The other side of the coin: Using intervention research in child anxiety disorders to inform developmental psychopathology

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Abstract
With advancements in the technology of prevention and treatment of childhood anxiety disorders, information regarding our understanding of normal and abnormal child development can be enriched. Typically, research has focused on developing efficacious and effective interventions with less attention devoted to the impact this information may have on the field of developmental psychopathology. By reviewing the results of both treatment and prevention studies, several potential contributions of intervention research to the field can be explored. Results from wait-list or monitoring control groups will be reviewed, providing valuable information regarding the normal trajectory of the anxious child. Outcomes of children receiving the intervention prove that this pathway can be altered and is not impermeable. Furthermore, a review of long-term follow-up studies addresses the question of whether intervention can change the long-term trajectory of an anxiety-disordered child and prevent disorders in later life. Contributions to the etiological understanding of the anxiety disorders will also be reviewed: changes in variables considered important in the etiology and maintenance of disorder can be examined in synchronicity with changes in symptomatology following intervention. An examination of potential developmental predictors of treatment outcome will also contribute to this review, with a focus on the limitations of the current research in gaining a complete understanding of the relationship between developmental level and outcome. Directions regarding future research in the study of interventions for child and adolescent anxiety disorders will be discussed with the aim of promoting further communication between intervention research and the field of developmental psychopathology.

The existence of empirically supported treatments for childhood disorders in general (see Kazdin & Weisz, 1998; Ollendick & King, 2000) and anxiety disorders specifically (see Ollendick & King, 1998) has consolidated the notion that, to some degree, child development is flexible and malleable and not fixed or impermeable. Significant and meaningful changes in children’s symptoms and general functioning have been observed and documented following cognitive–behavioral therapy (CBT) interventions (e.g., Barrett, Dadds, & Rapee, 1996; Kendall, 1994; Kendall et al., 1997; Mendlowitz et al., 1999; Silverman et al., 1999; Spence et al., 2000). Recently, prevention studies and long-term follow-up studies have provided additional evidence that the trajectory of the anxious child’s development can be altered (Barrett, Duffy, Dadds, & Rapee, 2001; Dadds, Holland, Laurens, Mullins, Barrett, & Spence, 1999; Dadds, Spence, Holland, Barrett, & Lauren, 1997; Kendall & Southam–Gerow, 1996). These results demonstrate the ability
of interventions (treatment and prevention) to not only produce change but also inform developmental theory. Change produced by intervention provides evidence that maladaptive paths can be modified.

Typically and unfortunately, intervention research has remained somewhat disparate from developmental psychology (Cicchetti & Toth, 1992; Shirk & Russell, 1996). This separation is apparent when one considers the way in which treatments for childhood disorders are often developed. Many interventions for childhood depression and anxiety are downward extensions of adult treatments and not necessarily or sufficiently based on theory and data from child development. Not surprisingly, this pattern is also evident in the diagnostic categories (DSM-IV; American Psychiatric Association, 1994; Jensen & Hoagwood, 1997) applied to childhood presentations of emotional distress (Schneering, Hudson, & Rapee, 2000; Silk et al., 2000) and further highlights the gap between clinical psychology and developmental psychology (Cicchetti & Rogosch, 2002; Shirk, 1998). With developmental psychopathology as a growing endeavor, the division between clinical and developmental psychology will narrow. Developmental psychopathology offers the combined understanding of normal and abnormal development in an attempt to further elucidate the causal processes involved in the etiology of disorder and can, with a shift to intervention, allow developmental theory to inform intervention research. The benefits of the interplay have emerged and will continue to do so (e.g., Kendall, 1984; Kendall, Lerner, & Craighead, 1984; Masten & Braswell, 1991; Ollendick & Vasey, 1999; Toth & Cicchetti, 1999).

On the other side of the coin, however, past results of intervention research have offered little to advance theories of developmental psychopathology. In the field of the anxiety disorders, several etiological models have recently emerged that attempt to describe potential pathways to disorder (Chorpita & Barlow, 1998; Manassis & Bradley, 1994; Rapee, 2001; Vasey & Dadds, 2001). For example, Chorpita and Barlow (1998) underscored the importance of perceived control, hypothesizing that early experience of reduced control over one’s environment will increase a child’s vulnerability to anxiety disorder. They further proposed that an environment of reduced control leads to the development of a cognitive bias whereby the person has an increased probability of interpreting future situations as uncontrollable. Low perceptions of control are said to increase the individual’s underlying inhibition (Gray, 1987; Kagan, Reznick, & Snidman, 1987). The model argues that in early development an individual’s cognitive vulnerability acts in a mediational role between the occurrence of uncontrollable events and the development of anxiety. In later development this cognitive vulnerability or “template” is said to act as a moderator to amplify the expression of anxiety.

Hudson and Rapee (in press) proposed a multiple pathway model that outlines the importance of the child’s temperament in selecting specific environments that may further maintain the child’s vulnerability to anxiety. This model offers multiple and fluid pathways toward disorder, suggesting that a child who inherits a genetic predisposition toward anxiety is likely to exhibit increased sensitivity or emotionality, a more avoidant coping style, and greater physiological arousal to threat. Greater emotionality and greater physiological arousal can give rise to an increased tendency to interpret situations as threatening. An inhibited child who avoids novel stimuli is prevented from habituating to potentially fearful stimuli and instead the child’s restriction of exposure to the world increases the child’s sensitization to novel stimuli. The model also proposes that the child’s temperament allows maladaptive patterns of behavior to develop from others in his or her environment (parent, siblings, teachers, peers). For instance, the environment provides support for the child’s avoidant style (parents who permit or facilitate avoidance), thereby further increasing the child’s perception of threat, reducing the child’s perceived control over threat, and ultimately increasing the child’s avoidance of threat and anxiety.
Verbal instructions and/or modeling of anxious behavior are also important in the model described by Hudson and Rapee (in press). A child may observe and copy the anxious behavior of other significant persons in the environment (parents, peers, siblings) as well as learn how to behave in the face of fearful or ambiguous stimuli. Finally, the onset of disorder may be shaped or triggered by the child's social, cognitive, and emotional development; traumatic experiences; and cultural factors. These factors influence the fluid transition between normality and "disorder."

In considering the development of anxiety disorders, no single common pathway can be defined. Rather, the paths are many and varied (Cicchetti, 1993; Cicchetti & Rogosch, 1996; Sroufe & Jacobvitz, 1989). Developmental psychopathologists have argued that both multifinality and equifinality are key concepts in understanding the complexity and intricacy of causal processes (Cicchetti & Rogosch, 1996), and they apply here. That is, there are multiple pathways to one disorder (equifinality) and one pathway may have multiple outcomes (multifinality). With regard to anxiety, the presence of a parent who encourages the child's avoidance may or may not lead to an anxiety disorder in the child. Alternatively, the presence of an anxiety disorder does not necessitate the presence of an environment (e.g., parent) that was encouraging of avoidance.

The present paper will address the ways in which treatment and prevention of anxiety disorders in youth can inform theories of normal and abnormal development. To do so, one must first recognize and acknowledge the limitations of intervention research to inform developmental theory and etiological theory. We must, for example, be cautioned not to assume that just because a variable changes due to an intervention that the same variable was therefore involved in the etiology or maintenance of the disorder. Variables that show change following intervention may be consistent with a certain theory of abnormal development but do not offer proof of the theory. The documentation of intervention-produced change provides fuel for investigation of the roles that these variables may play in the cause or maintenance of the disorder.

This paper reviews the results of treatment and prevention studies of youth with anxiety disorders and highlights the ways in which the results inform theories of the developmental psychopathology of anxiety. Access to data from carefully controlled randomized treatment and prevention trials for childhood disorders (and hence more rigorous designs) allows a worthwhile examination of the potential bridges between the subdisciplines. Studies that show the superiority of an active treatment condition to a wait-list control condition provide evidence of both the plasticity and the stability of the course of the disorder: without intervention the child's disorder remains stable, and with intervention there are observed changes. Additional questions can be addressed when intervention studies follow treatment recipients for periods longer than the typical 6–12 months. For example, are changes made in childhood maintained across the child's development and into maturity? Does successful treatment alter the trajectory for the sequelae of the disorder?

