. In general, such data support the idea that cognitive variables form mediational pathways between troublesome parental-child/adolescent interactions and depression. Of course, this research is not the only type of study that bears on the issue of cognitive vulnerability to depression, and on the origins, of this vulnerability. Most of the studies reviewed thus far have examined these factors in young adults. A body of data also exist on such factors in children.

A potentially important way to examine the origins and development of cognitive vulnerability for depression is to assess cognitive functioning in children who are not depressed, but who are at-risk for depression. One such a group of high-risk children are those whose mothers are depressed (Goodman & Gotlib, 1999; Hammen, 1991a). For instance, Radke-Yarrow, Belmont, Nottelmann, and Bottomly (1990) found that the children of depressed mothers reported more negatively toned

self-attributions than did children of nondepressed mothers, and also found some correspondence between mother and child statements; hence, a mother who endorsed the statement "I hate myself" was likely to have a child who endorsed the statement "I am bad." In another study, Jaenicke et al. (1987) assessed the offspring of unipolar, bipolar, nonpsychiatric medical patients, and normal mothers, using a self-referent incidental recall task (e.g., Rogers, Kuiper, & Kirker, 1977). This task has been used most frequently used with adults, but was modified for use with children by Hammen and Zupan (1984). Jaenicke et al. (1987) found a lack of positive information recall for the children of both unipolar and bipolar mothers, and found on other tasks that children in the unipolar and bipolar groups reported a less positive self-concept and evidenced a more negative attributional style than the other children.

In another study examining possible cognitive vulnerability mechanisms in the children of depressed mothers, Taylor and Ingram (1999) found that negative mood enhanced the recall of negative personally relevant stimuli for high- but not low-risk children, suggesting the emergence of negative cognitive schemas in these children. These data thus indicate that depressed mothers may transmit negative cognitive characteristics to their children, which might form the basis of a negative self-schema that is activated in response to negative mood producing events. In another study, Garber and Flynn (2001) assessed perceptions of self-worth, attributional style, and hopelessness in the children of depressed mothers, and found that maternal depression was related to all three of these categories of negative cognitions. They also found that low maternal care was associated with perceptions of limited child self-worth. Children's attributional style was also found to mirror maternal attributions for child related events; specifically, children made attributions for child-related events that were similar to the attributions made by their mothers.

Assessing the children of depressed mothers is not the only way to assess the possible origins of cognitive vulnerability. For example, Rudolph, Kurlakowsky, and Conley (2001) showed in a longitudinal study that both family dimensions and stress were associated with helplessness and deficits in perceptions of control. To the extent that a sense of helplessness and perceptions of control contribute to vulnerability to depression, these results reinforced the idea that parenting is important in producing cognitive vulnerability, but also suggest that other factors such as stress may also play a role. Moreover, these data hint that individuals other than parents can play a role in creating vulnerability. In fact, research by Cole, Jacquez, and Maschman (2001) and Williams, Connolly, and Segal (2001) indicate that people outside the family (e.g., teachers and romantic partners) may play some role in generating cognitive vulnerability in children and adolescents.

In sum, data support the idea that high-risk children may possess negative cognitive structures, and that depressed parents may transmit these negative cognitive characteristics to their children. However, the data also indicate that although parents are extremely important, other factors and other interpersonal relations may also contribute to the creation of cognitive vulnerability. More generally, there appears to be little doubt from these data that children at risk for depression have negative self-schemas that, when accessed, are linked to the appearance of self-devaluing and pessimistic thoughts, as well as to dysfunctional information processing. Theory and data thus make a solid case that negative childhood events are essential elements in the

formation of cognitive structures that place some children at risk, and that may eventually predispose adults to the experience of depression (Goodman & Gotlib, 1999).

THE NATURE OF COGNITIVE VULNERABILITY TO DEPRESSION: SUMMARY AND SOME DIRECTIONS FOR THE FUTURE

Even though inspired by somewhat different theoretical descriptions of vulnerability, data clearly suggest that early interactions appear to be important determinants of cognitive vulnerability to depression. For example, research shows that being the child of a depressed mother is a risk factor, but further and more generally suggest that certain kinds of parental behaviors create this risk. Given various conceptualizations and empirical findings, what picture of the origins of cognitive vulnerability begins to emerge? A logical place to start in describing possible origins is in attachment processes.

