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Preadolescent Clues to Understanding Depression in Girls

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Abstract

Between the ages of 10 and 15, increases in depression among girls result in a rate that is twice as high as the rate of depression in boys. This sex difference remains throughout early and middle adulthood. Prior to early adolescence, there is essentially no sex difference in the rate of depression. The aim of the present review is to examine whether the preadolescent period is a time during which precursors to depression in girls can be identified. First, existing areas of research on explaining sex differences in depression, including cognitive and affiliative style and the socialization of emotion, are reviewed. Second, the hypothesis that for some girls, preadolescent precursors to depression take the form of excessive empathy, compliance and regulation of negative emotions is articulated. Third, ways of building on existing models by including the proposed preadolescent precursors are proposed. Finally, approaches to testing the hypotheses that individual differences in these domains during preadolescence may explain later individual differences in adolescent onset depression are explored.

Keywords

depression; girls; individual differences; preadolescence; sex differences

One in five females between the ages of 15 and 50 will suffer from clinically significant levels of depression at some point in her lifetime, a rate that is more than twice the lifetime prevalence of depression in males (Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993; Lewinsohn, Clark, Seeley, & Rhode, 1994). Beginning in adolescence, a rapid increase in the rate of depression among girls has been reported consistently (Ge, Lorenz, Conger, Elder, & Simons 1994; Hankin et al., 1998; Wichstrom, 1999). A predominant view is that increases in rates of depression in girls during adolescence result from newly encountered risk factors that are primarily specific to adolescence including struggles between attachment and autonomy (Cyranowski, Frank, Young, & Shear, 2000) and the physical and psychological changes associated with pubertal development (Petersen, Sarigiani, & Kennedy, 1991). Another possibility is that individual differences in psychological functioning *prior* to adolescence determine whether the challenges of adolescence are successfully met or not. This would be consistent with a stress-diathesis model of depression, in which preadolescent psychological functioning is the diathesis and the developmental, social, and biological challenges of adolescence are the stressors. If this is to be a viable approach to understanding the emergence of depression in girls during adolescence either the diathesis or the stressors must have dimensions, such as prevalence or intensity, that are sex specific.

In the present paper the focus is on exploring the diathesis—the individual characteristics that predispose girls to depression. The aim is to begin a dialogue on the role of *preadolescent* emotional and behavioral functioning in the development of depression in girls. First the literature on sex differences in depression and the existing developmental theories of depression in girls is reviewed. Second, ways of building on the existing models (e.g., Cyranowski et al., 2000; Hankin & Abramson, 2001; Nolen-Hoeksema & Girgus, 1994), by focusing on individual differences in psychological functioning during the preadolescent period that may serve as precursors to depressive disorders in girls, are proposed. Third, the hypothesis that for some girls, preadolescent precursors to depression take the form of excessive empathy, compliance and excessive regulation of negative emotions is articulated and indirect support for the hypotheses from the existing literature is reviewed. Finally, issues relevant to testing the hypotheses that individual differences in these domains during preadolescence may explain later individual differences in adolescent onset depression are discussed.

PHENOMENOLOGY OF DEPRESSION

Prevalence and Course of Depression

The lifetime prevalence of depression in adults is about 13% for men and 21% for women (Kessler et al., 1994). The most common course of depression is characterized by a first incidence occurring in early to middle adulthood, with around 70% of these individuals experiencing a recurrence of depression (Kessler, Zhao, Blazer, & Swartz, 1997). Approximately 25% of adults in community-based studies with lifetime histories of depression, however, report an onset during childhood or adolescence (e.g., Sorenson, Rutter, & Aneshensel, 1991). Prior to the 1980s, depression was thought to be very rare in children and adolescents. With the advent of structured methods of assessing depressive symptoms, the prevalence of depression in children and adolescents began to be examined systematically (Chambers et al., 1985; Puig-Antich, 1982). Although there is widespread acknowledgment that the onset of depression among children is still uncommon, estimates of the prevalence of major depression during adolescence range from 14% to 20% (Kessler, Avenevoli, & Merikangas, 2001). In fact, depression is among the most frequently occurring mental disorder among adolescents.

Sex Differences in Depression

For women, depressive disorders are the most common of all mental and medical disorders and as such are responsible for significant distress and debilitation. At any point in time, approximately 1/5 of women are depressed. In fact, major depression is the leading cause of disability in 15–44-year-old women (Murray & Lopez, 1996), and the likelihood of experiencing a recurrence of depression increases with each episode (Kovacs, 1997). The sex difference in depression appears to emerge around the time of adolescence (Angold & Rutter, 1992; Ge et al., 1994; Hankin et al., 1998; Petersen, Sarigiani, & Kennedy, 1991), is found within different ethnic groups (e.g., Grant et al., 1999) and with different sampling methods such as community-based (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993; Offord et al., 1987; Spence, Najman, Bor, O'Callaghan, & Williams, 2002; Wichstrom, 1999) and high risk samples (Goodyer, Ashby, Altham, Vize, & Cooper, 1993; Grant & Compas, 1995). Initial episodes of depression are also more severe and longer in duration for girls than for boys (McCauley et al., 1993), and girls who experience depression for the first time in childhood or adolescence, compared to women with onsets later in life, have a prolonged period of risk for future episodes (Kovacs, 1997).

There is some evidence that in comparison to rates of depression in the first half of the 20th century, rates of depression have increased in the past 50 years (Kessler et al., 1994; Leon,

Klerman, & Wickramaratne, 1993). It is important to note however, that the sex difference in depression rates has not changed (Kessler et al., 1994; Leon et al., 1993). Moreover, to the best of our knowledge, there are no data indicating increased rates of depression in youth. Thus, we focus on the highly robust finding of higher rates of depression among females compared to males, and the period during which the sex difference emerges for the first time – adolescence.

DEVELOPMENTAL MODELS OF DEPRESSION IN GIRLS

In recent years, many investigators have argued that early precursors to depression should be examined in ways that help explain these subsequent sex differences in rates of depression (Bebbington, 1998; Culbertson, 1997; Gjerde, 1995; Kovacs & Devlin, 1998; McCauley, Pavlidis, & Kendall, 2001; Piccinelli & Wilkinson, 2000; Ruble, Greulich, Pomerantz, & Gochberg, 1993; Zahn-Waxler, Cole, & Barrett, 1991). Such a consensus among scientists highlights the need for an innovative approach to conceptualizing and measuring potential precursors to depression. Along these lines, several investigators have proposed theories to account for sex differences in depression. These theories can be broadly grouped in terms of interpersonal style, attributional style, and emotional development and are reviewed in the following section.

Sex Differences in Interpersonal Style

In a seminal paper, Nolen-Hoeksema and Girgus (1994) presented 3 models for explaining the emergence of gender differences in depression at adolescence. After reviewing the available literature, they concluded that one model received the best empirical support: girls carry more risk factors for depression than boys *before* adolescence, and those risk factors only lead to depression in the context of the challenges of adolescence, which are more significant for girls than boys. The identified risk factors reflected sex differences in social behavior and interpersonal style that were not viewed as impairing in and of themselves, such as girls' tendency to be more cooperative in interactions with others.

Similarly, Cyranowski et al. (2000) focused on sex differences in affiliative style as a risk factor for depression. The authors argued that these differences are present relatively early in life and are thought to be the result of biological and social factors. Problems arise in adolescence when, the authors posit, there is a transition of attachments from parents to peers, and eventually to romantic partners. Adolescent girls who are most challenged by this transition and, as a result, are more likely to become depressed, are characterized by an insecure attachment to their parents, an anxious or inhibited temperament, and low instrumental coping. Consistent with the position of Nolen-Hoeksema and Girgus (1994), the authors note that these risk factors are often present *prior* to adolescence, but do not actually lead to disorder until adolescence.

What these proposed models reveal is the possibility that the way girls are socialized to relate interpersonally may, in fact, place them at risk for depression. Two important questions are raised by this literature. First, given that the majority of girls are socialized in traditional ways, what are the conditions under which certain girls are at risk for depression? The second question is whether traditional patterns of female interpersonal styles in children can be meaningfully conceptualized into atypical or maladaptive manifestations, such as being overly cooperative or compliant, prior to the onset of depression.

Sex Differences in Attributional Style

Hankin and Abramson (2001) have provided a cognitively based transactional theory that is aimed at explaining sex differences in depression at adolescence and is also designed to apply across developmental levels. They propose that a causal chain begins with negative events that

contribute to negative affect. Certain cognitive vulnerabilities (e.g., tendency to ruminate) increase the likelihood that the initial negative affect leads to depressive responding to other negative events. Since girls tend to report more life events, especially interpersonal, peer, and family related negative events (e.g., Little & Garber, 2000), this may explain later sex differences in depression. In addition, Hammen (1991) has suggested that depressed women “generate” more interpersonal stress, which perpetuates or maintains the course of their depressive illness.

