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Emotions and the Development of Childhood Depression: Bridging the Gap

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Abstract

There is a gap between scientific knowledge about typical and atypical emotional development and efforts to identify and serve children's mental health needs. The gap can be bridged with research that integrates clinical perspectives into the study of emotional development. We illustrate this by discussing typical emotional development in early childhood and how it differs from the atypical features of emotion seen among preschool-age children with depression. We suggest new research directions that integrate the study of typical emotional development with clinical evidence of risk for and presence of affective disorders in young children.

The mental health problems of young children are often unrecognized until they become severe and difficult to treat (e.g., Tolan & Dodge, 2005; U.S. Public Health Service, 2000a, 2000b). There is mounting evidence that early childhood behavioral and emotional difficulties are not always transient phases of normal development, but can represent demonstrate risk for or the presence of psychopathology (Briggs-Gowan, Carter, Bosson-Heenan, Guyer, & Horwitz, 2006; Egger & Angold, 2006; Keenan & Wakschlag, 2000). Yet, there is a significant gap in scientific knowledge that needs to be bridged to help us distinguish among these different developmental pathways. To bridge the gap, we need evidence that *integrates* knowledge of the wide range of individual differences in the functioning of typical children with clinical knowledge of the unique features of disordered functioning. Although this is a challenge during periods when children are going through rapid developmental changes, early identification is important for prevention because certain forms of behavioral and neural plasticity may permit intervention before symptoms crystallize into serious disorders (Cicchetti & Cohen, 2006).

We still have much to learn about when, why, and how early childhood problems constitute dysfunctional behavior that warrants formal diagnosis, signal risk for disorder, or reflect transient periods of difficulty that will resolve themselves without professional intervention. Recently, a published prevalence study indicated that approximately 6%–7% of Danish toddlers qualified for a psychiatric diagnosis of emotional, behavioral, or attentional disorder on the basis of two recognized classification systems (Skovgaard, Houman, Christiansen, & Andreasen, 2007; see Egger & Angold, 2006, for discussion of the systems). Diagnosing such young children stimulates intense debate. What evidence demonstrates that we can distinguish disorder in processes such as executive attention and self-regulation when they are just emerging and rapidly developing (McClellan & Speltz, 2003)? In order to address this gap in knowledge, we need greater integration of developmental theory, knowledge, and methods with the study of individual differences that include significant risk or impairment.

In this way, we avoid "pathologizing" individual differences among typically developing children, and yet address the critical need for evidence-based early identification and intervention (Egger & Angold, 2006).

In this article, we illustrate an approach to the study of emotional development that can address the call for research that aids the accurate classification of problems and prediction of pathways to health, risk, and affective disorder (Costello et al., 2002). A comprehensive, comparative analysis of the emotional profiles of typically developing children and children with or at risk for clinical depression will help distinguish normal transitory problems (such as increased irritability as a developmental phase), indicators of risk or emerging psychopathology (such as predisposition to react negatively or difficulty regulating emotion), and symptom constellations that constitute clinical disorder (such as depression). We briefly summarize (1) what is known about early emotional development, (2) trends in research on childhood depression, and (3) new research directions that integrate the study of typical emotional development with clinical evidence of risk for and presence of affective disorders in young children.

Childhood Depression and Emotional Development

A leading developmental perspective views emotions as adaptive psychological processes that function to support goals for survival and well-being (Barrett & Campos, 1987), and yet emotions are a salient feature of psychopathological functioning (Berenbaum, Raghavan, Le, Vernon, & Gomez, 2003; Cicchetti, Ganiban, & Barnett, 1991; Cole, Michel, & Teti, 1994; Gross & Muñoz, 1995; Keenan, 2000). Considerable evidence links heightened negative emotion, whether viewed as responses to challenging situations or as a stable temperamental characteristic, to the presence of or risk for psychological problems in children (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Eisenberg et al., 1993; Luby et al., 2006; Zeman, Shipman, & Suveg, 2002). Yet because heightened negative emotion is associated with several disorders, it does not identify specific pathways. We share the view that all emotions, including negative ones, are adaptive, and we advocate for research that identifies how normally functional processes become dysfunctional. Specifically, we believe that examining a full range of emotions, specific features of emotional processes (not just valence), and the nature and efficacy of strategies children use to regulate emotional reactions and moods will advance our knowledge of the development of psychopathology in early childhood (Cole & Hall, 2008; Luby & Belden, 2006).