Attachment Processes in the Creation of Cognitive Vulnerability

Attachment processes are informative about the most distal aspects of vulnerability, and in fact appear to have considerable evolutionary significance. Bowlby (1988) has noted in this regard that "It is . . . more than likely that a human being's powerful propensity to make these deep and long-term relationships is the result of a strong gene-determined bias to do so, a bias that has been selected during the course of evolution" (p. 81). The motivation to bond with caregivers is thus hard-wired from our past. Although there are a number of functions that attachment may serve, the ongoing maintenance of affective bonds plays a crucial role in human's most basic emotional needs: the maintenance of proximity to others.

In line with attachment, childhood is obviously a time of enormous learning. Clearly in this regard the occurrence of negative events can have a profound effect on the development of the child's cognitive and affective neural structures, and in the connections between them (Goodman & Gotlib, 1999; Ingram et al., 1998). Because occasional negative events are a routine part of growing up, however, it seems likely that to the extent that these events involve key attachment figures, they will have an important effect on cognitive vulnerability. Additionally, to the extent that such events are (a) frequent, (b) occur in the context of multiple and likely interacting domains (e.g., divorce, high levels of poverty, problematic peer relationships), (c) extremely traumatic, and/or (d) significantly deprive the child's emotional needs, cognitive and affective development will be proportionally affected.

Some Possible Mechanisms of the Development of Depressive Self-Schemas

Because attachment is so inherently an interpersonal process, what might be the mechanisms by which interpersonal experiences lead to depressive cognitive structures? Within the context of having a depressed mother, Goodman and Gotlib (1999) suggest a variety of factors that may be associated with the development of negative cognitive structures (e.g., modeling negative cognition and interactions, and exposure

to depressive behaviors and affect). Likewise, Cole et al. (2001) have pointed to the “looking glass” hypothesis to conceptualize the development of depressive cognitive structures. Suggested by Cooley (1902) and Meade (1934), the looking glass hypothesis proposes that views of oneself are constructed from the perceptions of others. Hence, as children develop self-schemas, a lack of care or rejection by important attachment figures (i.e., caregivers) appear likely to generate personal themes of derogation and unworthiness that become deeply encoded in these self-structures. Also encoded are concepts linked to the experience of disrupted attachment such as representations and memories about the behavior of significant others. In the terminology of attachment theory, these experiences should not only determine the working models (or schemas) of oneself, but should also determine how people are generally inclined to see others, as well as expectations for how to interact with others.

Disruptions in attachment are almost certainly characterized by the experience of negative affect. It is thus important to note that during critical maturation periods, cognitive structures are not the only neural networks that are undergoing development and maturation; affective structures (see LeDoux, 1996) are also in the process of becoming more differentiated and developing associations to other structures (see Jordan & Cole, 1996). As these affective and cognitive structures collaterally develop, connections between them may also develop in such a way that negative cognitive self-structures should become closely linked to negative affective structures; negative affect may therefore become associated with unfavorable conceptions of the self. Hence, depressive self-schemas do not only represent negative views of the self, but may also be connected to negative affective structures.

If disruptions in attachment are brief and secure attachment is not compromised, or if it is reestablished, negative cognitive representations are likely to be limited and more weakly associated with negative affective networks. On the other hand, if the attachment process is more problematic, then connections between negative self-representations and negative affect should become more extensive. Thus, if negative emotion producing events related to the self are numerous, or particularly traumatic, they should have a correspondingly profound effect on the development of, and connections between, representations of the self and others. They should also have profound effect on the experience of negative affective states. The vulnerable person thus develops a schema of the self as unlikable and unlovable that is strongly tied to the experience of negative affect, and may substantially influence how others tend to be viewed.