Also central to this discussion is the degree to which developmental variables (e.g., age, level of cognitive or emotional development) may be predictive of a positive treatment outcome. If treatment shows comparative efficacy regardless of the child's initial development, then one might conclude that developmental variations (within those included in the study) are not important in treatment effectiveness. Alternatively, if certain developmental variables do moderate outcomes, then critical periods in the course of the disorder and the timing of treatment are revealed.

Important, too, is knowledge of normal development. An understanding of the etiology of anxiety disorders benefits from an understanding of normal development. In terms of intervention research, this understanding is crucial in determining the point at which an intervention has been effective. Children may improve over the course of treatment, but how meaningful are these changes? How do the treated children, at posttreatment, compare to children with normal levels of anxiety? Has
treatment returned once extreme cases to within normal limits (Kendall, Marrs–Garcia, et al., 1999)? The usefulness of the information provided by normative comparisons in intervention research will be discussed.

Finally, we discuss the impact of developmental psychopathology on treatment implementation with anxiety-disordered youth. Despite concerns that intervention research is atheoretical, the increased communication between clinical and development psychology has enabled intervention research to be guided by theories of development.

**Treatment and Prevention Efforts Compared to Wait-List or Monitoring Conditions**

Mostly within the last decade, randomized clinical trials have been conducted to examine the efficacy of CBT for childhood anxiety disorders (Barrett, 2001; Kendall, 1993; Ollendick & King, 1998). The majority of large randomized clinical trials to date have included samples of children with one of three primary diagnoses: Generalized Anxiety Disorder (GAD, formerly Overanxious Disorder), Separation Anxiety Disorder (SAD), or Social Phobia (SP, earlier labeled Avoidant Disorder). Generally, these studies have shown that CBT reduces anxiety for school-aged children suffering from diagnosable levels of these disorders (e.g., Barrett, Dadds, & Rapee, 1996; Kendall, 1994; Silverman et al., 1999). Of special interest to the current paper are the data from the untreated control conditions. Specifically, many of these studies used waitlist controls (to control for the effects of maturation, naturally occurring events, regression to the mean, the effects of repeated assessments, and other threats to internal validity). The data from wait-list controls are useful, as they provide an indication of the natural course of children after they have developed clinically significant levels of anxiety.

The first randomized clinical trial for anxiety in youth (ages 9–13) compared 16 weeks of CBT to an 8-week wait-list (Kendall, 1994). Children who had received CBT ($n = 27$) showed a steeper rate of improvement than children on the wait-list on multiple measures of anxiety and measures of coping and depressive symptoms. Children on the wait-list generally showed no change (or very modest change) over the 8-week duration. Out of 20 wait-list children, only 1 child (5%) failed to meet criteria for their primary diagnosis following the 8-week wait-list. Anxiety disorders appear relatively stable in 9- to 13-year-olds over a 2-month period. Consistent data were reported from a second randomized clinical trial (Kendall et al., 1997) where, again, CBT-treated youth showed significantly greater improvement than wait-list children and the children on the wait-list exhibited only a very modest change over the 8-week period. Only 6% of wait-listed children failed to meet criteria for their primary diagnosis compared to 53% of the treated children.

Results from other laboratories are fairly consistent: there is little improvement over wait-list periods for anxious children. For instance, Silverman and colleagues (1999) reported that following an 8–10 week wait-list, only 13% of the wait-list children no longer met criteria for their primary diagnosis (compared to 64% of the CBT-treated children). The only somewhat discrepant data set (Barrett et al., 1996) had a slightly longer wait period (12 weeks) and indicated that 26% of wait-listed cases showed some improvement (compared to 70% of CBT-treated children). The rates of change were higher in this study for both the wait-list and the treated cases.

Our review of the evidence from randomized clinical trials suggests that only a small percentage of anxious children “lose” their diagnosis of an anxiety disorder without treatment: childhood anxiety disorders did not typically remit naturally after reaching a clinical level. This conclusion is consistent with other research demonstrating the chronicity of anxiety disorders (e.g., Kovacs & Devlin, 1998) and the fact that anxious adults retrospectively report higher levels of anxiety symptoms or anxiety-related problems as children compared to nonanxious adults (Lipsitz et al., 1994).

In addition to considering treatment outcome for youth with anxiety disorders, it is also worthwhile to consider prevention ef-
Intervention research to inform developmental psychopathology

The development of prevention programs aimed at the anxiety disorders is a relatively new endeavor, and hence the number of treatment studies far outweighs the number of prevention trials. Nevertheless, several studies have begun to emerge in the literature (e.g., Barrett & Turner, 2001; Dadds et al., 1997; LaFreniere & Capuano, 1997). Prevention programs have the potential to limit the development or progression of anxiety to clinical levels, and they may be more cost effective in reducing the overall incidence of childhood disorders and their cost to society (Dadds et al., 1997). Recently, Barrett and Turner (2001) conducted a universal prevention program designed specifically to prevent anxiety disorders in sixth grade (10–12 years) children in a number of schools. The study compared a CB intervention (either teacher led or psychologist led) to a monitoring only condition and found significantly greater changes on self-reported anxiety in both teacher-led and psychologist-led intervention conditions from pre- to postintervention compared to the monitoring condition. Interestingly, the study showed a main effect for time, indicating that all three groups significantly improved on the self-report measures of anxiety (Spence Children's Anxiety Scale). The study also examined high-risk children (i.e., children who scored in the clinical range in the self-reported anxiety measures). Although the sample size was small, the evidence points to promising news that high-risk children in the interventions groups were more likely to move into the healthy range than high-risk children in the monitoring condition. Similar results were found in a purely teacher-led intervention for fifth to seventh graders (Lowry, Barrett, & Dadds, 2001).

In an indicated prevention trial, Dadds and colleagues (1997) compared the efficacy of a 10 session school-based child- and parent-focused CB intervention to a monitoring group. In this study, both groups showed reductions in anxiety at posttreatment, but at the 6-month follow-up this effect was only evidenced in the intervention group. Addressing prevention most directly, Dadds and colleagues examined how many children who had been diagnosis free before the intervention developed a full anxiety disorder over a 6-month follow-up period. This revealed that 54% of the children in the monitoring group developed a full anxiety disorder compared to only 16% of the children in the intervention group, suggesting the superiority of the CB intervention in preventing the onset of full anxiety disorders.

Rapee and colleagues (Rapee & Jacobs, 2002; also cited in Lyneham & Rapee, in press) have been examining the efficacy of a selective prevention program for behaviorally inhibited preschoolers (3.5–4.5 years). Behavioral inhibition has been identified as a temperamental risk factor for the later development of anxiety disorders (Biederman et al., 1993). In this study, 50% of the behaviorally inhibited children received a CB intervention while the other half received no intervention. The intervention program was provided exclusively to the parents and involved a six-session educational program addressing such issues as parental overinvolvement, modeling of anxiety, parent anxiety reduction, and exposure hierarchies for the child. The preliminary results suggest that children whose parents received the intervention were lower in inhibition and anxiety “problems” than children in the monitoring group. Interestingly, these results seem to indicate that the children in the monitoring group show an increase in anxiety while anxiety in children in the intervention group decreases. These promising results suggest that intervention at even as young as 3 years of age can be beneficial in altering the trajectory of the anxious child.

In contrast, LaFreniere and Capuano (1997) randomly assigned 42 anxious–withdrawn preschoolers (ages 31–70 months) to either an intervention that targeted parent–child attachment or a control group. The intervention produced significant improvements on parent–child interactions, parental stress, parental control, child motivation, and child competence; but no significant improvements in teacher rated anxious–withdrawn behavior were observed. The comparison of this study to the ongoing project conducted by Rapee and Jacobs (2002) suggests that for preschoolers, intervening with parents targeting the child’s inhibited behavior may be more effec-
tive in reducing anxiety than targeting the attachment bond.