Children who are diagnosed with depression exhibit prolonged sad or irritable mood or anhedonia (loss of pleasure and interest) along with concurrent symptoms involving four or more of the following: significant changes in eating and/or sleeping, changes in motor activity (restlessness or lethargy), difficulty concentrating, feelings of worthlessness or guilt, and recurrent thoughts of death. Although researchers once assumed that children under the age of 6 were too psychologically immature to experience clinical depression (Rie, 1966), evidence now indicates that depression often has a chronic and relapsing course of symptoms, underscoring the need to understand early precursors and first onset (Costello et al., 2002). Indeed, young children can suffer a constellation of symptoms that qualifies for a depressive disorder diagnosis (Luby et al., 2002); it is considerably similar to depression in older individuals and is relatively stable, specific, and distinguishable from disruptive disorders (Costello et al., 2002; Keenan & Wakschlag, 2004; Luby et al., 2003; Luby, Mrakotsky, Heffelfinger, Brown, & Spitznagel, 2004; Stalets & Luby, 2006). It is not clear how common depression is in early childhood, but one study estimated it at 2% (Egger & Angold, 2006).

Our view is that childhood depression results from dysfunctional patterns of normally adaptive emotional processes. Biological and environmental influences, and in most cases both, determine whether a pattern of emotional functioning deviates from the norm and further develops into symptoms that result in significant impairment in functioning. For instance, sadness, even intense or enduring, is not inherently maladaptive. Defined as (a) the appreciation that a goal for well-being is lost and (b) behavioral readiness to relinquish effort to attain it (e.g., Barrett & Campos, 1987), sadness supports realistic behavior in the face of unachievable goals. What distinguishes normal sadness from dysphoric mood is not the presence of sadness but such difficulty resolving it that it becomes pervasive and compromises other domains of functioning. It is therefore important to understand the regulation of emotion, or the ability to alter emotional responses (Cicchetti, Ackerman, & Izard, 1995; Cole, Martin, & Dennis, 2004; Thompson, 1994).

A brief synopsis of early emotional development

Emotional development is rapid in the first five years of life. From the first weeks, nascent emotional capacities are evident (e.g., Gormally et al., 2001). A core set of emotions—anger, sadness, enjoyment, fear, interest, and surprise—and rudimentary strategies for regulating emotions, such as self-soothing, are discernable in infant behavior and expression before the end of the first year (Izard, 1991; Lewis & Michalson, 1983; Rothbart, Ziaie, & O'Boyle, 1992; Sroufe, 1996). In the second year, the rudiments of guilt, shame, embarrassment, and pride emerge (Barrett, Zahn-Waxler, & Cole, 1993; Kochanska, 1997; Lewis & Sullivan, 2005; Lewis, Sullivan, Weiss, & Stanger, 1989). Around age 2, toddlers begin to understand prototypical expressions of happiness, sadness, and anger, and then other emotions, how they relate to situational contexts, and how they influence behavior (Lewis & Michalson, 1983). Between ages 2 and 5, children develop skill at regulating emotions (Kopp, 1989), such that, by first grade, most children regulate emotion well enough to learn, form and maintain friendships, and obey classroom rules (Calkins & Hill, 2007; Denham, 1998; Shonkoff & Phillips, 2000).

This positive portrait is tempered by the fact that these same capacities contribute to the psychological vulnerability of young children. Emotional receptivity and responsiveness make young children vulnerable to environmental stress and conflict. Yet, young children lack the cognitive and social resources that help older persons cope with stress and conflict, including reflexive self-awareness, analytic reasoning, a social network, and personal autonomy. Thus, young children are emotionally sensitive but lack the skill, experience, and self-sufficiency to deal with strong emotions. Early exposure to adverse circumstances can have long-term deleterious effects on children's physiological and behavioral functioning, including debilitating effects on the neural, cardiovascular, and endocrine processes that support emotional functioning (Gunnar & Quevedo, 2007; Pollak, 2005; Porges, 2001), which is why it is critical for children to have external sources of emotion regulation, such as competent, sensitive caregivers.