Cross-sectional research using self-report questionnaires of dysfunctional beliefs and attributional styles as well as incidental recall of self-referent information have generally confirmed that children with high rates of depressive symptoms do show similar patterns of negative thinking and negatively biased information processing to adults (Abela, Brozina, & Haigh, 2002; Hankin & Abramson, 2002). In addition, change in the rate of negative attributions is associated with change in the rate of depressive symptoms (Garber, Keiley, & Martin, 2002). Thus, as symptoms of depression increase, so do negative attributions. The reverse is also true (Garber et al., 2002). This relationship between negative cognitions and depression does not clearly emerge until the adolescent period however (Turner & Cole, 1994).

Thus far, the evidence for the *prospective* relation between cognitive vulnerabilities, such as attributional style or rumination, and the development of depression in children and adolescents has been mixed. Several studies have not demonstrated a significant association and among the few that have, the effect size is typically small (Joiner & Wagner, 1995). Still, it seems reasonable to posit that less constructive patterns of cognitive-emotional responding to life events in early childhood may predispose some girls to develop depression in adolescence. Moreover, there may be sex differences in the socialization of cognitive and emotional responses to life events such that girls may be more prone than boys to develop patterns of responding that do not serve them well during the adolescent period. Thus, further exploration of individual differences in cognitive-emotional processes that can be reliably captured in the preadolescent period seems warranted.

Sex Differences in Emotional Development

Zahn-Waxler et al. (1991) proposed one of the few sex-specific models for the development of depression that incorporates development prior to adolescence. Based on their review of the literature, these authors concluded that there are individual differences in how children internalize moral standards (e.g., empathy and guilt) that emerge early and show relatively robust sex differences. Girls more often engage in prosocial acts and empathic responding than boys beginning as early as age two, and also demonstrate greater physiological arousal during empathy mood induction (see Zahn-Waxler, 2000, for a review). Further, parental socialization practices that increase the likelihood of the development of empathy and guilt are applied more to interactions with girls than with boys. During the preschool period, parents are more likely to teach their daughters than their sons to have concern for others, reflect on how their behavior affects others, and to engage in prosocial instead of antisocial behavior (Keenan & Shaw, 1997). Zahn-Waxler et al. (1991) argue that these sex differences, in the context of a society that teaches girls to minimize self-expression and maximize their efforts at caring for others sets the foundation for later increases in depression in girls. Girls who are taught to be more sensitive to others’ emotional distress but who lack the skills for effectively coping with that distress are placed in a psychologically vulnerable position. A ‘main’ effect however is also likely. That is, girls who fall at the extreme (high) end of the empathy continuum in the absence of other deficits are likely to be vulnerable to depression. The authors conclude that, “Eventually, we must construct cumulative risk indices to determine how factors pertaining to

sex roles interact with other psychosocial risk factors and biological vulnerabilities to produce different kinds of depression (p. 266).”

THEORETICAL CHALLENGES TO DEVELOPING A PREADOLESCENT MODEL OF THE DEVELOPMENT OF DEPRESSION IN GIRLS

The goal in this paper is to integrate and expand on the above theories by focusing in on clearly operationalized, developmentally salient constructs, and by examining whether there is sufficient theoretical and empirical support for testing relations between the hypothesized constructs and concurrent and later depressive symptoms and disorders. Based on the existing literature we have identified three constructs as candidate preadolescent precursors to depression in girls: excessive empathy, compliance, and emotion regulation. These constructs were selected for several reasons. First, these constructs clearly extend from the above reviewed existing theories on interpersonal style and patterns of responding to stress or demands. Second, we believe that a focus on empathy, compliance, and emotion regulation may provide a link between individual differences in cognition, emotion, and behavior and the socialization of female psychology that may be critical in understanding why females are twice as likely to develop depression as males. Third, these three psychological constructs fit well within a normative framework of development. As such, we can begin to generate hypotheses about how deviations from typical expressions of compliance, empathy, and emotion regulation can be observed and in which contexts deviations are more likely to occur. For these reasons we explore the theoretical relevance and empirical support for these constructs in the development of depression by reviewing the existing literature. Before doing so, however, two theoretical challenges need to be considered.

First, why do depressive symptoms not emerge until the adolescent period? A large and varied body of research supports a developmental shift in the prevalence of depression among girls, with increases in rates of depression occurring in the mid adolescent period (e.g., 13–15 years of age) (Angold & Rutter, 1992; Ge et al., 1994; Grant et al., 1999; Hankin et al., 1998; Lewinsohn et al., 1993; Petersen, Sarigiani, & Kennedy, 1991). Our hypothesis that precursors to depression can be reliably observed in the preadolescent period still requires us to explain why girls who evidence excessive levels of empathy, compliance, and over-regulation of their emotions do not, on average, manifest depressive disorders until later in development.

One possibility is that these three psychological constructs, either singly or in combination, interfere with the development of competencies that are needed for successfully meeting the demands of adolescence. For example, increased individuation with regard to beliefs, behaviors and goals is one of the developmental challenges of adolescence for both girls and boys (Shahar, Henrich, Blatt, Ryan, & Little, 2003). Skills that are likely to provide a foundation for greater individuation such as assertiveness, self-confidence, expressiveness, and a commitment to one's own agenda may be underdeveloped in girls who are overly compliant, for example. This mismatch between interpersonal competencies and developmental challenges may lead to feelings of hopelessness, inadequacy and a lack of sense of self. In addition, girls who are overly compliant and excessively oriented to the needs of others may respond more readily to peer encouragement to engage in activities such as early sexual behavior or illicit use of substances, despite a desire to abstain from these behaviors. The dissonance between beliefs and behaviors may lead to feelings of sadness and guilt. The reported high level of co-occurrence between depression and conduct problems in girls (Keenan, Loeber, & Green, 1999) may be explained in part by this pathway.

Second, what is the role of pubertal development in the association between preadolescent psychological precursors and adolescent onset depression? After a decade of solid research, the role of pubertal development in the onset of depression still remains unclear. Some

investigators assert that the challenges of pubertal change are more intense for girls than for boys, and thus may be related to sex differences in depression during adolescence (Ge, Conger, & Elder, 1996; Petersen, Sarigiani, & Kennedy, 1991). The fact that all girls experience puberty, however, argues for the explication of how pubertal development may confer risk for depression. A main effect for puberty on depression has not been consistently found (Angold & Rutter, 1992; Laitinen-Krispijn, van der Ende, & Verhulst, 1999). Greater empirical support is seen for an association between pubertal timing and depression (Ge et al., 1996; Stice, Presnell, & Bearman, 2001). Even in this literature, however, the association between early onset puberty and higher depression scores is complex, with differences in depression scores emerging over time, not at the time of pubertal onset (Ge, Conger, & Elder, 2001). The level of complexity in the puberty-depression literature is further increased by the possibility that both pubertal development and depression may be associated with a shared factor. For example, exposure to inter-adult conflict has been associated with both earlier pubertal development (Ellis & Garber, 2000) and girls' depressive symptoms (Sheeber, Hops, Alpert, Davis, & Andrews, 1997).

With regard to the proposed model, we view the role of the psychological experience of puberty in the development of depression as a possible stressor under which a diathesis for depression, as defined as excessive empathy, compliance, and emotion regulation, may emerge. Whether that stressor is in the form of hormonal changes that affect assertiveness or the experience of emotions, or changes in the demands of the parenting or peer environment remains to be tested. Clearly, a comprehensive model of depression in girls must address the relative contribution of the biological and psychological experience of puberty to the change in risk for depression. The study of individual differences prior to the onset of puberty may help to generate clear and testable hypotheses regarding the unique role of pubertal development in the onset of depression.

EVIDENCE FOR THE ROLE OF EXCESSIVE EMPATHY, COMPLIANCE AND EMOTION REGULATION IN THE DEVELOPMENT OF DEPRESSION IN GIRLS

Although we believe that the pattern of individual differences across empathy, compliance and emotion regulation is likely to explain more variance in later depression than one single construct, we begin this review by examining the theoretical relevance, evidence for sex differences, and empirical support for the role of each of the three constructs in the development of depression in girls.

Empathy

Theoretical Relevance of Empathy in the Development of Depression—The broad construct of excessive empathy is part of both definitions of depression and theories about the origins of depression. For example, Attribution and Learned Helplessness Theories of depression (Abramson, Seligman, & Teasdale, 1978) include feelings of excessive responsibility and guilt about negative events. Although these theories are not gender specific, a plausible hypothesis is that females may be more susceptible to depression given that they are more likely than boys to have persistent and excessive feelings of responsibility for the emotional well-being of others and empathy for others' negative emotional experiences.

Zahn-Waxler et al. (1991) proposed several reasons for postulating a relation between excessive empathy and depressive disorders including taking on other people's problems as if they were one's own, and cultivating a feeling of guilt and responsibility. Zahn-Waxler (2000) stated that higher order emotions, such as empathy and guilt, are necessary components of emotional health and well-being. Deviations in either direction are reflected in different

forms of psychopathology: the absence of these moral emotions is associated with disruptive behavior problems and the excess with anxiety and depression.