Together these prevention programs have primarily shown that, in comparison to providing no treatment at all, intervention can prevent the development of unwanted levels of anxiety. Moreover, these studies have shown that for most children, anxiety levels overall improve over time, even without intervention. This result is consistent with evidence from studies examining the course and prevalence of fears in children, which indicate that increasing age is associated with a decrease in fearfulness (e.g., Gullone, 2000). Conversely, these prevention studies have shown that anxiety levels in children at risk for developing anxiety disorders are likely to worsen over time.

Are there special benefits to intervening during childhood? Prompt intervention for clinical anxiety means that the child will experience immediate relief in anxiety and related negative states. Skills learned in childhood may be used, reused, adapted, and used again. When CBT is effective with children, they become armed with coping skills that can be carried throughout a lifetime (Kendall, 1994). The continued application of coping skills may lead to further benefits. For example, Silverman et al. (1999) reported that children who had received CBT continued to show meaningful symptomatic improvements over the posttreatment follow-up period. Further, numerous self-report and parent-report measures also showed gradual, but continual, improvements after posttreatment assessments. Similarly, Barrett, Dadds, and Rapee (1996) reported continued improvements after therapy was discontinued. These findings suggest that gains can continue after the intervention and buttress the belief that early intervention is to be valued. A final potential benefit of intervention lies in the impact on the development of other disorders. Some data suggest that anxiety may lead to other conditions such as depression or substance abuse (Brady & Kendall, 1992; Dobson, 1985; Kendall, Brady, & Verduin, 2001; Strauss, Last, Hersen, & Kazdin, 1988; see also Kessler & Price, 1993). Early intervention may alter the trajectory that an anxiety disorder might otherwise have on the child’s life, possibly preventing the development of comorbid conditions. Later in the paper we will discuss this issue further by examining longer term follow-up data on children and adolescents receiving interventions.

Although not proof of an etiological role, it is nonetheless informative to consider what factors actually change as a result of an effective treatment for clinically anxious youth. Specifically, what variables change following efficacious treatment (e.g., cognitive biases, family functioning, etc.) and how might these findings fit with developmental theories of anxiety? For example, Barrett, Dadds, and Rapee (1996) found that treated children (CBT and family management training for parents) showed significant cognitive change in terms of reductions in the number of threat interpretations of ambiguous situations. These authors also reported decreases (compared to pretreatment) in the avoidant solutions following family discussions. In other words, family discussions no longer lead to avoidant solutions. Treadwell and Kendall (1996) demonstrated the role of processing biases as mediators of treatment outcome. They examined anxious children’s self-talk and found that negative, but not positive, self-talk mediated therapeutic improvement. These findings, taken together, suggest that changes in interpretation biases, environmental support of avoidance, and negative self-talk influence gains linked to intervention.

How do these results mesh with developmental theories of anxiety? Consider the model proposed in Hudson and Rapee (in press; see also Kendall, 2000) in which one of the variables defining an anxious vulnerability is a cognitive processing bias. Changes in negative self-talk (Treadwell & Kendall, 1996) and changes in interpretations of ambiguous situations (Barrett, Rapee et al., 1996) following treatment are consistent with the hypothesized role of a processing bias in the maintenance and/or development of anxiety. Another component was environmental support, and the results from the Barrett, Rapee, et al. (1996) study are consistent with
the benefits of reducing the environmental support for avoidance. Taken together the findings are consistent with current theories of childhood anxiety, but they are not direct tests of etiology. Even when anxiety symptoms have been alleviated and a change is observed in family functioning or negative self-talk, the conclusion cannot be drawn that these variables were necessarily involved in etiology. Future studies should develop research designs to directly test the existing models (e.g., prospective longitudinal research in so-called high-risk children).

**Developmental Predictors of Outcomes for Anxious Youth**

**Age**

Policymakers (and health care companies) may look to the data to identify critical periods for intervention (cost-effective plans) for anxious children. At what developmental age (stage) should one implement various strategies to maximize intervention gains and ensure the maintenance of their benefits? Evaluations of CBT for anxious youth have reported efficacy, yet age as a predictor of treatment outcome has only recently received attention (e.g., Berman, Weems, Silverman, & Kurtines, 2000; Kendall et al., 1997; Southam–Gerow, Kendall, & Weersing, 2001). Treatment and prevention studies involving anxious youth have focused on ranges in age from 7 to 17 years, but not all of the studies have reported analyses of age as a predictor of outcome (e.g., Dadds et al., 1997; Mendlovitz et al., 1999; Spence, Donovan, & Brechman–Toussaint, 2000). In those studies that do examine age, although the results are mixed, it seems that younger children may benefit slightly more from CBT and more from parental involvement in treatment than older children.

Southam–Gerow, Kendall, and Weersing (2001) examined predictors of treatment response in a combined sample of anxious youth (ages 7–15). All of these youth had received individual CBT (Coping Cat program), and many were a part of previously reported outcome studies (e.g., Kendall, 1994; Kendall et al., 1997). The total sample was 155 children at posttreatment and 107 children at 1-year follow-up. Using diagnostic data from these points, the children were placed into two groups: poor response (an anxiety disorder diagnosis) and good treatment response (no anxiety disorder diagnosis). Although age did not predict severity at pretreatment, older children were significantly more likely to be in the poor response group than younger children at posttreatment, but not at 1-year follow-up. Perhaps older youth had a more persistent form of anxiety or were less developmentally “nonnormative” and, as a result, their symptoms may have interfered more with the developmental challenges that these youth face. It is also worth recalling that the child’s developmental level plays an integral role in the development of responses to adult authority (Kendall et al., 1984): children may become less cooperative with their adult therapist as they grow older, and interventions geared for middle childhood may need further adjustment for older youth (Albano, 2000). The onset of adolescence coincides with an increase in reports of anxiety associated with negative evaluation (Schniering et al., 2000), and anxious adolescents may experience greater difficulty building a therapeutic alliance as a result of their increased social concerns. It has also been suggested that the many CBT interventions are geared more toward children and less toward adolescents (Southam–Gerow et al., 2001).

In another study that provides further information regarding age and treatment outcome, Last, Hansen, and Franco (1998) randomly assigned 56 children (aged 6–17) with school phobia to a CBT or an attention-placebo control condition. At posttreatment, younger children were more likely than older children to achieve 95% school attendance. Although the authors were not able to examine whether age differentially affected the outcomes in the separate conditions (because of small sample size), results are consistent with the findings reported by Southam–Gerow and colleagues (2001). Perhaps breaking the dysfunctional patterns of anxious cognition and
avoidance may be more difficult for adolescents because their coping styles are more established than younger children, the result of having had more time to practice maladaptive coping.

These results are somewhat surprising because, when compared to studies examining children with both internalizing and externalizing difficulties, there are some data suggesting that older children benefit more from CBT than younger children. For example, Durlak, Fuhrman, and Lampman (1991) conducted a meta-analysis on CBT for a wide range of childhood psychopathologies based on cognitive developmental stage. A larger effect size was observed for the group aged 11–13 years (.92) than for the two younger age groups, aged 5–7 years (.57) and 7–11 years (.55). The authors asserted that a certain level of cognitive development may be essential for cognitive therapy to be most effective. As children cognitively mature and become capable of abstract thinking and hypothetic deductive reasoning, they may become more competent at the skills involved in cognitive therapy (Weisz & Weersing, 1999; Weisz, Weiss, Han, Granger, & Morton, 1995). If this is the case, then what explanation can be provided for the success of younger anxious children? Perhaps CBT for anxious youth (a treatment that is often applied and evaluated for youth who are at least 8 years of age) matches well with the developmental level of children this age.

Although further exploration is required, the results suggest that age relations for anxious youth are somewhat different from those for youth suffering from other types of psychopathology. Perhaps younger children suffering from anxiety disorders experience more distress over their symptoms than do younger children with externalizing disorders, although the latter group’s symptoms are more distressing to individuals in their environment. Consequently, anxious children may, in general, be more motivated to participate in treatment.