During this period of rapid emotional development and vulnerability, it should be possible to specify qualities that distinguish the emotional functioning of typically developing children from those with disorder or risk for disorder. For example, typical children's tantrums appear to be composed of two related but distinct components—anger and distress—that are organized into initial quick peaks in anger intensity that decline as whining and comfort-seeking appear (Potegal & Davidson, 2003; Potegal, Kosorok, & Davidson, 2003). The tantrums of depressed preschool-age children, however, are more violent, self-injurious, destructive, and verbally aggressive, and they have a longer recovery time (Belden, Thompson, & Luby, 2008). Collectively, these findings suggest that the emotional dynamics of depressed and nondepressed children's tantrums differ, which may serve as one indicator of a need for early intervention.

Trends in research on emotional functioning in children with or at risk for depression

Research on emotional functioning in children with or at risk for depression has identified important emotional correlates of depressive symptoms but has not yet fully embraced a developmental perspective that would permit studying the thresholds that distinguish normal and atypical emotional functioning. Approaches that examine a continuum of symptom profiles across ages, whether cross-sectional or longitudinal, are rare (but see Graber, Brooks-Gunn, & Warren, 2006).

Research on depressed children tends to draw from studies of adult depression rather than research on emotional development. Generally, it reveals that depressive symptoms in children and youth are associated with attending to and remembering both positive and negative emotional content differently (Bishop, Dalgleish, & Yule, 2004; Gotlib, Traill, Montoya, Joormann, & Chang, 2005; Joormann, Talbot, & Gotlib, 2007), reduced performance when other information is also presented that is emotional in nature (Jazbec, McClure, Hardin, Pine, & Ernst, 2005; LaDouceur et al., 2005), and less accurate, more inefficient processing of emotional information (LaDouceur et al., 2006; Pérez-Edgar, Fox, Cohn, & Kovacs, 2006; Pine et al., 2004; Reijntjes, Stegge, Meerum Terwogt, & Hurkens, 2007; but see Bishop et al., 2004 and Pine et al., 2004 for exceptions). However, much remains unknown about the consistency and specificity of such differences, as the same effects are often found for anxious children (Dalgleish et al., 2003; Hardin, Schroth, Pine, & Ernst, 2007).

Our view, that difficulty appropriately releasing from and resolving negative emotions is at the core of depression, has some empirical support (Forbes, Fox, Cohn, Galles, & Kovacs, 2006; Park, Goodyer, & Teasdale, 2004; Wilkinson & Goodyer, 2006). Childhood depressive symptoms are linked with less frequent use of and less confidence in effective strategies (such as problem solving and positive reappraisal; Garber, Braafladt, & Weiss, 1995; Garnefski, Rieffe, Jellesma, Meerum Terwogt, & Kraiij, 2007; Reijntjes et al., 2007). As with adults, neuroimaging evidence suggests that depression involves greater mental processing and/or less ability to draw on positive emotions or approach motivation when negative emotions are evoked (Forbes et al., 2006; Thibodeau, Jorgensen, & Kim, 2006).

Studies of infants or children who are offspring of depressed parents are particularly important as these groups have heightened risk for depression and, at young ages, it is possible to prospectively examine potential precursors because the children do not yet show symptoms (Goodman & Gotlib, 1999). Observational studies of young children at risk for depression indicate that they differ in emotional responsivity from healthy children, but the studies suggest nuances that are often not captured in neurophysiological and cognitive studies of responses to emotional information. For example, 4-month-olds of depressed mothers smile and vocalize less than infants of nondepressed women do during spontaneous interactions with their mothers (Field et al., 2007a; Moore, Cohn, & Campbell, 2001), a pattern that forecasts symptoms at 18 months (Moore et al., 2001). However, compared to infants who are not at risk, 5-month-old offspring of depressed mothers laugh *more* and fuss *less* when (a) maternal behavior is confined to imitating the infant (behavior that agitates infants of nondepressed mothers) or (b) the interaction is with an animated doll (Field et al., 2007b). Similarly, the emotional reactions of school-age children with major depressive disorder differ in complex ways from those of children with other disorders. Casey (1996) reported that although depressed children expressed less emotion in peer interaction than children with ADHD, they did not differ from children with ODD. They were *slower* to express emotion than both ADHD and ODD children, although they eventually behaved similarly. Their emotion perception inaccuracies were not random (like those of ADHD children) but biased toward attributing negative emotions to other children.

In sum, evidence indicates unique emotional differences in children with or at risk for depression but does not fully distinguish childhood depression from other problems and does not address how emotional patterns uniquely associated with depression evolve from normal, adaptive emotional processes. An integration of developmental approaches with clinically pertinent aspects of emotional functioning may contribute to filling this gap. It may aid delineation of normal variations and normative boundaries, and the unique emotional characteristics that typify risk for and presence of childhood depression risk. To illustrate, we first take a brief look at the emotional problems of a troubled preschool-age child.