Sex Differences in Empathy—Consistent sex differences in both observed and reported empathy, including behavioral and emotional responses to others that reflect sympathy, kindness, and compassion, have been found across a number of studies and early developmental periods (see Keenan & Shaw, 1997 and Zahn-Waxler et al., 1991 for reviews). As early as the first year of life, girls demonstrate a higher rate of “interest” expressions during social interactions with mothers than do boys (Malatesta & Haviland, 1982). Denham, McKinley, Couchoud, and Holt (1990) reported that among teachers of 65 preschoolers, girls were rated as more understanding of other children's positions, more sympathetic, and more helpful than boys. Furthermore, in an observational study of preschool girls' and boys' facial and emotional reactions to a movie about children getting hurt on a playground, girls' sad and concerned facial reactions to the movie were associated with spontaneous helping behavior on the playground (Eisenberg, McCreath, & Ahn, 1988). No such relation was found for boys.

Elementary school age children also demonstrate significant sex differences in empathic responding. Hastings, Zahn-Waxler, Robinson, Usher, and Bridges (2000) conducted a longitudinal study of predominantly Caucasian children in which observed empathy in response to an adult feigning injury was observed at ages 5 and 7, and child, mother and teacher reports of empathy were collected at age 7. Significant sex differences were found across all informants and for the observed empathy at both ages. Zhou et al. (2002) reported similar results. Empathic responses to visual stimuli were observed in a sample of predominantly Caucasian and Hispanic elementary school children. Girls demonstrated greater empathic responses to positive stimuli (e.g., a birthday party scene) than boys. However, there were no significant sex differences in response to negative slides (e.g., a crying child).

Although there is some evidence of heritability of empathy (Zahn-Waxler, Robinson, & Emde, 1992), sex differences in empathy appear to be at least partly due to different socialization practices for girls and boys, with parents encouraging their daughters more than their sons to think about the feelings of others, especially in the context of how the child's behavior affects others (Keenan & Shaw, 1997). For example, Krevans and Gibbs (1996) reported that preadolescents whose parents used inductive reasoning strategies were more empathic, and that more empathic children were also more prosocial. Furthermore, parents' use of statements of disappointment in their child's behavior was most strongly related to children's prosocial behavior. Significant sex differences were found for child and parenting behaviors, with girls showing greater empathy and prosocial behavior and parents of girls using more inductive reasoning strategies.

Empirical Support for the Role of Empathy in the Development of Depression—

In terms of psychopathology, deficits in empathy have been associated with disruptive behavior problems and delinquency (Cohen & Strayer, 1996; Eisenberg & Miller, 1988; Hughes, White, Sharpen, & Dunn, 2000; Loeber, Farrington, Stouthamer-Loeber, & van Kammen, 1998). In contrast, there have been few studies testing the relation between excessive levels of empathy and psychopathology, specifically depression.

Results from studies on empathy and depression in adults are mixed. Empathy was not related to concurrent depressive symptoms in 17–25-year-old Asian and European American undergraduates (Lengua & Stormshak, 2000). In a sample of women aged 21–53 employed in helping professions (e.g., nursing), self-reported empathy and depressive symptoms were positively associated, and women who were high on self-reported empathy were more likely to develop depressive symptoms in the context of life events than women scoring lower on self-reported empathy (Gawronski & Privette, 1997). In another study, both cognitive and

emotional empathy were measured in a sample of adult caregivers of older adults (Lee, Brennan, & Daly, 2001). These investigators reported that cognitive empathy (the identification and understanding of another's experience) was negatively associated with depression and positively associated with life satisfaction, whereas emotional empathy (the vicarious emotional response to another's experience) was negatively associated with life satisfaction but unrelated to depressive symptoms.

The association between empathy and psychopathology in children has been examined infrequently. In a study that provides some indirect support, Ferguson, Stegge, Miller, and Olsen (1999) tested the relation between guilt and shame and symptoms of psychopathology in a sample of 5–12-year-old Caucasian boys and girls. Children were told stories about themselves involved in various types of transgressions and then asked about how they would feel or act in that hypothetical situation. Among girls, verbal responses indicating concerns about not having expressed sufficient empathy, failing to adhere to standards, and not demonstrating adequate responsibility were associated with both externalizing and internalizing problems as measured by the CBCL broad band factors. The reverse was true for boys: higher scores on these types of responses were associated with fewer symptoms of psychopathology. The authors conceptualized these types of responses as a *prone to guilt* that is adaptive, in contrast to guilt that is associated with negative emotion, externalization of responsibility, and rationalization. The fact, however, that slightly higher CBCL scores (although still in the nonclinical range) were observed for girls who reported such guilt proneness, than girls who did not, begs the question for whom are such responses adaptive?

The authors are aware of only one study in which the hypothesis that *excessive* empathy is related to depression in children was explicitly tested. Robins and Hinkley (1989) administered several self-report measures including an assessment of depressive symptoms and a measure of irrational beliefs to 61 8- to 12-year-old children (59% girls) from diverse ethnic backgrounds. Among the 11 different subscales measuring irrational beliefs, a need for approval, high self-expectations, helplessness, excessive empathy, and perfectionism were all significantly correlated with depressive symptoms. However, only the scores on the excessive empathy subscale, explained unique variance in depression scores in the context of the other measures of irrational beliefs.

Summary of the Potential Role of Empathy in the Development of Depression—

Sex differences in empathic responding appear early in life and are relatively robust. With the exception of the Robins and Hinkley (1989) study, which is cross-sectional, the empirical association between excessive empathy and the development of depression has not been tested in children. This may be partly due to the overwhelming emphasis on *lack* of empathy in psychopathology research. In addition, most measures of prosociality do not typically conceptualize prosocial feelings and behaviors as having extreme right tails. Thus, the first issue to resolve in the further exploration of this construct is the ability to generate data on excessive levels of empathy. Notwithstanding that challenge, the theoretical support for excessive empathy as a precursor to depression in the context of sex differences in the socialization of empathy is sufficiently compelling to warrant further exploration.

Compliance

Theoretical Relevance of Compliance in the Development of Depression—

There is theoretical overlap between excessive compliance and a number of other constructs such as lack of assertiveness, reassurance seeking and sociotropy. For example, Beck, Epstein, and Harrison (1983), described sociotropy, characterized by a need to please others and have positive interpersonal relationships and autonomy, as one of two personality dimensions that

were hypothesized as being linked to the development of depression. An individual high on sociotropy may engage in higher than average rates of compliance in an effort to win approval or protect themselves against disapproval.

Excessive reassurance seeking has also been proposed as a risk factor for the development of depression (Joiner & Metalsky, 2001), based on Coyne's (1976) interpersonal theory of depression. The construct of excessive reassurance seeking includes items that may reflect over-compliance such as "giving in to the wishes of others" and "going along with others so that they will like you." In the case of excessive reassurance seeking as a risk factor for depression, excessive compliance is manifest as a means of gaining acceptance or approval.

In the present model, excessive compliance is conceptualized as complying in situations in which noncompliance would be appropriate, *and* demonstrating higher than average rates of committed compliance, which Kochanska, Coy, and Murray (2001) define as eagerly embracing another person's agenda or request. Although excessive compliance may reflect passivity or a lack of self-efficacy, it may also reflect an active attempt to control a situation by pleasing others. Complying in a situation in which noncompliance would be appropriate may reflect an attempt to resolve a conflict. By focusing on the *behavioral* act of excessive compliance the motive behind the behavior is not assumed. This has the advantage of being easier to operationally define, which will facilitate attempts to support or refute the hypothesis that excessive compliance is a precursor to depression in girls.

Sex Differences in Compliance—Girls usually demonstrate higher levels of compliance beginning in the toddler period. In an ethnically diverse community-based study of toddlers, mothers reported that girls were more compliant than boys (Briggs-Gowan, Carter, Moye Skuban, & McCue Horwitz, 2001). In addition, Kochanska et al. (2001) observed that girls were more compliant than boys in response to a prohibition throughout the first 4 years of life. In this study, committed compliance (defined previously) and situational compliance, defined as cooperation without a sincere commitment, were observed in two situations: a demand context and a prohibition context. Sex differences were strongest in the prohibition context, during which girls were much more likely to engage in committed compliance than boys, and boys were much more likely to engage in situational compliance than girls.

Girls have also been observed to be more compliant and conscientious in the school environment than boys. In a predominantly African American and Hispanic sample of 5–12-year-old children, teachers rated girls as significantly higher on compliance than boys (Mistry, Vandewater, Huston, & McLoyd, 2002). Serbin et al. (1990) reported that girls' higher academic performance in elementary school was partially mediated by being more responsive to social cues and compliant with adult directions than boys. Shiner (2000) assessed personality characteristics in an ethnically diverse sample of boys and girls in 3rd through 6th grade. Girls scored higher on the academic conscientiousness factor, which in turn was significantly correlated with rule-abiding behavior with others such as parents and peers. Thus, a number of studies have documented sex differences in compliance from the toddler period to middle childhood.