The child’s age can be important when determining whether family involvement in treatment is preferred. Barrett, Dadds, and Rapee (1996) compared a child-only CBT (based on Kendall et al., 1990), child CBT plus family anxiety management training (CBT+FAM), and a wait-list control condition. Children aged 7–14 with a primary diagnosis of overanxious disorder, SAD, or SP were randomly assigned to one of the three 12-week conditions. Although both treatments were effective, within the younger age group (aged 7–10), children were more likely to be diagnosis free at posttreatment in the CBT+FAM condition (100%) than the CBT condition (56%). In contrast, for the older group (aged 11–14), there were nonsignificant posttreatment differences between the CBT (60%) and CBT+FAM (60%) conditions. At 1-year follow-up the same age effects were observed. Parent training may be more beneficial for younger than for older children.

Considerations of normal developmental changes can inform our understanding of the role of age and parental involvement in treatment on outcomes. As Daleiden, Vasey, and Brown (1999) suggested, younger children might have responded more favorably to family involvement due to the powerful role that parents play in the lives of younger children. Parents of younger children play a larger role in the level of their child’s exposure to outside social influences than parents of older children who may have less impact on their child’s social exposure. Improving parenting skills may be important for younger children, but for older children individual cognitive exercises and exposure to feared stimuli may be sufficient to produce change in anxiety levels.

Older children are in the process of increasing their autonomy and reducing their contact with the family environment, which may make parent involvement in treatment more difficult.

Another factor that has been shown to impact the influence of parental involvement in treatment on outcome is the presence of parental psychopathology. This influence appears to depend on the child’s developmental level. Berman and colleagues (2000) investigated specific predictors of treatment outcome in an exposure-based CBT with 106 anxiety disordered children and adolescents (aged 6–17). Although, the authors did not find that
age predicted outcome, the presence of parental psychopathology appeared to be more troublesome when treating younger children as compared to older children. The finding is consistent with the notion of transfer of control (Ginsburg, Silverman, & Kurtines, 1995; Silverman & Kurtines, 1996). In this model, control is gradually transferred from the therapist to the parent and then to the child. The therapist uses a reinforcement system to manage the child’s behavior and then teaches the parent to use this system. The parent then uses the system to aid the child in developing self-control over his or her own symptoms. The presence of parental psychopathology may hinder this process and limit the efficacy of treatment for younger children.

In a study by Cobham, Dadds, and Spence (1998), parental psychopathology again appeared as an influence. The study compared CBT alone and CBT plus Parental Anxiety Management (PAM) for two groups of anxious children, those with anxious parents and those without anxious parents. It is worth noting that the parental anxiety management condition here differed from the FAM condition reported in Barrett, Dadds, and Rapee (1996), in that the focus of PAM was on the parent’s anxiety and not on the child. Cobham and colleagues found an effect at posttreatment (but not 1-year follow-up) that held for those in the CBT alone condition: anxious youth without an anxious parent were more likely to be diagnosis free than anxious youth who had one or more anxious parents, but only for the older group (11–14 years). Note also that there was no effect of age for participants in the CBT+PAM condition (neither at posttreatment nor at 1-year follow-up). These results suggest that, when the parent does not receive treatment for their own anxiety, the older child does not improve as rapidly. Perhaps consistent with developmental theory, it is important for the older child to remain autonomous and receive individual rather than family therapy (therapy with the parents). However, when parental anxiety exists, these issues may need to be addressed for the child to improve at the same rate as older children without an anxious parent.

It is clear that the relationship between developmental level and the presence of parental psychopathology in the treatment of anxious youth requires further examination. The results with respect to age, parental involvement, and parental psychopathology seem to be inconsistent. These results suggest that younger children tend to do better when parents are involved in the child’s treatment, suggesting that parental involvement is not necessary for older children. However, older children do not improve as rapidly if the parents are anxious and the parents receive no treatment. In future randomized clinical trials, the issues of age, parental psychopathology, and parental involvement need to be further delineated. Larger sample sizes in randomized clinical trials will allow for a closer examination of what is occurring.

It is also important to understand age effects in prevention outcome research. Although it is clear that there are a number of risk factors associated with the development of anxiety (e.g. parental anxiety, traumatic, stressful, and negative life events), how these risk factors affect children may be influenced by developmental level. Not surprisingly, Donovan and Spence (2000) suggest that preventive efforts should take the child’s developmental level into account when designing preventive interventions.

At what age should preventive programs for anxiety be implemented? Currently, the results on developmental level as a predictor of outcome are inconclusive. For example, Barrett and Turner (2001) and Lowry–Webster and colleagues (2001) conducted studies examining universal prevention programs for anxiety. Although children aged 10 –13 years can benefit from universal prevention programs, information regarding age as a predictor of outcome was not reported. Using data collected from their previous study (Barrett & Turner, 2001), Barrett, Johnson, and Turner (in press) examined the role of age in preventive interventions of 692 children at low, moderate, and high risk for anxiety in grade 6 (ages 9 and 10) and grade 9 (ages 14–16). Results indicate that at children in grade 6 reported more anxiety at preintervention and significantly greater reductions in levels of anxiety at postintervention compared to chil-
dren in grade 9. However, the authors stated that the appropriate timing of preventive interventions remains unclear due to the differential intervention effects found at postintervention and at 1-year follow-up.

**Gender**

Developmental theory considers the role of gender in the negotiation of the tasks of normal development. Consideration of gender is warranted, too, in the study of abnormal development (Cicchetti & Sroufe, 2000). Cicchetti and Sroufe (2000) argued that being male may be a risk factor for certain types of psychopathology (i.e., conduct disorder) while serving as a protective factor for other types of psychopathology (i.e., anorexia). Gender has been identified as an important variable in the literature on depression, but it has not been a consistent factor in anxiety treatment outcome, with few studies reporting gender effects in outcome for child anxiety (e.g., Kendall, 1994; Kendall et al., 1997; Treadwell et al., 1995). Whereas some studies have reported that gender did not significantly predict outcome for child anxiety (e.g., Southam–Gerow et al., 2001), some studies have reported significant gender effects (e.g., Barrett, Dadds, & Rapee, 1996; Mendlowitz et al., 1999). Some interesting findings have emerged. For example, gender was associated with outcome in a study by Mendlowitz and colleagues (1999). Regardless of treatment condition, females reported both less anxiety at posttreatment and greater use of the coping strategies than did males. In another study, Barrett, Dadds and Rapee (1996) reported that gender also played a role in treatment outcome. Females, who participated in the CBT+FAM condition, were more likely to have no anxiety diagnosis (83%) compared to females who participated in the CBT-alone condition (37%). Findings reported by Cobbham et al. (1998) are consistent with Barrett, Dadds, and Rapee (1996), in that both studies suggest that the child’s gender may affect the benefits of parental involvement in treatment. Females with an anxious parent were more likely to be anxiety diagnosis free if they had participated in the CBT+PAM condition (89%) compared to females who participated in CBT alone (20%). Furthermore, females who participated in CBT alone were more likely to be anxiety free if their parent did not have an anxiety disorder (78%), compared to females with an anxious parent (20%). Both of these findings did not occur for males, and no gender effects were found at 1-year follow-up. One can speculate that parental psychopathology may not affect females and males in the same manner and that girls may be more sensitive to changes in their parents’ modeling of anxious behavior than boys.

An explanation of these findings may be consistent with previous research reporting gender differences in the way in which parents interact with anxious children. Krohne and Hock (1991) reported that mothers of high-anxious girls (versus low-anxious girls) were more likely to intervene competitively in a problem-solving task on which the child was working independently; the effects were the opposite for the boys. Perhaps the family treatment was most applicable to mothers of anxious girls and thus produced greater changes among girls than boys (e.g., by reducing overcontrolling behavior and increasing granting of psychological autonomy).

In studies aimed at preventing anxiety disorders in children, the role of gender in predicting outcome is not clear. Lowry–Webster and colleagues (2001) randomly assigned 594 children (ages 10–13) to a family group CBT program or to a monitoring group. In this study, gender was not a predictor of prevention outcome. However, Dadds and colleagues (1999) reported that gender was a predictor of posttreatment outcome in a study that compared a school-based intervention to a monitoring group. At postintervention, girls were more likely to meet the criteria for anxiety disorder than boys were, regardless of whether they received the intervention. Similar results were found in Barrett and Turner’s (2001) universal prevention program. Girls reported higher levels of anxiety than boys pre- and postintervention. These findings are consistent with community prevalence studies that show a higher prevalence rate of anxiety disorders in females than males. Further re-
search should be conducted to clarify the role of gender as a predictor of outcome of preventative interventions.