Depressogenesis of Cognitive Mechanisms

How do such structures function? All individuals encounter negative emotions that result from stressful events, but most do not experience depression as a result. On the other hand, when individuals who possess negative cognitive structures (that are well-integrated with negative affective structures) encounter such experiences, not only should they experience negative emotions, but these negative emotions also activate a variety of maladaptive self-cognitions (Beck, 1967; Ingram et al., 1998). Hence, life stress that is cognitively interpreted in terms of one’s inadequacy and inferiority turns a “normal” negative affective state into depression (Teasdale, 1988).

This idea is reminiscent of Freud's differentiation between mourning and melancholia; in mourning the person's response to a negative event is "*this* is terrible" whereas in melancholia the person's response to this event is "*I* am terrible." The depressogenesis of the cognitive mechanisms outlined here therefore lies in the transition from normal negative affective states to a depressive psychopathological state via the connection between negative cognitive self-structures and negative affective structures.

Final Pathways

In the processes described here, interpersonal events play several key roles. For example, during key developmental periods distressful interpersonal events involving key attachment figures activate negative affective structures, lead to the development of negative cognitive self-structures, and correspondingly begin the process of developing connections between these structures. Additionally, once these vulnerability structures are in place, stressful interpersonal events elicit the activation of depressive cognitive processes.

In describing the idea that interpersonal events play a pivotal role as potent triggers for the activation of proximal vulnerability, the broader relationship between cognitive and interpersonal functioning in vulnerability has not yet been commented upon. Ingram et al. (1998) have suggested in this regard that cognitive factors serve as the *final common pathway* to depression, at least for depression that is primarily psychologically mediated (as opposed to that which may be primarily biologically mediated, such as bipolar disorder). That is, even though numerous psychological factors are related to the depression, these may operate via cognitive processes. Like Akiskal's (Akiskal, 1979; Akiskal & McKinney, 1973, 1975) examination of depression from a neuroanatomical level of analysis (the diencephalon as the final neuroanatomical pathway), the final common pathway proposal argues that cognitive factors can be seen as mediating other psychological vulnerability processes, including interpersonal processes. Hence, for vulnerable or currently depressed people, events and social interactions that are interpreted via negative cognitive structures may lead to negative responses, even if these events are not necessarily negative. Likewise, whereas stressful events create negative emotions for even the healthiest of people, for the vulnerable person stressful circumstances are interpreted through a meaning system that distorts the impact of the event, and creates negative affect that fuels further dysfunctional cognitions. Hence, the person who has been negatively sensitized by key attachment figures will interpret events through the lens of a negative cognitive structure that in turn creates more stress and more negative affect.

The final common pathway hypothesis therefore proposes that the interpretation of stressful events, and interactions with others, are dependent upon the processing functions of depressogenic cognitive structures. The idea that cognition serves as the central mediating process is not new, and goes back at least to Beck's speculations on the nature of depression (Beck, 1967). More recently, Hammen (1991b) summed up this perspective nicely in a discussion of stress generation in depression:

Negative cognitions about themselves and events may alter their responses to circumstances or may contribute to an inability to cope with emergent situations and may also determine reactions to personally meaningful events [i.e., stress-generation]. In a sense, therefore, depression causes future depression through the mediation of stressors and cognitions about the self and circumstances. (p. 559)

Hence, the essence of the final pathway hypothesis is that cognition is the psychological connection that holds together the rest of the vulnerability process.

In summary, although not completely uniform, available data suggest that cognitive factors play an important role in both the onset and maintenance of the depressed state. Moreover, the data further suggest that these cognitive factors develop in childhood, and are linked to disrupted interaction patterns with key attachment figures such as parents (although individuals other than parents may also contribute some to vulnerability). Similar interactional patterns may carry on throughout the vulnerable individual's life, and thus constitute an important aspect of the depression process. As important as these various processes are, however, cognitive variables may serve as the final common pathway to depression. That is, to have meaning, interpersonal interactions or stressful events must be processed through the lens of cognitive schemas that, in the case of depression-proneness, are negative in nature. It is in this manner that "normal" negative events turn into depression. As Ingram et al. (1998) note, this idea is not new, but its age makes it no less potent.

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