Empirical Support for the Role of Excessive Compliance in the Development of Depression—Excessive compliance has been shown to be significantly associated with depressive symptoms in adults. For example, lack of assertion, which shares some of the core features of compliance, has been associated with depressive symptoms in nonreferred college students (Culkin & Perrotti, 1985; Olinger, Shaw, & Kupier, 1987), and in patients who were clinically referred for depression (Hartlage, Arduino, & Alloy, 1998). Bellack, Hersen, and Himmelhoch (1983a, 1983b) compared observers' ratings of compliance and assertiveness in a series of role-plays among depressed and nondepressed women. Depressed women had

higher rates of compliance in contexts for which noncompliance would have been appropriate, and lower global ratings of assertiveness than nondepressed women. Following social skills training, depression scores decreased significantly as did compliance to unreasonable requests. Thus, changes in depression and compliance occurred in tandem.

Fritz and Helgeson (1998) demonstrated a significant association between a construct that they termed *unmitigated communion*, which includes excessive compliance in the context of helping others (e.g., I can't say no when someone asks for help), and depression in adults. In a second study conducted in a laboratory setting, women who scored high on unmitigated communion reported greater emotional distress after hearing a confederate disclose a problem with their relationship. This association was still evident two days post laboratory assessment (Fritz & Helgeson, 1998). In addition, several interpersonal factors were shown to mediate the relation between unmitigated communion and emotional distress including "having difficulty asserting oneself in relationships," "feeling uncomfortable receiving support from others," and "having a desire for others to heed one's advice." In their program of research, the authors appear to have found a point at which compliance and empathy may interact to lead to depression. Specifically, if the goal of engaging in high levels of compliance when someone is in distress is to control the behavior of others and that goal is not achieved, then depressed affect may result. This is one of the few studies to operationalize and test the association between an excessive manifestation of an otherwise assumed "positive" psychosocial construct and mental health functioning.

Important to the current authors' proposed model, several studies link excessive compliance and internalizing problems in children. In the study cited above by Kochanska et al. (2001), committed compliance was positively associated with observed and maternal reports of shyness. This is important because in a number of studies, social withdrawal early in life accounts for unique variance in later depression in school age children (Boivin, Hymel, & Bukowski, 1995; Block & Gjerde, 1990; Hymel, Rubin, Rowden, & LeMare, 1990; Mesman & Koot, 2000). In a study designed to test the relations between estimates of academic competence and depression, sex differences in compliance with school demands and later depression were found. The findings were such that girls were more likely to comply with academic tasks and demands. However, they underestimated their competence, and this underestimation was associated with self-reported depression and anxiety (Cole, Martin, Peeke, Seroczynski, & Fier, 1999).

Grant and Compas (1995) examined risk factors for anxious-depressed symptoms among adolescents whose parents were diagnosed with cancer. Adolescents reported on perceptions of changes in their responsibilities for the care of the family (e.g., helping other people, obligations at home, doing household chores). The results indicated that girls reported more family responsibilities and more depressed/anxious symptoms than boys. Consistent with our hypothesis, testing of a mediational model revealed that high rates of compliance with chores and other family responsibilities mediated the relationship between gender and anxious-depressed symptoms.

Bandura, Pastorelli, Barbaranelli, and Capara (1999) used the construct of self-efficacy in testing relations with depressive symptoms in 11-year-old girls and boys over a 3-year period. Overall, girls rated themselves as lower in beliefs in their ability to work cooperatively, to manage interpersonal conflicts, refuse unreasonable requests, and to voice their opinions, than did boys. Low scores in these areas were associated concurrently and longitudinally with depressive symptoms in girls, but not in boys, even after controlling for earlier depressive symptoms.

Summary of the Potential Role of Excessive Compliance in the Development of Depression

Constructs related to what in the present paper is conceptualized as excessive compliance have been part of long standing theories of depression (e.g., Beck et al., 1983). Yet the evidence to support this type of psychological construct to the development of depression has been relatively mixed (Coyne, Thompson, & Whiffen, 2004). Still, there does appear to be sufficient indirect evidence that excessive compliance may be associated with unrealistic self-imposed standards and concern about others' evaluations, which may play a role in the development of depression in girls. Girls who take on excessive responsibilities or who comply in situations in which noncompliance would be appropriate may be denying their individual goals in order to accomplish something for others. Such behavior may precede the onset of depression when the excessive compliance overshadows the development of more autonomous behavior and/or when the compliance fails to achieve the desired goal, such as winning approval or relieving the distress of the caregiver for example.

Emotion Regulation

Theoretical Relevance of Emotion Regulation for the Development of Depression

Emotion regulation has recently become widely studied by developmental psychologists (Cicchetti, 1996; Fox, 1994). The capacity to regulate emotions is broadly defined in terms of extrinsic and intrinsic processes that monitor, evaluate, and modify emotional reactions (Thompson, 1994). Negative emotions are not maladaptive *per se*. However, there are dimensions of emotion regulation, including the rapidity to becoming distressed, the duration of distress, and the latency to recover from distress that appear to have implications for less optimal functioning (Keenan, 2000). In fact, one could argue that problems with emotion regulation are at the foundation of many forms of psychopathology, including depression.

The assessment of individual differences in emotion regulation is still developing, with relatively little data on how to best operationalize "emotion dysregulation," outside of diagnostic nosology. It is accepted, however, that biological and environmental factors contribute to emotion regulation, and that developing emotion regulation skills is a process, with significant changes occurring during specific developmental periods, such as toddlerhood and adolescence (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Thus, deficits in emotion regulation may occur at any point in development, and seem likely to precede more fully developed mental disorders.

Some investigators use the broader construct of coping with stress in exploring relations between emotion regulation and child and adolescent psychological adjustment (see Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001 for a review). Emotion regulation is viewed as a component of coping, the definition of which often includes goal directed behaviors and cognitions that are voluntarily activated in response to a stressor (Compas et al., 2001). In the present model, emotion regulation is conceptualized as a continuous active process that occurs in the course of daily activities rather than focusing on a pattern of responses to a specific stressor. In addition, emotion regulation is viewed as comprising individual differences in biological reactivity and regulation as well as learned strategies for managing negative emotion.

A potential pathway to developing excessive control of negative emotion regulation that may be of particular concern to the development of depression in girls begins by having a limited repertoire of strategies. When strategies are limited then the experience of ineffective emotion regulation strategies may lead to over-control or inhibition of negative emotion. For example, if the primary strategy is to share emotions with the caregiver and the caregiver's response is dismissive or critical, the result may be to inhibit the expression of negative emotion. In order for this hypothesis to be viable there needs to be evidence of sex differences in the types of

strategies used to regulate emotion and evidence that the control or inhibition of negative emotion is associated with depression.

Sex Differences in Emotion Regulation—As early as the toddler period, there appear to be sex differences in the strategies used to regulate emotions. For example, Raver (1996) reported sex differences in the types of strategies that 2-year-old girls and boys used during stressful tasks in a primarily African-American sample of parent-child dyads. Girls tended to seek comfort from their mothers when distressed more often than boys. Boys, on the other hand, used self-distraction (i.e., diverting their attention away from the stressor) more than girls. These sex differences were observed despite the lack of sex differences in the frequency of displays of negative emotion.

This early sex difference in the use of others to help regulate emotion continues into childhood and adolescence. In a sample of predominantly Caucasian school age children from low- to middle income environments, girls were more likely than boys to view the expression of emotion, including negative emotion, as something positive and helpful (Zeman & Shipman, 1996). In a cross-cultural study of adolescent responses to anxiety provoking situations, girls were more likely to express their negative emotions and seek support than boys (Olah, 1995). This sex difference was found across all five cultures included in the study: Indian, Italian, Hungarian, Swedish and Yeminite.

Although seeking social support is typically associated with positive mental health, for some girls a high reliance on social support as a mechanism by which negative emotions are managed may be sub-optimal given evidence for a close link between girls' emotional well-being and interpersonal relations. Girls appear to ascribe a more important role to interpersonal relationships on their emotional well being than do boys. For example, preadolescent girls are more likely to explain emotional states as being caused by interpersonal situations than preadolescent boys (Strayer, 1986), and thus view their emotional functioning as more closely tied to their social interactions than do boys. As a result, when problems in social relations arise, girls who are emotionally reactive and who rely on support from their social relations may be particularly at risk for experiencing depressive symptoms.

Sex differences in emotional constraint have also been documented, particularly for the expression of anger. Underwood, Hurley, Johanson, and Mosley (1999) observed facial and verbal expressions among 8–12-year-old predominantly Caucasian boys and girls who participated in play sessions with confederate peers. Although girls reported being bothered more than boys by the confederate's provocation, boys were more likely to express anger during the peer interaction. Girls, on the other hand, were more likely than boys to make self-deprecating comments than boys during the peer provocation. In a mainly Caucasian sample of girls and boys in first, third, and fifth grades, children's displays of emotion were assessed in the "disappointing gift task" (Saarni, 1984). In this task, the child's display of emotion was coded following the receipt of a gift that they had earlier rated as undesirable. Girls were more likely to show positive emotion and a dampening of negative emotion than boys, especially in the older age group.