**Longitudinal Research in an Intervention Context**

Within intervention research, longitudinal data can be used to assess the maintenance of intervention effects over longer periods of time and the degree to which intervention for the target disorder may have a desirable impact on the disorder and other comorbid conditions or the sequelae of the target disorder. Carefully designed longitudinal studies can also potentially elucidate developmental variables (e.g., age of onset, gender, duration of disorder, and timing of risk and protective factors) as they relate to therapeutic change and to the maintenance of change over time. Recently, the results from several long-term follow-up intervention studies have begun to emerge in the literature, allowing these questions to begin to be addressed. Unfortunately, longer term follow-up studies of childhood anxiety prevention efforts has yet to be carried out.

The follow-up studies that have been conducted have supported the long-term maintenance of gains to up to 6 years posttreatment (e.g., Barrett et al., 2001; Kendall & Southam–Gerow, 1996). In Kendall and Southam–Gerow’s 3-year follow-up study, clients’ maintenance of gains were evident on the children’s diagnostic status and self- and parent-report measures of anxiety, as well as self-reported anxious self-talk and depression. Barrett and colleagues (2001) reported that at 6 years posttreatment, 85.7% of children no longer met criteria for any anxiety disorder. Moreover, they found the individual and family-based CBT to be comparably effective at long-term follow-up. Although both studies support the long-term clinical utility of CBT in the treatment of childhood anxiety disorders, they do not report on developmental variables (such as age or gender) as predictors of treatment response.

In a very recent project, Kendall, Safford, Flannery–Schroeder, and Webb (2002) evaluated, not only the long-term maintenance of treatment gains but also the potential impact that treatment could have on the sequelae of anxiety disorders: depressive symptomatology and substance use problems. Eighty-five youth (90% of the original 94) who had been treated in a randomized clinical trial (Kendall et al., 1997) an average of 7.4 years prior, were evaluated through structured diagnostic interviews and multiple self-report measures to assess anxiety levels, depressive symptoms, substance use, and other comorbid disorders, both currently and since treatment.

Analyses indicate that the treatment gains were maintained from posttreatment to long-term follow-up on measures of anxiety, depression, coping skills, and internalizing and externalizing symptoms. Moreover, some significant improvements were made in coping skills, internalizing symptoms, and externalizing symptoms in the time from posttreatment to the 7-year follow-up assessment. These findings hint of a developmental maturity, a “sleeper effect” of treatment, or a combination of the two factors. In any case, the results buttress the advantage of intervening at ages 9–13 in the modification of both the developmental trajectory of anxiety and the development of depression and other sequelae of childhood anxiety (Brady & Kendall, 1992). Immediate gains were achieved, which then seem to have equipped the youth to navigate the developmental tasks of adolescence in a more normative and age-appropriate manner. Treatment may have facilitated developmental maturity, which then led to the improved treatment outcomes or vice versa. Another admittedly optimistic explanation could attribute the larger improvements at longer term follow-up to a sleeper effect by which initial improvements are seen, but more sizable improvements lie dormant, to be seen at a later developmental period (at long-term follow-up). Because wait-listed clients eventually received treatment, untreated cases are not followed for extended periods and alternative explanations for the results cannot be ruled out.

The lack of anxiety-related problems at the longer term follow-up may have resulted from, for example, maturity or co-occurring outside events and not the longer term effects of CBT. However, the majority of longitudinal epidemiological data suggest that anxiety
does not remit without treatment and anxiety-disordered children tend to become anxiety-disordered adults (e.g., Gittelman, 1986; Last, 1988).

Preliminary analyses from Kendall and colleagues (2002) revealed that the main predictors of the presence of the primary anxiety diagnoses (SAD, GAD, and SP) at 7.4-year follow-up were poor coping skills at pretreatment (as measured on both child and parent versions of the Coping Questionnaire) and the child (now adolescent) having experienced negative life events. Other variables were examined as well. Self- and parent reports of anxiety (e.g., symptoms) and the number of self- and parent-reported diagnoses were also predicted by the occurrence of negative life events after completing the anxiety treatment program and by impoverished family functioning in areas such as communication, affective involvement, and behavior control.

Further analyses examined the effects of anxiety treatment on the developmental trajectory of other disorders, such as depression and substance abuse. Importantly, individuals who continued to have one or more anxiety diagnoses (SAD, GAD, SP) at the time of long-term follow-up were significantly more likely to have depression than children without an anxiety disorder. This finding confirms previous reports suggesting that anxiety may lead to depressive disorders (Brady & Kendall, 1992). Also, it appears that individuals who met criteria for depression at some point between posttreatment and long-term follow-up were significantly more likely to have received additional treatment after leaving our program. Note that risk factors commonly found to be associated with the development of depression (gender, negative life events, previous depression) were not found to be predictive in the current study.

Similar analyses were conducted to examine whether successful treatment of child anxiety had a preventative effect on the adolescents’ use and abuse of substances. Preliminary analyses found that youth treated unsuccessfully for anxiety reported more days of drinking, were more likely to have smoked marijuana, and reported more consequences (e.g., social or interpersonal and physical or psychological) from drug use than youth treated successfully. Furthermore, they were more likely to have experienced drug withdrawal and overdose.

In terms of predictors of substance abuse and dependence, age (at intake) predicted tobacco, alcohol, and marijuana use: older youth were more likely to have tried these substances, intuitively they have had more years in which to initiate use. In addition, it is interesting that boys in the sample were less likely to have tried alcohol and youth with married parents at intake were more likely to have tried tobacco. Other analyses revealed that youth with better school performance at intake were less likely to have had substance use problems at long-term follow-up. Externalizing symptomatology at posttreatment and the experience of negative life events were predictive of hard drug use and substance use problems. Further analyses are being conducted to more closely examine the relationship between treated childhood anxiety and later substance use, abuse, and dependence (see Kendall et al., 2002).

In addition to long-term changes associated with child anxiety treatment, the durability of prevention efforts warrant investigation. Note that longer term follow-up of childhood anxiety prevention efforts has only recently been undertaken, with a 2-year follow-up by Dadds and colleagues (1999). They conducted 1- and 2-year follow-ups of the 128 children participating in their early intervention and prevention group program (Dadds et al., 1997). Although both the treatment and monitoring groups showed improvements (i.e., reduction in rates of existent anxious disorders and prevention of new anxiety) immediately and 6 months postintervention, the groups did not significantly differ in improvements at 12 months postintervention. However, the superiority of the intervention group was again evident at the 2-year follow-up. In fact, at that time, the intervention group showed the lowest diagnosis rate at any point in the study. Thus, the importance of longer term follow-up is again underlined to demonstrate the true effects of prevention efforts, which were not seen at the 1-year follow-up. As with Kendall et al.’s (2002) 7.5-year follow-up, the notion
of the sleeper effect and/or the role of developmental maturity is suggested, whereby sizable changes lie dormant to be manifested later in the participant’s experience. Dadds and colleagues also examined age and gender, among other potential predictors of chronicity at long-term follow-up. Although gender was predictive of outcome at postintervention (as discussed earlier), in that girls tended to improve less than boys, this effect disappeared by 24 months. Pretreatment severity was the only predictor of chronicity at 2 years post-treatment.

Results regarding developmental factors and other possible predictors of long-term outcome are informative about the degree to which an anxious developmental trajectory can be modified and the sequelae of anxiety changed. The results from long-term treatment follow-up (Kendall et al., 2002) indicate that it is possible for successful treatment to prevent associated problems such as depression and substance use. Recently Kendall and Kessler (in press) made a call to researchers to shift their thinking toward the consideration of child and adolescent treatment not only as treatment for a target disorder per se but also as prevention. The longer term follow-up results provide testament to this. Future research in both treatment and prevention should examine the role of developmental factors and the timing of risk and protective factors that influence long-term intervention-produced gains.