The Emotional Profile of a Troubled Preschooler

> Mr. and Mrs. B sought outpatient services for their 4-year-old son's impulsivity and excessive crying. They reported that A.B. was easily provoked, and that when provoked, he was impulsively aggressive. To illustrate the seriousness of the problem, they described an incident in which A.B. became very frustrated because his 2-year-old brother would not relinquish a toy immediately. In his frustration, A.B. poked his brother's eye with a stick.
>
> In addition, A.B.'s parents stated that he was always unhappy, including frequent periods of excessive crying. They found him inconsolable, particularly during these periods, such that he required constant attention and support that disrupted family life. At these times, they tried unsuccessfully to soothe him or redirect his attention to pleasant activities. The excessive crying often followed his misbehavior, and their descriptions of his behavior suggested he felt intense guilt and shame. This pattern of unhappiness, frustration, misbehavior, and excessive crying was so well established and disruptive that his parents established a "cry room" in the home where A.B. often cried unabated for long periods.

A.B.'s emotional difficulties, which impair his interpersonal functioning, are atypical and, if left unchecked, will arguably compromise his ability to master later developmental tasks (Cicchetti et al., 1991; Cole & Hall, 2008). Typically developing 4-year-olds have their share of impulsive, angry, aggressive behavior with siblings (Dunn, 2002; Miller, Volling, & McElvain, 2000) and get angry when their goals are thwarted, but they modulate anger, frustration, and disappointment well enough that their behavior is easily redirected and not disruptive or destructive (Cole, 1986; Cole, Zahn-Waxler, & Smith, 1994; Skuban, Shaw, Gardner, Supplee, & Nichols, 2006). In fact, among typically developing 3- and 4-year-olds, low-intensity anger is followed by *appropriate* effort and problem solving (Dennis et al., under review). A.B., on the other hand, is not just angry; he is persistently, excessively sad and irritable, and his emotional difficulties may be compounded by anxiety, guilt, and/or shame, particularly in response to his own misbehavior. Furthermore, his capacity for interest and pleasure in typically enjoyable activities appears substantially diminished, including being unresponsive to parental soothing. The available data fail to address such atypical emotional functioning.

Future Directions

Our experience suggests research directions that we believe can shed more light on the clinically significant features of emotional dysfunction that is associated with early childhood depression and, in so doing, cast additional light on the nature of typical emotional development, including mechanisms underlying the development of trajectories toward and away from childhood depression.

Negative emotions: Anger, anxiety, guilt and shame

A.B.'s aggression follows intense anger, a characteristic that may distinguish the aggression of young children with disruptive disorders from that of typically developing preschoolers (Wakschlag et al., 2007). What seems different for A.B. is his intense distress after acting angrily. We know little about individual differences in children's normal recovery from anger or the emotions that follow anger (Cole & Hall, 2008). A.B.'s intense and sustained post-anger distress raises the question of whether he feels inordinate anxiety, shame, or guilt about his actions, reactions that are common in depressed adults (Gratz & Roemer, 2004). Typical youngsters become sad or clingy after intense anger (Potegal & Davidson, 2003), but A.B.'s responses are different. Emotions such as sadness and anxiety that follow anger are one area worthy of study for understanding clinical risk and dysfunction, as Izard (1972) and Tomkins (1963) first noted. For instance, infants who become sad when their goals are blocked have large cortisol responses, whereas those who express the most anger show little cortisol response, a difference that suggests sadness in this context may reflect more stress (Lewis, Ramsay, & Sullivan, 2006; Lewis, Sullivan, Ramsay, & Alessandri, 1992). Relatively little is known about the experience and regulation of anger in children with major depression. Poorly regulated anger or persistent frustration can devolve into prolonged hopelessness and sadness or increased aggressiveness (Goodwin, 2006).