Controlling negative emotions, however, does not necessarily reflect poor emotion regulation. On the contrary, emotional control is often associated with social competence (Eisenberg et al., 1993; Roberts, 1999). There may be a point, however, at which the control of emotion has negative implications for developing competence in regulating negative emotion once it is elicited.

Empirical Support for the Role of Emotion Regulation in the Development of Depression—Some empirical support for the relation between emotion regulation strategies

and depression comes from the adult literature. Bromberger and Matthews (1996) for example, found that women who reported holding their anger in, in comparison to women who were more likely to express their angry feelings, had higher scores on the BDI 3 years later. Cox, Taylor, and Enns (1999) tested the hypothesis that a desire for emotional control would be associated with DSM-IV based depressive symptoms. A sample of 348 college students completed several questionnaires including a scale that included items measuring a desire to keep control over negative emotions such as anger and sadness, and a fear of intense emotions. Scores on this scale explained additional variance in depressive symptoms after controlling for trait anxiety and negative affect. Sex differences in these associations, however, were not tested.

Emotion regulation in children is often measured using temperament questionnaires in which an “emotionality” factor is included. Such factors usually assess the frequency and intensity of negative emotion, but not necessarily the strategies used to regulate emotion. There are a few exceptions, however. Zeman et al. (2002) assessed the association between strategies used to regulate anger and sadness and internalizing and externalizing scores in a primarily Caucasian sample of girls and boys in 4th and 5th grade. Three types of emotion regulation were assessed separately for sadness and anger: inhibition (e.g., getting mad inside but not showing it), dysregulated expression (e.g., whining), and emotion regulation coping (e.g., staying calm). Inhibition of anger, not sadness, was associated with internalizing but not externalizing problems. Unfortunately, no sex differences were reported.

In a nationally representative sample of 5th through 12th grade students, a significant association between disclosing negative feelings and depression scores was found (Schraedley, Gotlib, & Hayward, 1999). Children and adolescents who reported sharing their negative emotions with others had significantly lower depression scores. Including gender in the model revealed that this effect was found among girls but not among boys.

Summary of the Potential role of Excessive Emotion Regulation in the Development of Depression—Despite the fact that emotionality and regulation are part of most forms of psychopathology, there has been little research conducted with children on the types of strategies used to control negative emotions and their association with depression. There is evidence, however, that some individuals may exert excessive levels of control over negative emotion and that this inhibition may in fact increase their risk for depression. In addition, the tendency of females to rely on expressions of emotion within the context of intimate relations as a primary method of emotion regulation may prove to be disadvantageous when social support systems are sub-optimal.

CONTEXTS WITHIN WHICH THE PREADOLESCENT DIATHESIS MAY LEAD TO DEPRESSION

In this paper we focus primarily on conceptualizing preadolescent diatheses for female depression in order to highlight directions for future research into individual differences. We recognize, however, that sex differences may also exist in the occurrence and severity of stressors that serve to trigger depression onset. Family conflict and maternal depression have been shown to be especially salient for girls in this respect. In the following section we briefly discuss the ways in which these contexts may provide an environment within which the pre-existing diatheses of excessive empathy, compliance and emotion regulation lead to depression.

Family Conflict

In recent years, family conflict and marital discord have been shown to be directly associated with increases in depressive symptoms in adolescents (Sheeber, Hops, Alpert, Davis, &

Andrews, 1997). This research has demonstrated that the association between family stress and psychological adjustment is either stronger for girls than for boys or is only found among girls (Anderson, 1993; Lee et al., 1994; Rudolph & Hammen, 1999). For example, Jaycox and Repetti (1993) found that both family conflict and negative parent-child interactions were uniquely associated with girls' adjustment problems (including internalizing problems). This relationship did not exist for boys. In their longitudinal study of 443 adolescents, Davies and Windle (1997) reported a similar finding, namely that marital discord was a significant correlate of depressive symptoms for girls only. These authors added that this association was not a function of maternal depression.

When considering the mechanisms involved in these associations, a number of pieces of evidence suggest an important role of individual differences in compliance and high empathy. In a study of preschool aged children, Kerig, Cowan, and Cowan (1993) reported that daughters were more likely to receive negative feedback for displays of autonomy and assertiveness than boys. This pattern of sex difference is further heightened in the context of marital discord: mothers who had lower scores on a self-report of marital satisfaction were more likely to negate their daughters' attempts at assertion. Although it is not clear whether *excessive* compliance is actually reinforced in the context of marital discord, such a hypothesis seems plausible given the sex differences in how mothers respond to young children's acts of assertiveness and autonomy.

The results of a study based on high school students indicated that girls' orientation to social relations may be an important part of the association between family conflict and depressive symptoms for girls (Gore, Aseltine, & Colten, 1993). These investigators found that family stress was related to female depressive symptoms in the context of high levels of interpersonal caring, and high levels of adolescent involvement in maternal problems. Although these data are cross-sectional, they clearly support the role of individual differences in empathy in the relation between family conflict and depressive symptoms.

Maternal Depression

Although maternal depression is associated with a wide variety of adjustment problems in girls and boys, it appears to have particular relevance for the development of depression (Downey & Coyne, 1990), and more specifically for the development of depression in girls (Cummings & Davies, 1992; Hops, 1996). It is likely that the link between parental and child depression is partly through shared genetic influences. However, results from behavior-genetics research have revealed that a sizable portion of the variance in depression in the offspring of depressed parents is due to nongenetic factors (Eley, 1999; Essau & Merikangas, 1999). Thus, examinations of contextual mechanisms (e.g., parenting, family conflict) by which daughters of depressed women become depressed are warranted. Recent investigations of the contribution of maternal depression to child psychopathology have been conducted in the context of multivariate analyses, in which patterns of family interactions and other family stressors also have been assessed.

In a study that examined adolescents' responses in the context of negative paternal behavior toward the mother, Davis et al. (2000) reported that girls who were vulnerable to depression were more likely than boys to demonstrate a care-taking role with their mother. This effect was not found for boys. In addition, girls who suppressed aggressive responses in the context of maternal depressive behavior were more likely to show increases in depression. Thus, suppressing negative affect and taking on a conciliatory role in the context of negative parental interactions appear to have negative outcomes for adolescent girls who are living with a depressed caregiver.

Although studies that have included assessments of both parents' depression have found evidence for an association between fathers' and mothers' depressed mood on girls' adjustment, there appears to be a stronger and more direct link between maternal depression and girls' depression (Conger et al., 1995). Data from studies on family and marital conflict indicate that girls may be more oriented to their mothers' emotional states and may assume a caregiver role with their mothers. It is possible, therefore, that the interaction of empathy and maternal depressed mood places girls at risk for later depression.

This brief review of the evidence of marital conflict and maternal depression as stressful contexts is meant to identify possible directions for further exploration of the contexts in which individual differences in preadolescent psychological functioning lead to depression. Although our approach is to start with identifying the diatheses and then exploring potential stressors, an equally useful approach is to first identify the stressors and then ask the question, for whom is this context stressful? The study of individual differences is useful in its own right, but the expansion of this program of research will enhance and compliment the research on stressful contexts. In addition, the incorporation of stressful contexts into the study of precursors to depression may reveal that certain stressful contexts may precede and, in fact, be causally related to the precursors. A truly developmental model will ultimately need to explain how individual differences in empathy, compliance, and emotion regulation emerge.

LOGISTICAL CHALLENGES AND FUTURE DIRECTIONS

There appears to be sufficient justification based on theory and the development of sex differences to pursue the three constructs: excessive empathy, compliance and regulation of emotion as important measures of individual differences in risk for depression in girls. On the other hand, the empirical support for these constructs is indirect at best. Thus, the next step is to develop a program of research to directly and prospectively test the relation between these three constructs in preadolescence and the development of adolescent onset depression. There are, however, several logistical challenges to testing the proposed model. First, although depressive disorders are relatively common among adolescent girls, the base rates are still low. Thus, samples either need to be large enough to accommodate a dependent measure that has a low base rate, or the sample must be prescreened or clinically referred. Although large representative samples are the preferred context in which to test such a theory, preliminary questions about the validity of the hypotheses can be addressed in other sampling designs. An alternative approach is to use other dependent measures such as scores on a depression index. Given the episodic nature of depressive symptoms and disorders, an approach that can accommodate the waxing and waning of symptoms over time may yield the most useful information about the factors associated with such changes.

A second obstacle is the lack of reliable and valid measures of some of the constructs of interest. As stated earlier, compliance and empathy have typically been conceptualized as either protective factors or, when compliance and empathy are low, as risk factors for disruptive behavior problems. As a result, there are few instruments designed to measure excessive empathy or compliance and little effort directed at operationalizing these constructs (one exception is the Behavioral Assertiveness Task for Children developed by Ollendick, Hart, & Francis (1985), during which compliance to unreasonable requests is measured). On the other hand, the methods that have been validated for assessing empathy and compliance on a continuous scale may prove useful for identifying extreme scores in the left and right hand tails of the distribution. Thus, a reasonable approach will include testing the utility of existing measures for generating a full distribution of scores.