**Normative Comparisons**

Normative data are crucial to an understanding of child and adolescent psychopathology and also central to interventionists’ research. Normative development is the backdrop against which to judge not only the presence of psychopathology but also the convincingness of treatment-produced outcomes. In randomized clinical trials, efficacy is demonstrated by testing the statistical significance of outcomes: changes exceed what would be expected by chance alone. These results do not identify the “clinical significance” or meaningfulness of the amount of change associated with the intervention (Kendall, Flannery–Schroeder, & Ford, 1999), nor do tests of statistical significance describe whether or not the treated participants are functioning within normal limits at the end of treatment. Kendall and colleagues describe how normative comparisons can be used to evaluate the clinical significance of therapeutic interventions (Kendall & Grove, 1988; Kendall, Marrs–Garcia, et al., 1999; Kendall & Sheldrick, 2000).

Normative comparisons allow researchers to investigate the effectiveness of an intervention against a criterion that is independent of the initially distressed or diagnosed group. By using a predetermined standard, one can potentially identify which of two effective treatments might be more beneficial. Moreover, normative comparisons may give insight into the nature of psychopathology by providing information on disorders that rarely reach normative levels, despite otherwise therapeutic intervention.

A central issue that occurs when using normative comparisons is deciding what is considered “normal.” From a medical model, normality is viewed as “health,” in that the presence of psychopathology is abnormal, whereas its absence is viewed as normal. Researchers with this viewpoint would be likely to use exclusionary criteria when conducting normative comparisons (Sabshin, 1989). For example, a researcher would exclude subjects from the normative sample if they displayed the characteristics of disorder that are similar to those being addressed in the intervention. Using exclusion criteria runs the risk of creating a nonrepresentative, “supernormal” sample, and comparing the treated sample with this nonrepresentative sample would be setting up an overly stringent criterion.

From a developmental perspective, normality could be viewed as “average” and represented by a bell-shaped curve showing a continuous distribution of individual scores on a given characteristic. Although this perspective has its merits, Kendall, Marrs–Garcia, et al. (1999) caution that researchers cannot assume that scores are normally distributed or that the average is normal (i.e., report of hallucinations). Moreover, it is not always clear which population should be used as the basis for normative comparison (i.e. lo-
cal vs. national data). Normative comparisons are undeniably associated with definitions of normal development, and researchers are ultimately responsible for determining how to define normative behavior and choosing normative samples for purposes of the comparison. Kendall, Marrs–Garcia, et al. (1999) provide an example of how to use equivalency testing for normative comparisons in the evaluation of treatment outcome. As an illustration, they used normative comparisons to evaluate the clinical significance of the findings reported by Barrett, Dadds, and Rapee (1996). They compared the 6-month posttreatment Child Behavior Checklist (CBCL) Internalizing $T$ scores (Achenbach, 1991) of children who had participated in CBT plus family anxiety management (CBT+FAM) with the data on normative (nondisordered) children. Prior to treatment, Barrett and colleagues reported that children in the CBT+FAM group scored above the clinical cutoff on the CBCL ($M = 66.3$, $SD = 7.3$; $T$-score mean of 50; Achenbach, 1991). Six months after treatment, treated children were within the normative range ($M = 45.8$, $SD = 7.6$). Analysis using the normative comparisons procedure (see Kendall, Marrs–Garcia, et al., 1999) indicated that treated children were indistinguishable from a normative sample, whereas the mean of the control children remained outside the normative range. Thus, children who once showed deviant levels of symptoms were effectively treated and progressed to a level that falls within the normative range.

The normative comparison method allows intervention researchers to use knowledge of normal development not only to assist in the pretreatment determination (classification) of the presence of psychopathology but also to serve as a benchmark to judge the clinical significance of the efficacy of the intervention. Such efforts require the collaboration of developmental psychopathologists and interventionists alike.

**Using Developmental Models to Inform Intervention**

We have thus far discussed the ways in which interventions (both treatment and prevention) can inform developmental theory and developmental psychopathology. Our discussion now flips the coin to address the ways in which developmental models inform treatment. In this section, several issues will be discussed. We first talk more broadly about the influence of developmental theory on the treatment of child anxiety disorders such as the differences in treating anxious adults and anxious children and in defining abnormal anxiety. Then we offer a more focused discussion on developmental sensitivity in the treatment of anxiety in early childhood and adolescents.

**Adult versus child intervention**

Early in the history of child therapy, approaches to the treatment of childhood anxiety were based on the then-current adult theories, often using the same elements and processes. Although adult theory and data may serve as a starting point for the development of child-focused interventions, this approach, without other considerations, has potentially serious pitfalls. When developing child-focused interventions, it is important to recognize that “children” are not a uniform group (Kendall, 1984) and that they are not “little adults” (Barrett, 2000). A single treatment approach, like one used with adults, is unlikely to meet the needs of children at various developmental levels. The cognitive, emotional, and social needs and abilities of clients in early childhood are quite different than those of adolescents. Further, any intervention is likely to have a different impact and meaning for children at different developmental stages and with different developmental histories. For example, a therapist might confront and dispute the irrationality of the beliefs of an adult client, but such direct disputation might go over (not into) the head of a child and even be misperceived by the child as a scolding (see Toth & Cicchetti, 1999, on the role of causal reasoning in interventions).

Once a child is identified as needing treatment, many aspects of his or her development need to be considered in determining the best intervention. General “child” treatments are not best: often they fail to consider develop-
mental aspects. The “developmental uniformity myth” (Kendall et al., 1984) states that it is misguided to describe and employ treatments presumed to be uniform for “children.” Children are very heterogeneous, varying in cognitive abilities, behavioral histories, genetic makeup, and social and emotional capabilities. Any application of general strategies to “children” ignores development and fails to benefit from an understanding of the child’s normal developmental changes.

Developmental knowledge can direct an intervention. When determining what type of clinical intervention will be most appropriate, the child’s emotional, physical, cognitive, behavioral, and social development should all be considered (see Kendall et al., 1984). Further, developmental changes in areas such as memory, language, conditional thinking, categorization abilities, and perceptions of rules may also all influence the effectiveness of treatment interventions (see Kendall et al., 1984). A thorough consideration of these important developmental variables will allow clinicians to identify both potential limitations and opportunities. Note that although cognitive behavioral treatments for anxious youth are manualized and checks of reliability to the manual document adherence, the treatment is applied with flexibility, allowing the therapist to adapt the treatment to fit the developmental needs of the individual child (Kendall, Chu, Gifford, Hayes, & Nauta, 1998). The therapist’s flexibility to adapt the treatment manual to the child’s needs is considered of great importance (see Hudson, Krain, & Kendall, 2001; Kendall et al., 1998). Therapists working with younger children, who have difficulty with the concept of cognitive restructuring, may spend less time on this aspect of the treatment and more on exposure-based interventions. Spence et al. (2000) reported that therapists in their treatment study reduced the focus of cognitive challenges with younger children (ages 7–9) because they noted that younger children had a difficult time grasping cognitive restructuring exercises.

One interesting question is whether treatment is best enacted during periods of developmental change or those of relative stability. Cicchetti and colleagues (Cicchetti & Rogosch, 2002; Toth & Cicchetti, 1999) proposed that points of natural developmental transition, such as adolescence, present unique opportunities for reorganization. However, Kendall et al. (1984) noted that multiple simultaneous transitions can be problematic for maintenance. As Kendall et al. (1984) proposed, research is needed to assess the relative merits of intervening during times of developmental transition compared to times of developmental stability.

Toth and Cicchetti (1999) assert that considering the interface between pathology and normality is particularly important when working with children, as characteristics or behaviors that are considered normal at one point of development may be seen as abnormal at another point of development. This point is clearly applicable to work with anxious children because anxiety is a normal part of childhood (Gullone & King, 1993). Knowledge of normal childhood anxieties helps us formulate theories of pathological anxiety and can help define the separation of normal and abnormal anxiety. Accordingly, the assignment of an anxiety disorder diagnosis is best made within the context of the child’s current point of development. For example, behavior in response to separation from one’s mother is quite different in meaning for children ages 7 and 17. Anxiety is only considered to be of a clinical level when it is in exaggerated proportion, given the situation and child’s point of development, and when it interferes with the child’s activities and development.