During the second year, children reveal sensitivity to standards, which supports the development of guilt, shame, and embarrassment (e.g., Barrett et al., 1993; Kagan, 1981; Lewis et al., 1989). Researchers have not explored the relation of these emotions to early presence of and risk for depression. Typically developing preschoolers show shame after they have been angry (Bennett, Sullivan, & Lewis, 2005); this may become dysfunctional, however, if it maintains a negative focus on the self and interferes with appropriate, instrumental problem solving and reparative behavior. Depressed preschoolers display high levels of guilt and shame and lower levels of reparative behavior than preschoolers with other clinical disorders and without disorder (Luby, Belden, Sullivan, Hayden, & McCadney, under review). In A.B.'s case, his intense personal distress after being aggressive does not aid reparation or even appear to constitute empathic concern. Self-focused distress interferes with prosocial behavior, whereas empathic concern motivates it, probably alleviating shame or guilt (Eisenberg et al., 1988, 1990). Thus, a promising future direction for research is to understand individual differences in young children's emotions about their misbehavior, distinguishing among callousness, personal distress, and empathic concern, and how these relate to other emotions. For example, proneness to fear may inhibit empathic concern in early childhood (Young, Fox, & Zahn-Waxler, 1999).

Positive emotions: Joy, interest, and pride

Another atypical feature of A.B.'s emotions is diminished positive emotion. Most upset 4-year-olds are responsive to efforts to redirect them toward pleasurable activities. A.B. does not enjoy, and is not readily diverted to, activities that most 4-year-olds greet with eagerness and delight. Young children who have or are at risk for depression may have difficulty generating positive emotions, such as enjoyment, enthusiasm, pride, and interest (Forbes & Dahl, 2005). Preschoolers who qualify for diagnosis of depression with anhedonia show the most severe depression (Luby et al., 2004), and the trait of low positive emotionality in 3-year-olds is associated with family history of depression (Durbin, Klein, Hayden, Buckley, & Moerk, 2005).

Temporal and intensive dynamics of emotional responding

Apart from studying the emotions involved, we also need to study atypical temporal and intensive features of emotional responses (Thompson, 1994). The speed, intensity, and duration of different emotions likely distinguish A.B.'s emotional responses from those of

typically developing children. Yet, surprisingly few studies do service to Thompson's (1994) call for studying emotion dynamics (but see Luby & Belden, 2006). In part, this neglect may be due to the emphasis on aggregated negative emotions, such that threshold to a palpable emotional response, intensity (peak and average), and duration are highly correlated with total amount. A more detailed, time-sensitive study of *specific* emotions, and among children with risk or problems, will yield information on the clinical utility of studying temporal and intensive emotion dynamics.

Context appropriateness

Negative emotions, even intense ones, are appropriate in certain circumstances (Saarni, 1999). A.B.'s lack of pleasure in contexts that please most children can be thought of as context-inappropriate emotion. Adults with major depressive disorder report higher levels of sadness than controls while watching films that generally evoke happy emotions (Rottenberg, Gross, & Gotlib, 2005). We know little about the context appropriateness of young children's emotional responses, although toddlers who react fearfully to situations that other children find enjoyable have more symptoms of anxiety (Buss, Kiel, Williams, & Leuty, 2005; Fox, Henderson, Marshall, Nichols, & Ghera, 2005). Diminished positive emotion in response to normally pleasant events then seems a particularly important aspect of context-inappropriate emotion in the study of depression (Forbes & Dahl, 2005).

Emotion regulation strategies

Finally, A.B. shows little effective, age-appropriate self-regulation of emotion, such as self-distraction or support seeking. It would be useful to know whether depressed children lack strategies or whether their strategic attempts are ineffective because of the intensity of emotional reactions. As we noted earlier, school-age children with depression do not think of effective regulatory strategies and also report lacking confidence in those strategies. Multimethod, time-sensitive studies of strategies, their appropriateness, and their effectiveness are important for understanding typical and atypical emotional development.

In sum, A.B.'s emotional profile involves multiple emotions, with problematic temporal and intensive qualities, and clinically pertinent features such as resistance to change and few effective regulatory strategies (Cole & Hall, 2008; Luby & Belden, 2006). To fully develop a scientific basis for understanding emotional differences among typically developing children and those who are developing depression, research should (a) distinguish the emotional profiles of depressed and high-risk children; (b) specify the range of their emotional differences, including expressive and physiological qualities; (c) trace emotional profiles over time, from early risk to later outcomes; (d) examine the conditions that lead one child's symptoms to be transient and another's to develop into serious emotional dysfunction; and (e) integrate multiple levels of analysis, addressing the complex interplay among environmental, neurobehavioral, and cognitive factors. Integrating developmental and clinical science has enormous potential to address the complex and varied pathways to children's mental health and resilience, symptom development, and psychopathology. In doing so, the forward movement of our fields across the gap will be assured.

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