Although in this review we have treated each of the three proposed precursors as operating independently, we recognize that the nature of the relations among the constructs needs to be

articulated. It is tempting to argue that excessive regulation of negative emotions is a necessary condition, given the growing body of literature on the role of negative emotionality in a number of childhood disorders. On the other hand, there are some data to suggest that the combination of excessive empathy and compliance may explain variance in depression (e.g., Fritz & Helgeson, 1998). The immediate goal is to explore the utility of each of the three constructs independently and then to test whether different combinations are associated with different manifestations of depression and/or different patterns of comorbidity. For example, the presence or absence of excessive emotion regulation may be associated with whether the depressed mood is manifest by dysphoria or irritability. The presence or absence of excessive compliance may be associated with the co-occurrence of depression and conduct problems when the excessive compliance carries over into peer relations. Once it is established that each construct is indeed prospectively associated with depression, then more complex models will need to be proposed.

It is important to note that the proposed model is aimed at explaining depression in a subgroup of girls. There are multiple pathways to any disorder, and some pathways may be more common for subgroups of girls. The majority of the evidence for the proposed model, for example, is drawn from studies in which the racial and ethnic make up of the samples has been predominantly Caucasian and European-American. Other proposed models have been developed for racial minority groups. For example, racial discrimination and exposure to community violence are associated with depression in preadolescent African American children (Simons et al., 2002). African American girls, therefore, could be viewed as being at higher risk than males or Caucasian females because of the compounding effects of race and gender related stressors (DuBois, Burk-Brazton, Swenson, Tevendale, & Hardesty, 2002). Thus far, however, African American girls do not consistently report disproportionately higher rates of depression than other ethnic/racial minority or majority groups. Future tests of the proposed model should include strong representation of ethnic and/or racial minorities and alternative or perhaps additive risk factors such as exposure to conflict or violence.

The fact that depression varies across and within individuals in severity and chronicity argues for complex models that incorporate the psychological and biological processes, the changing dynamics of the proximal social environment, and the challenges of one's social context. In the proposed model, the focus has been on only a few components of what will eventually need to be a broader model of the development of depression in girls. The hope is that in the context of other lines of investigation, the effort to identify which combination of preadolescent precursors leads to depression in girls will have the potential to significantly impact the mental health of women, and reduce their global burden of disease.

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REFERENCES

- Abela JRZ, Brozina K, Haigh EP. An examination of response styles theory of depression in third- and seventh-grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology* 2002;30:515–528. [PubMed: 12403154]
- Abramson LY, Seligman MGP, Teasdale JD. Learned helplessness in humans. Critiques and reformulation. *Journal of Abnormal Psychology* 1978;87:49–74. [PubMed: 649856]
- Anderson ER. Analyzing change in short-term longitudinal research using cohort-sequential designs. *Journal of Consulting and Clinical Psychology* 1993;61:929–940. [PubMed: 8113494]

- Angold A, Rutter M. Effects of age and pubertal status on depression in a large clinical sample. *Development and Psychopathology* 1992;4:5–28.
- Bandura A, Pastorelli C, Barbaranelli C, Capara GV. Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology* 1999;76:258–269. [PubMed: 10074708]
- Bebbington PE. Sex and depression. *Psychological Medicine* 1998;28:1–8. [PubMed: 9483678]
- Beck AT, Epstein N, Harrison R. Cognitions, attitudes and personality dimensions in depression. *British Journal of Cognitive Psychotherapy* 1983;1:1–16.
- Bellack AS, Hersen M, Himmelhoch JM. A comparison of social skills training, pharmacotherapy and psychotherapy for depression. *Behavior Research and Therapy* 1983a;21:101–107.
- Bellack AS, Hersen M, Himmelhoch JM. Social skills training for unipolar depression. *Psychotherapy in Private Practice* 1983b;1:9–13.
- Block, J.; Gjerde, PF. Depressive symptoms in late adolescence: A longitudinal perspective on personality antecedents.. In: Rolf, J.; Masten, AS.; Cicchetti, D.; Nuechterlein, KH.; Weintraub, S., editors. *Risk and Protective Factors in the Development of Psychopathology*. Cambridge University Press; New York: 1990. p. 334–360.
- Boivin M, Hymel S, Bukowski WM. The roles of social withdrawal, peer rejection, and victimization by peers in predicting loneliness and depressed mood in childhood. *Development and Psychopathology* 1995;4:765–785.
- Briggs-Gowan MJ, Carter AS, Moye Skuban E, McCue Horwitz S. Prevalence of social-emotional and behavioral problems in a community sample of 1- and 2-year-old children. *Journal of the American Academy of Child and Adolescent Psychiatry* 2001;40:811–819. [PubMed: 11437020]
- Bromberger JT, Matthews KA. A “feminine” model of vulnerability to depressive symptoms: A longitudinal investigation of middle-aged women. *Journal of Personality and Social Psychology* 1996;70:591–598. [PubMed: 8851743]
- Chambers WJ, Puig-Antich J, Hirsch M, Paez P, Ambrosini PJ, Tabrizi MA, Davies M. The assessment of affective disorders in children and adolescents by semi-structured interview. *Archives of General Psychiatry* 1985;42:696–702. [PubMed: 4015311]
- Cicchetti, D. *Development and Psychopathology, Special Issue: Regulatory Processes*. Vol. 8. Cambridge University Press; New York: 1996.
- Cohen D, Strayer J. Empathy in conduct-disordered and comparison youth. *Developmental Psychology* 1996;32:988–998.
- Cole DA, Martin JM, Peeke LA, Seroczynski AD, Fier J. Children's over- and underestimation of academic competence: A longitudinal study of gender differences, depression, and anxiety. *Child Development* 1999;70:459–473. [PubMed: 10218266]
- Conger RD, Patterson GR, Ge X. It takes two to replicate: A mediational model for the impact of parents' stress on adolescent adjustment. *Child Development* 1995;66:80–97. [PubMed: 7497831]
- Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME. Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin* 2001;127:87–127. [PubMed: 11271757]
- Cox BJ, Taylor S, Enns MW. Fear of cognitive dyscontrol in relation to depression symptoms: Comparisons between original and alternative measures of anxiety sensitivity. *Journal of Behavior Therapy* 1999;30:301–311.
- Coyne JC. Toward an interactional description of depression. *Psychiatry: Journal for the Study of Interpersonal Processes* 1976;39:28–40.
- Coyne JC, Thompson R, Whiffen V. Is the Promissory Note of Personality as Vulnerability to Depression in Default? Reply to Zuroff, Mongrain, and Santor (2004). *Psychological Bulletin* 2004;130:512–517.
- Culbertson FM. Depression and gender. *American Psychologist* 1997;52:25–31. [PubMed: 9017929]
- Culkin J, Perrotti RS. Assertiveness factors and depression in a sample of college women. *Psychological Reports* 1985;57:1015–1020. [PubMed: 4080901]
- Cummings, ME.; Davies, PT. Parental depression, family functioning, and child adjustment: Risk factors, processes, and pathways.. In: Cicchetti, D.; Dante; Toth, SL., editors. *Developmental perspectives on depression*. Rochester symposium on developmental psychopathology. Vol. 4. University of Rochester Press; Rochester, NY: 1992. p. 283–322.