Consideration of the boundary between normality and pathology also serves to highlight the adaptive role of anxiety in development. The numerous forms of anxiety that are experienced in childhood are adaptive and can serve to facilitate normal development. During infancy, fears of loud noises, strangers, separation, and physical injury are common (Gullone, 1996; Spence, Rapee, McDonald, & Ingram, 2001). For school-aged children, however, fears shift toward evaluative and social concerns and then again to more abstract fears during adolescence (Gullone, 1996). Experience with naturally occurring anxiety-provoking situations allows children to practice discriminating between threatening and non-
threatening situations. Children develop the ability to distinguish between situations that must be endured and threatening situations that can be avoided. Enduring mild stress in situations allows the child to try different coping strategies and to develop success experiences, which will contribute to a sense of control.

In addition to utilizing appropriate language and presenting concepts that are developmentally appropriate for the child’s age and cognitive, emotional, and social development, it is also important that therapeutic approaches recognize the network of relationships that support the child. Children are intricately linked with their parents, siblings, teachers, and peers, making truly individual therapy quite different than working with more autonomous adults. It is important to note the differences in how children and adults seek treatment. Parents usually seek treatment for their child because they are the ones who believe there is a problem within the child, whereas adults are typically responsible for identifying their own psychological (emotional) distress. Children usually do not think their symptoms are as problematic as their parents report. As a result, Howard (1995) suggested that a distinction be made between the patient (i.e., the child) and the client (i.e., the parent or school personnel) to differentiate between the persons invested in treatment. Further, the primary social network of the child may vary according to the age and developmental level. Young children are primarily linked with their parents and family, whereas peer relationships and independence take on much more importance in adolescence. The challenges of treating anxious youth are compounded by the fact that working with children requires working with their parents, who themselves may suffer from anxiety.

As indicated earlier in this paper, research findings point to the fact that parents play an important role in the maintenance of anxious behavior in their children by modeling and reinforcing anxious and avoidant behavior instead of encouraging autonomous, coping behavior (e.g., Barrett, Rapee, et al., 1996; Hudson & Rapee, 2001; Manassis et al., 1994; Messer & Beidel, 1994; Siqueland, Kendall, & Steinberg, 1996). Treatment interventions are informed by the theory and findings on the behavior of parents of anxious youth; this means helping parents to break the patterns of avoidance that they are directly and indirectly teaching their children. Treatments that involve the family have focused on teaching parents child management skills, skills to manage their own anxiety, communication and social skills, ways to increase the granting of autonomy to their children, and strategies for problem solving (e.g., Barrett, Dadds, et al., 1996; Cobham et al., 1998; Rapee, Wignall, Hudson, & Schniering, 2000; Silverman et al., 1999). Positive results from these types of programs were reviewed earlier.

Although there is uniform and widespread acceptance of the need to consider the child’s current developmental level, the majority of existing treatments are implemented without consideration of how the child’s psychopathology developed. Typically, children with similar presenting problems (the same diagnosis) are treated with a similar theoretical (and practical) approach. It is a practice that is consistent with the notion that there are numerous pathways to the same disorder. Indeed, the concept of equifinality (Cicchetti & Rogosch, 1996) specifies that a common outcome (e.g., anxiety disorder) will develop over time from different starting points, indicating that diverse processes are involved in attaining the shared outcome. Numerous pathways to anxiety are currently considered viable. Given also that the factors maintaining a disorder may not be the same as those that led to its development, it is crucial to incorporate consideration of maintaining variables into treatment. It is possible that an understanding of these pathways to disorder will lead us to refined treatment and prevention. Currently the treatment programs have shown that approximately 60% of children improve following CB treatment. Could it be that modifying the treatment programs based on the pathway that led the child to disorder would bring about increased treatment efficacy?

Most existing interventions for children are targeted toward middle childhood (approximately ages 8–14; Barrett, Dadds, et al., 1996; Kendall, 1994; Kendall et al., 1990).
Therefore, we will briefly consider how treatment and prevention efforts for young children and adolescents could be informed by developmental psychopathology.

**Early childhood intervention**

Recent efforts to understand the presence of anxiety symptoms in young children (Spence et al., 2001) have indicated that specific subtypes of anxiety may be less discrete in preschool than in school-aged children. Given this, treatment of children in early childhood is likely to present unique challenges and rewards. These children are unlikely to be able to grasp some of the examples or concepts that are used with older children. For example, young children are limited in their cognitive development and verbal skills, and they may not possess the cognitive skills for abstract processes such as meta-cognition or thinking about their thoughts. For example, young children may be aware of things that frighten them (e.g., going to school) but unable to articulate the source of these fears or feared outcomes (e.g., fears of ill consequences befalling their caretaker during separation). Indeed, various theorists have identified the ages of 5–7 as crucial for the emergence of mediational thinking (Kendler & Kendler, 1962), and such a change has implications for approaches to treatment. Given the limited cognitive capacity of early childhood, the anxiety of young children is often manifest in behavior, for example, crying or running away in response to feared situations. It is also worth noting that the source of anxiety is likely to differ for children in early childhood. These children are most likely to exhibit fears related to fears of physical injury (Spence et al., 2001). Therapeutic interventions such as questioning one’s anxious self-talk are likely to be more difficult and less effective with young children compared to their older counterparts. Interventions that are primarily behavioral in nature may hold the most promise. Further, caretaker participation in treatment efforts may also be particularly important for this age group. In fact, in a prevention program described earlier aimed at 3- to 4-year-old children who are behaviorally inhibited, Rapee and Jacobs (2002) exclusively see the parents. In that program parents are given psychoeducation about anxiety on both its adaptive functions and possible interfering patterns. Parents can also be shown ways in which their behavior may maintain their child’s anxiety (e.g., letting a child play video games during the day after refusing to go to school). Teaching parents contingency management procedures and anxiety coping skills can be worthwhile. Such techniques will enable them to deal more effectively with their child’s anxiety and better help their child (and themselves) cope with feared situations. Considering models of anxiety that emphasize the role of attachment (Manassis & Bradley, 1994), methods that seek to increase the child’s sense of security may also be a worthwhile area of attention in the treatment of anxiety disorders in this age group. Indeed, recent application of parent–child interaction therapy, an intervention that seeks to strengthen the parent–child relationship, has produced promising results for the treatment of SAD in young children (Pincus, Choate, & Barlow, 2001).

**Intervention during adolescence**

It should not be surprising that, even if the treatment strategies are similar, some of the many features of interventions that target adolescents will be different from those that focus on young children. For disorders in general, the findings indicate that intervention with adolescents produces less positive outcomes, suggesting that we need to modify the treatment for adolescents. For instance, the Coping Cat program for 7- to 13-year-olds has been modified (CAT project; Kendall, Choudhury, Hudson, & Webb, 2002) for adolescents (14–18 years) by emphasizing developmentally appropriate content. It is important that adolescents possess more complex cognitive skills such as abstract thinking and metacognition. These skills are useful for therapeutic interventions that require reasoning through hypothetical situations (Weisz & Hawley, 2002) and in identifying anxious self-talk and developing coping self-talk. However, the ability to consider other’s perspectives also...
leads to greater concern with other’s opinions relatively stable. Also, prevention studies have indicated that without intervention children at risk for anxiety are more likely to develop clinically significant levels of anxiety over time than children receiving the intervention. The findings from adult retrospective studies suggest that adults with anxiety are likely to have had disorders as children, indicating that the impact of anxiety is long term. Can intervention change this trajectory and reduce the distress the child experiences across his or her lifetime and, as stressed by Kendall and Kessler (in press), prevent disorders in later life? The findings from long-term follow-up studies have suggested that intervention can indeed alter the development of an anxious child. Future research should continue to examine the long-term benefits of interventions. In the case of prevention research longitudinal follow-up is required of not only the cohorts who received the intervention but also cohorts who were simply monitored. Analysis of the monitoring-only cohorts provides valuable information regarding long-term outcomes when no intervention takes place. Treatment studies typically provide intervention for those children in wait-list control conditions, hence, longitudinal data on these children is not possible or ethical.

Often assumed in the field is the notion that there is applicability of an intervention for both boys and girls of a range of ages. The extant literature has provided inconsistent data regarding age and gender as predictors of outcome. Contrary to some research, older anxiety-disordered children tend to have poorer outcomes than younger anxiety-disordered children. Also, there has been some evidence that anxious girls may be more sensitive to parental involvement in treatment than anxious boys. The results are inconsistent, and it seems clear that future research in the treatment of anxiety-disordered children needs to use larger sample sizes to produce more compelling analyses examining age and gender.

A different approach would be to design, implement, and evaluate age- or gender-focused programs. A prevention or treatment program for 8-year-old girls may be different from a program for 12-year-old boys, even if some of the guiding theory and intervention proce-

Summary and Future Directions

Advancements in the field of child and adolescent anxiety have led to confidence in the interventions offered to children and their families. The growing body of intervention research has also contributed to the expansion of knowledge in developmental psychopathology of the anxiety disorders. Wait-list controlled treatment studies inform us that without intervention children’s anxiety remains
One of a small number of interventions to have been rigorously and favorably evaluated. However, we need to move forward and take the next step to the conceptual level. What are some of the psychological forces and concepts that contribute to beneficial gains? One area that may assist in understanding the treatment more intimately is the examination of the treatment processes in child treatment (e.g., therapeutic alliance, therapist flexibility; see Russell & Shirk, 1998) and their role in beneficial treatment outcomes. The systematic study of therapy moderators and mediators explores specific mechanisms that may produce unique psychological change (Kazdin, 1995, 2001; Kendall, Flannery–Schroeder, et al., 1999; March & Curry, 1998). Unfortunately, however, the analysis of client and therapist variables in the therapy process with children is a relatively neglected field (Mook, 1982a, 1982b; Kazdin & Weisz, 1998; Shirk & Russell, 1996; Shirk & Saiz, 1992). Process research, done on treatments known to be effective, will contribute meaningfully to our conceptual understanding of treatment outcomes, and perhaps be better able to point to specific developmental variables in predicting change. Earlier in this paper we speculated that older children might not do as well in treatment because the anxious adolescent experiences more difficulties in building an alliance with the therapist. Alternately, one might also speculate that an adolescent, in part due to the need for autonomy, would do better in individual treatment as compared to family therapy. Although developmental theory and data would suggest that such hypotheses have merit, such notions need much more application and evaluation within the field of prevention and intervention evaluation. Analyses of the process of therapy with adolescent clients, for example, can begin to address these and related developmentally informed speculations. We know so little about what is effective about our treatments, and the exploration of the psychotherapy process is the key to the advancement of knowledge in this area.

As we have discussed, CBT for anxiety-disordered youth has been described as a “probably efficacious” treatment (e.g., Kazdin & Weisz, 1998; Ollendick & King, 2000), procedures are similar. In such an approach there is not likely to be acceptance of a uniformity myth about all children or an acceptance of an adult program simply applied to youth. In this paper, we have offered suggested modifications of the intervention based on the child’s age. Further research examining the developmental appropriateness and effectiveness of the overall treatment package as well as the individual treatment components for children of varying age and gender groups is required.

Although age is frequently used as a marker for developmental change, it may be a poor proxy for more influential forces. Further, age is also a poor proxy for the diversity of changes that occur at different rates. Age, at best, is a simple marker for the various social, cognitive, physical, and emotional factors that reflect psychological maturation. Instead, measures specific to the important developmental forces are needed at pretreatment and posttreatment. The inclusion of other more meaningful measures of developmental level at pretreatment will provide the intervention evaluator with an opportunity to test for potential developmental moderators of outcome and determine whether an intervention is differentially effective for youth at different points in their social, cognitive, physical, or emotional development. For example, CB treatment relies on children being able to participate in problem solving and cognitive restructuring; therefore, limitations in the child’s cognitive development may be predictive of a poor outcome. Not only may the child’s cognitive development be predictive of outcome but other indicators of development may also prove to be important. The availability of data at pre- and posttreatment would permit focused analyses of changes on specific developmental factors and the association of these changes with treatment-produced gains. The potential to identify mediators of therapeutic gain, as well as moderators of change, more than justifies the inclusion of developmental assessments.

As we have discussed, CBT for anxiety-disordered youth has been described as a “probably efficacious” treatment (e.g., Kazdin & Weisz, 1998; Ollendick & King, 2000), one of a small number of interventions to have been rigorously and favorably evaluated. However, we need to move forward and take the next step to the conceptual level. What are some of the psychological forces and concepts that contribute to beneficial gains? One area that may assist in understanding the treatment more intimately is the examination of the treatment processes in child treatment (e.g., therapeutic alliance, therapist flexibility; see Russell & Shirk, 1998) and their role in beneficial treatment outcomes. The systematic study of therapy moderators and mediators explores specific mechanisms that may produce unique psychological change (Kazdin, 1995, 2001; Kendall, Flannery–Schroeder, et al., 1999; March & Curry, 1998). Unfortunately, however, the analysis of client and therapist variables in the therapy process with children is a relatively neglected field (Mook, 1982a, 1982b; Kazdin & Weisz, 1998; Shirk & Russell, 1996; Shirk & Saiz, 1992). Process research, done on treatments known to be effective, will contribute meaningfully to our conceptual understanding of treatment outcomes, and perhaps be better able to point to specific developmental variables in predicting change. Earlier in this paper we speculated that older children might not do as well in treatment because the anxious adolescent experiences more difficulties in building an alliance with the therapist. Alternately, one might also speculate that an adolescent, in part due to the need for autonomy, would do better in individual treatment as compared to family therapy. Although developmental theory and data would suggest that such hypotheses have merit, such notions need much more application and evaluation within the field of prevention and intervention evaluation. Analyses of the process of therapy with adolescent clients, for example, can begin to address these and related developmentally informed speculations. We know so little about what is effective about our treatments, and the exploration of the psychotherapy process is the key to the advancement of knowledge in this area.

As we have discussed, CBT for anxiety-disordered youth has been described as a “probably efficacious” treatment (e.g., Kazdin & Weisz, 1998; Ollendick & King, 2000),
ily enhancement of avoidant responding [FEAR] effect, cognitive bias), identified by intervention researchers, change with successful treatment. It is possible that these variables represent the mechanism by which change in anxiety occurs: treatment that produces change in the FEAR effect and cognitive biases will produce change in anxiety. Given that etiological theories of anxiety place emphasis on the role of cognition and the role of parents in the etiology and/or maintenance of anxiety, this explanation is plausible. Future intervention research in child and adolescent anxiety disorders needs to more adequately examine the mechanisms that produce change in childhood anxiety symptomatology to be able to investigate more substantially the knowledge of etiology and maintenance of anxiety. Etiology should be more adequately assessed by carefully designed longitudinal studies.

Developmental psychology offers theory and research that can inform and guide the growth of intervention. In this paper we also discussed the importance of using data from studies of normal development to help identify areas where an anxiety-disordered child or adolescent has gone astray. Normative data offer information about the processes that unfold as anxiety is diminished, as well as about the forces that maintain unwanted anxious distress. When the efficacy and effectiveness of an intervention is examined, normative development must also be considered. We have suggested here and elsewhere (Kendall et al., 1999) that it is important to consider the degree to which an intervention can return a previously extremely anxious youth to within a normative range of anxiety. Such normative comparisons (e.g., Kendall et al., 1999) provide both a metric for evaluating change and an illustration of yet another valuable use for normative developmental information.

In conclusion, much can be learned about developmental psychopathology from intervention research given the presence of adequately designed studies. To further the communication between the subdisciplines, future intervention research needs to focus on (a) including measures that assess developmental variables in addition to age and gender, (b) collecting larger sample sizes to allow for examination of possible the differential effects of the intervention for children with varying developmental levels, and (c) examining the effective components of treatment and the mechanisms that bring about change. Intervention research has also much to gain from developmental psychology in the advancement of fine-tuning developmentally appropriate interventions. Developmental psychology offers theory, and theories can assist in the development of an intervention. Clinical child and adolescent psychology contribute the methods of randomized clinical trials and the search for empirically supported treatments. Together, the chances for advancement are multiplied.

References


Intervention research to inform developmental psychopathology


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