- Cyranowski JM, Frank E, Young E, Shear K. Adolescent onset of the gender difference in lifetime rates of major depression. *Archives of General Psychiatry* 2000;57:21–27. [PubMed: 10632229]
- Davies PT, Windle M. Gender-specific pathways between maternal depressive symptoms, family discord, and adolescent adjustment. *Developmental Psychology* 1997;33:657–668. [PubMed: 9232381]
- Davis B, Sheeber L, Hops H, Tildesley E. Adolescent responses to depressive parental behaviors in problem-solving interactions: Implications for depressive symptoms. *Journal of Abnormal Child Psychology* 2000;28:451–465. [PubMed: 11100919]
- Denham SA, McKinley M, Couchoud EA, Holt R. Emotional and behavioral predictors of preschool peer ratings. *Child Development* 1990;61:1145–1152. [PubMed: 2209184]
- Downey G, Coyne JC. Children of depressed parents: An integrative review. *Psychological Bulletin* 1990;108:50–76. [PubMed: 2200073]
- DuBois DL, Burk-Brazton C, Swenson LP, Tevendale HD, Hardesty JL. Race and gender influences on adjustment in early adolescence: Investigation of an integrative model. *Child Development* 2002;73:1573–1592. [PubMed: 12361320]
- Eisenberg N, Fabes RA, Bernzweig J, Karbon M, Poulin R, Hanish L. The relations of emotionality and regulation to preschoolers' social skills sociometric status. *Child Development* 1993;64:1418–1438. [PubMed: 8222881]
- Eisenberg N, McCreath H, Ahn R. Vicarious emotional responsiveness and prosocial behavior: Their interrelations in young children. *Personality and Social Psychology* 1988;14:298–311.
- Eisenberg N, Miller PA. The relation of empathy to aggressive and externalizing/antisocial behavior. *Psychological Bulletin* 1988;103:324–344. [PubMed: 3289071]
- Ellis BJ, Garber J. Psychosocial antecedents of variation in girls' pubertal timing: Maternal depression, stepfather presence, and marital and family stress. *Child Development* 2000;71:485–501. [PubMed: 10834479]
- Ferguson TJ, Stegge H, Miller ER, Olsen ME. Guilt, shame, and symptoms in children. *Developmental Psychology* 1999;35:347–357. [PubMed: 10082006]
- Fox, NA. Monographs of the Society for Research in Child Development. Vol. 59. University of Chicago Press; Chicago: 1994. The development of emotion regulation..
- Fritz HL, Helgeson VS. Distinctions of unmitigated communion from communion: Self-neglect and overinvolvement with others. *Journal of Personality and Social Psychology* 1998;75:121–140. [PubMed: 9686454]
- Garber J, Keiley MK, Martin NC. Developmental trajectories of adolescents' depressive symptoms: Predictors of change. *Journal of Consulting and Clinical Psychology* 2002;70:79–95. [PubMed: 11860059]
- Gawronski I, Privette G. Empathy and reactive depression. *Psychological Reports* 1997;80:1043–1049. [PubMed: 9198404]
- Ge X, Conger RD, Elder GH. Coming of age too early: Pubertal influence on girls' vulnerability to psychological distress. *Child Development* 1996;67:3386–3400. [PubMed: 9071784]
- Ge X, Conger RD, Elder GH. Pubertal transition, stressful life events, and the emergence of gender differences in adolescent depressive symptoms. *Developmental Psychology* 2001;37(3):404–417. [PubMed: 11370915]
- Ge X, Lorenz FO, Conger RD, Elder GH, Simons RL. Trajectories of stressful life events and depressive symptoms during adolescence. *Developmental Psychology* 1994;30:467–483.
- Gjerde PF. Alternative pathways to chronic depressive symptoms in young adults: Gender differences in developmental trajectories. *Child Development* 1995;66:1277–1300. [PubMed: 7555216]
- Goodyer I, Ashby L, Altham M, Vize C, Cooper P. Temperament and major depression in 11 to 16 year olds. *Journal of Child Psychology and Psychiatry* 1993;34:1409–1423. [PubMed: 8294527]
- Gore S, Aseltine RH, Colten ME. Gender, social-relational involvement, and depression. *Journal of Research on Adolescence* 1993;3:101–125.
- Grant KE, Compas BE. Stress and anxious-depressed symptoms among adolescents: Searching for mechanisms of risk. *Journal of Consulting and Clinical Psychology* 1995;63:1015–1021. [PubMed: 8543704]

- Grant KE, Lyons A, Landis D, Cho MH, Scudiero M, Reynolds L, Murphy J, Bryant H. Gender, body image, and depressive symptoms among low-income African American adolescents. *Journal of Social Issues* 1999;55:299–316.
- Hammen C. Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology* 1991;100:555–561. [PubMed: 1757669]
- Hankin BL, Abramson LY. Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin* 2001;127:773–796. [PubMed: 11726071]
- Hankin BL, Abramson LY. Measuring cognitive vulnerability to depression in adolescence: Reliability, validity, and gender differences. *Journal of Clinical Child and Adolescent Psychology* 2002;31:491–504. [PubMed: 12402568]
- Hankin BL, Abramson LY, Moffitt TE, Silva P, McGee R, Angell KE. Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology* 1998;107:128–140. [PubMed: 9505045]
- Hartlage S, Arduino K, Alloy LB. Depressive personality characteristics: State dependent concomitants of depressive disorder and traits independent of current depression. *Journal of Abnormal Psychology* 1998;107:349–354. [PubMed: 9604564]
- Hastings PD, Zahn-Waxler C, Robinson J, Usher B, Bridges D. The development of concern for others in children with behavior problems. *Developmental Psychology* 2000;36:531–546. [PubMed: 10976595]
- Hops, H. Intergenerational transmission of depressive symptoms: Gender and developmental considerations.. In: Mundt, C.; Goldstein, MJ.; Hahlweg, K.; Fiedler, P., editors. *Interpersonal factors in the origin and course of affective disorders*. Royal College of Psychiatrists; London: 1996. p. 113-129.
- Haviland, JM.; Malatesta, CZ. The development of sex differences in nonverbal signals: Fallacies, facts and fantasies.. In: Mayo, C.; Henley, N., editors. *Gender and Non-Verbal Behavior*. Springer; New York: 1981.
- Hughes C, White A, Sharpen J, Dunn J. Antisocial, angry and unsympathetic: “Hard-to-manage” preschoolers’ peer problems and possible cognitive influences. *Journal of Child Psychology and Psychiatry* 2000;41:169–179. [PubMed: 10750543]
- Hymel S, Rubin KH, Rowden L, LeMare L. Children's peer relationships: Longitudinal prediction of internalizing and externalizing problems from middle to late childhood. *Child Development* 1990;61:2004–2021.
- Joiner TE, Metalsky GI. Excessive reassurance seeking: Delineating a risk factor involved in the development of depressive symptoms. *Psychological Science* 2001;12:371–378. [PubMed: 11554669]
- Joiner TE, Wagner KD. Attribution style and depression in children and adolescents: A meta-analytic review. *Clinical Psychology Review* 1995;15:777–798.
- Keenan K. Emotion dysregulation as a risk factor for child psychopathology. *Clinical Psychology: Science and Practice* 2000;7:418–434.
- Keenan K, Loeber R, Green S. Conduct disorder in girls: A review of the literature. *Clinical Child and Family Psychology Review* 1999;2:3–19. [PubMed: 11324095]
- Keenan K, Shaw DS. Developmental and social influences on young girls’ behavioral and emotional problems. *Psychological Bulletin* 1997;121:97–113.
- Kerig PK, Cowan PA, Cowan CP. Marital quality and gender differences in parent-child interaction. *Developmental Psychology* 1993;29:931–939.
- Kessler RC, Avenevoli S, Merikangas KR. Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry* 2001;49:1002–1014. [PubMed: 11430842]
- Kessler RC, McGonagle KA, Swartz M, Blazer DG, Nelson CB. Sex and depression in the National Comorbidity Survey, I: Lifetime prevalence, chronicity and recurrence. *Journal of Affective Disorders* 1993;29:85–96. [PubMed: 8300981]
- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen H, Kendler KS. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results

- from the National Comorbidity Study. *Archives of General Psychiatry* 1994;51:8–19. [PubMed: 8279933]
- Kessler RC, Zhao S, Blazer DG, Swartz M. Prevalence, correlates, and course of minor depression and major depression in the national comorbidity survey. *Journal of Affective Disorders* 1997;45:19–30. [PubMed: 9268772]
- Kochanska G, Coy KC, Murray K. The development of self-regulation in the first four years of life. *Child Development* 2001;72:1091–1111. [PubMed: 11480936]
- Kovacs M. Depressive disorders in childhood: An impressionistic landscape. *Journal of Child Psychology and Psychiatry* 1997;38:287–298. [PubMed: 9232475]
- Kovacs M, Devlin B. Internalizing disorders in childhood. *Journal of Child Psychology and Psychiatry* 1998;39:47–63. [PubMed: 9534086]
- Krevans J, Gibbs JC. Parent's use of inductive discipline: Relations to children's empathy and prosocial behavior. *Child Development* 1996;67:3263–3277. [PubMed: 9071781]
- Laitinen-Krispijn, Ende JVD, Verhulst FC. The role of pubertal progress in the development of depression in early adolescence. *Journal of Affective Disorders* 1999;54:211–215. [PubMed: 10403167]
- Lee HS, Brennan PF, Daly BJ. Relationship of empathy to appraisal, depression, life satisfaction, and physical health in informal caregivers of older adults. *Research in Nursing and Health* 2001;24:44–56. [PubMed: 11260585]
- Lee VE, Burkham DT, Zimiles H, Ladewski B. Family structure and its effect on behavioral and emotional problems in young adolescents. *Journal of Research on Adolescents* 1994;4:405–437.
- Lengua LJ, Stormshak EA. Gender, gender roles and personality: Gender differences in the prediction of coping and psychological symptoms. *Sex Roles* 2000;43:787–820.
- Leon AC, Klerman GL, Wickramaratne P. Continuing female predominance in depressive illness. *American Journal of Public Health* 1993;83(5):754–757. [PubMed: 8484466]
- Lewinsohn PM, Clark GN, Seeley JR, Rhode P. Major depression in community adolescents—Age at onset, episode duration, and time to recurrence. *Journal of the American Academy of Child and Adolescent Psychiatry* 1994;33:809–818. [PubMed: 7598758]
- Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA. Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *Journal of Abnormal Psychology* 1993;102:133–144. [PubMed: 8436689]
- Little SA, Garber J. Interpersonal and achievement orientation and specific stressors predicting depressive and aggressive symptoms in children. *Cognitive Therapy and Research* 2000;24:651–670.
- Loeber, R.; Farrington, DP.; Stouthamer-Loeber, M.; van Kammen, WB. *Antisocial Behavior and Mental Health Problems*. Lawrence Erlbaum Associates; Mahwah, NJ: 1998.
- Malatesta CZ, Haviland JM. Learning display rules: The socialization of emotion expression in infancy. *Child Development* 1982;53:991–1003. [PubMed: 7128264]
- McCauley E, Myers K, Mitchell J, Calderon R, Schloedt K, Treder R. Depression in young people: Initial presentation and clinical course. *Journal of the American Academy of Child and Adolescent Psychiatry* 1993;32:714–722. [PubMed: 8340290]
- McCauley, E.; Pavlidis, K.; Kendall, K. Developmental precursors of depression: The child and the social environment.. In: Goodyer, I., editor. *The Depressed Child and Adolescent*. 2nd ed.. Cambridge University Press; Cambridge, England: 2001. p. 46-78.
- Mesman J, Koot HM. Child-reported depression and anxiety in preadolescence: II. Preschool predictors. *Journal of the American Academy of Child & Adolescent Psychiatry* 2000;39:1379–1386. [PubMed: 11068893]
- Mistry RS, Vandewater EA, Huston AC, McLoyd V. Economic well-being and children's social adjustment: The role of family process in an ethnically diverse low-income sample. *Child Development* 2002;73:935–951. [PubMed: 12038561]
- Murray, CJL.; Lopez, AD. *The Global Burden of Disease*. Harvard University Press; Cambridge, MA: 1996.
- Nolen-Hoeksema S, Girgus JS. The emergence of gender differences in depression during adolescence. *Psychological Bulletin* 1994;115:424–443. [PubMed: 8016286]

- Offord DR, Boyle MH, Szatmari P, Rae-Grant NI, Links PS, Cadman DT, Byles JA, Crawford JW, Munroe Blum H, Byrne C, Thomas H, Woodward CA. Ontario child health study: II. Six-month prevalence of disorder and rates of service utilization. *Archives of General Psychiatry* 1987;44:832–836. [PubMed: 3498458]
- Olah A. Coping strategies among adolescents: A cross-cultural study. *Journal of Adolescence* 1995;18:491–512.
- Ollendick TH, Hart KJ, Francis G. Social validation of the revised behavioral assertiveness test for children (BAT-CR). *Child and Family Behavior Therapy* 1985;7:17–33.
- Olinger LJ, Shaw BF, Kupier NA. Nonassertiveness, dysfunctional attitudes, and mild levels of depression. *Canadian Journal of Behavioral Science* 1987;19:40–49.
- Petersen AC, Sarigiani PA, Kennedy RE. Adolescent depression: Why more girls? *Journal of Youth and Adolescence* 1991;20:247–271.
- Piccinelli M, Wilkinson G. Gender differences in depression: Critical review. *British Journal of Psychiatry* 2000;177:486–492. [PubMed: 11102321]
- Puig-Antich J. Major depression and conduct disorder in prepuberty. *Journal of the American Academy of Child Psychiatry* 1982;21:118–128. [PubMed: 7069078]
- Raver CC. Relations between social contingency in mother-child interaction and 2-year-old's social competence. *Developmental Psychology* 1996;32:850–859.
- Roberts WL. The socialization of emotional expression: Relations with prosocial behavior and competence in five samples. *Canadian Journal of Behavioral Science* 1999;31:72–85.
- Robins CJ, Hinkley K. Social-cognitive processing and depressive symptoms in children: A comparison of measures. *Journal of Abnormal Child Psychology* 1989;17:29–36. [PubMed: 2926021]
- Ruble DN, Greulich F, Pomerantz EM, Gochberg B. The role of gender-related processes in the development of sex differences in self-evaluation and depression. *Journal of Affective Disorders* 1993;29:97–128. [PubMed: 8300982]
- Rudolph KD, Hammen C. Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transitional perspective. *Child Development* 1999;70:660–677. [PubMed: 10368914]
- Saarni C. An observational study of children's attempts to monitor their expressive behavior. *Child Development* 1984;55:1504–1513.
- Schraedley PK, Gotlib IH, Hayward C. Gender difference in correlated of depressive symptoms in adolescents. *Journal of Adolescent Health* 1999;25:98–108. [PubMed: 10447037]
- Serbin LA, Zerkowicz P, Doyle A, Gold D, Wheaton B. The socialization of sex-differentiated skills and academic performance: A mediational model. *Sex Roles* 1990;23:613–628.
- Shahar G, Henrich CC, Blatt SJ, Ryan R, Little TD. Interpersonal relatedness, self-definition, and their motivational orientation during adolescence: A theoretical and empirical integration. *Developmental Psychology* 2003;39:470–483. [PubMed: 12760516]
- Sheeber L, Hops H, Alpert A, Davis B, Andrews J. Family support and conflict: Prospective relations to adolescent depression. *Journal of Abnormal Child Psychology* 1997;25:333–344. [PubMed: 9304449]
- Shiner RL. Linking childhood personality with adaptation: Evidence for continuity and change across time into late adolescence. *Journal of Personality and Social Psychology* 2000;78:310–325. [PubMed: 10707337]
- Simons RL, Murray V, McLoyd V, Lin KH, Cutrona C, Conger RD. Discrimination, crime, ethnic identity and parenting as correlates of depressive symptoms among African American children: A multi-level analysis. *Development and Psychopathology* 2002;14:371–393. [PubMed: 12030697]
- Sorenson SB, Rutter CM, Aneshensel CS. Depression in the community: An investigation into age of onset. *Journal of Consulting and Clinical Psychology* 1991;59:541–546. [PubMed: 1918558]
- Spence SH, Najman JM, Bor W, O'Callaghan MJ, Williams GM. Maternal anxiety and depression, poverty and marital relationship factors during early childhood as predictors of anxiety and depressive symptoms in adolescence. *Journal of Child Psychology and Psychiatry* 2002;43:457–469. [PubMed: 12030592]
- Strayer J. Children's attributions regarding the situational determinants of emotion in self and others. *Developmental Psychology* 1986;22:649–654.

- Stice E, Presnell K, Bearman SK. Relation of early menarche to depression, eating disorders, substance abuse, and comorbid psychopathology among adolescent girls. *Developmental Psychology* 2001;37:608–619. [PubMed: 11552757]
- Thompson RA. Emotion regulation: A theme in search of a definition. *Monographs for the Society for Research in Child Development* 1994;59:25–52.
- Turner JE, Cole DA. Development differences in cognitive diatheses for child depression. *Journal of Abnormal Child Psychology* 1994;22:15–32. [PubMed: 8163773]
- Underwood MK, Hurley JC, Johanson CA, Mosley JE. An experimental, observational investigation of children's responses to peer provocation: Developmental and gender differences in middle childhood. *Child Development* 1999;70:1428–1446. [PubMed: 10621965]
- Wichstrom L. The emergence of gender difference in depressed mood during adolescence: The role of intensified gender socialization. *Developmental Psychology* 1999;35:232–245. [PubMed: 9923478]
- Zahn-Waxler, C. The development of empathy, guilt, and internalization of distress.. In: Davidson, R.J., editor. *Anxiety, Depression, and Emotion*. Oxford University Press; New York: 2000. p. 222-265.
- Zahn-Waxler, C.; Cole, P.M.; Barrett, K.C. Guilt and empathy: Sex differences and implications for the development of depression.. In: Garber, J.; Dodge, K.A., editors. *The Development of Emotion Regulation and Dys-regulation*. Cambridge University Press; Cambridge: 1991. p. 243-272.
- Zahn-Waxler C, Klimes-Dougan B, Slattery MJ. Internalizing problems of childhood and adolescence: Prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Development and Psychopathology* 2000;12:443–466. [PubMed: 11014747]
- Zahn-Waxler C, Robinson JL, Emde EN. The development of empathy in twins. *Developmental Psychology* 1992;28:1038–1047.
- Zeman J, Shipman K. Children's expression of negative affect: Reasons and methods. *Developmental Psychology* 1996;32:842–849.
- Zeman J, Shipman K, Suveg C. Anger and sadness regulation: Predictions to internalizing and externalizing symptoms in children. *Journal of Clinical Child and Adolescent Psychology* 2002;31:393–398.
- Zhou Q, Eisenberg N, Losoya SH, Fabes RA, Reiser M, Guthrie IK, Murphy BC, Cumberland A, Shepard SA. The relations between parental warmth and positive expressiveness to children's empathy-related responding and social functioning: A longitudinal study. *Child Development* 2002;73:893–915. [PubMed: 12038559]