GENERALIZED ANXIETY DISORDER IN YOUTH

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Abstract
Although mild worry is normative, children with Generalized Anxiety Disorder (GAD) experience worry that is intense, difficult to control, and impairing. Common worries of children with GAD may relate to perfectionism, performance, social situations, family, community/world events, or health. GAD co-occurs not only with other internalizing disorders (e.g., depression) but also with externalizing problems. A careful, multi-informant assessment is likely to help differentiate GAD from other disorders and also facilitate treatment planning. Research has found support for a number of variables in the etiology and maintenance of GAD including genetic, biological, familial, and environmental influences, cognitive processes, and personality traits and temperamental factors. The course of GAD is characterized by a chronic and episodic wax and wane of symptoms over a fairly long period of time though at least a few treatment approaches are promising. Numerous studies provide support for the use of cognitive behavior therapy (CBT) in treating GAD in youth, and preliminary data suggests that selective serotonin reuptake inhibitors (SSRIs) can also be helpful. The most apparent limitation of the extant literature that is reviewed is the lack of focus on youth with GAD in particular. Future research needs to compare youth with GAD to youth with other types of anxiety disorders.

KEY WORDS: generalized anxiety, cognitive behavior therapy, youth, review.

Resumen
Aunque preocuparse de manera moderada es normal, los niños con trastorno de ansiedad generalizada (TAG) experimentan una preocupación intensa, difícil de controlar y que ocasiona deterioro en su funcionamiento diario. Las preocupaciones comunes de los niños con TAG pueden relacionarse con el perfeccionismo, el funcionamiento, las situaciones sociales, la familia, los acontecimientos de la comunidad/del mundo o la salud. El TAG puede ocurrir al mismo tiempo no sólo con otros trastornos interiorizados (p. ej., depresión) sino...
también con problemas exteriorizados. Una evaluación cuidadosa y con múltiples informantes probablemente ayude a distinguir el TAG de otros trastornos y a facilitar la planeación del tratamiento. La investigación ha dado apoyo a un número de variables en la etiología y el mantenimiento del TAG, entre las cuales se incluyen las influencias genéticas, biológicas, familiares y ambientales, los proceso cognitivos, los rasgos de personalidad y los factores temperamentales. El curso del TAG se caracteriza por ser crónico y persistente en un período de tiempo bastante largo, pero al menos algunos tratamientos son prometedores. Numerosos estudios proporcionan apoyo para el uso de terapia cognitivo conductual (TCC) en el tratamiento del TAG en jóvenes, y los datos preliminares sugieren que los inhibidores selectivos de recaptación de la serotonina (SSRI, por sus siglas en inglés) también pueden ser de utilidad. La limitación más evidente en la literatura existente es la falta de atención al TAG particularmente en este grupo de sujetos. La investigación futura necesita comparar los jóvenes con TAG con otros que tengan otros trastornos de ansiedad.

PALABRAS CLAVE: ansiedad generalizada, terapia cognitivo conductual, jóvenes, revisión.

Clinical picture

Generalized anxiety disorder (GAD) in youth is characterized by excessive and persistent worrying that often leads to significant distress and/or impairment. The worries in GAD occur more days than not for a period of at least 6 months and are difficult to control (American Psychiatric Association [APA], 2000; Tracey, Chorpita, Douban, & Barlow, 1997). The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) diagnostic criteria also state that GAD in youth must be associated with at least one of the following physical symptoms: restlessness or feelings of being keyed up, easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension, or sleep disturbances (APA, 2000). Additionally, the symptoms of GAD must not be better explained by another mental disorder or occur exclusively within another disorder, nor may they be due to the physiological effects of a substance (e.g., caffeine) or a general medical condition (APA, 2000).

The development of GAD as a diagnostic category for youth has undergone several modifications. Initially classified as an overanxious reaction by the DSM-II (APA, 1968), revisions soon led to this pattern of excessive worrying being labeled overanxious disorder (OAD) in DSM-III-R (APA, 1987). Several difficulties with OAD existed and included: the high symptom overlap with several other anxiety disorders (Bernstein, Layne, Wiener, & Dulcan, 2004), presence of OAD symptoms in typically-developing children (Beidel, 1991; Bell-Dolan, Last, & Strauss, 1990), and lack of strong reliability in diagnosing OAD (Silverman, 1987). Ultimately, OAD was changed to GAD in the DSM-IV (APA, 1994). Several studies have since attempted to determine the reliability of the diagnosis in youth. A study by Tracy et al. (1997) empirically investigated the extent to which the DSM-IV’s (APA, 1994) categorization of GAD was applicable to children and adolescents, with results showing that the DSM-IV can successfully distinguish between GAD and other anxiety disorders in children. Additionally, a study by Kendall and Warman (1996)
found a high level of agreement (non-significant differences) between the disorders under DSM-III-R and DSM-IV, indicating that the diagnostic alterations should not limit the extent to which findings that utilized DSM-III-R criteria could generalize to research that follows the DSM-IV criteria.

Children with GAD often suffer from increased levels of distress and anxiety as a result of their constant preoccupation concerning numerous issues. Although mild anxiety and worries are considered part of normal development (Muris, Meesters, Merckelbach, Sermon, & Zwakhalen, 1998), children with GAD find their worries to be intense, difficult to control, and impairing in their daily life (Wagner, 2001). Common concerns of children with GAD may relate to perfectionism (e.g., never making mistakes), performance (e.g., athletic, academic, being on time), social situations, family (e.g., divorce, financial situations), community or world events (e.g., natural disasters, poverty, war), or health (e.g., death, becoming ill; Masi et al., 2004; Weems, Silverman, & La Greca, 2000). Youth with GAD often have a constant need for reassurance and approval that is driven by their persistent sense of self-doubt (APA, 2000; Wagner, 2001). Children with GAD may go unnoticed because their excessive worries about perfectionism and performance are often misinterpreted as adaptive qualities. Youth with GAD may present with the “illusion of maturity” because many of their worries are seen as socially desirable behaviors (e.g., goal-setting, high expectations) that are perceived as beneficial to the child’s future (Kendall et al., 1999; Kendall et al., 2004). Unlike adults with GAD, youth with this disorder often do not realize that their anxiety is excessive and unrealistic to the situation.

Children with anxiety disorders often experience somatic symptoms as well (Ginsburg, Riddle, & Davies, 2006; Hofflich, Hughes, & Kendall, 2006; Kendall & Pimentel, 2003; Masi, Favilla, Millepiedi, & Mucci, 2000). Ginsburg et al. (2006) found restlessness, stomachaches, and chills/hot flashes to be the most commonly reported somatic symptoms in youth with GAD. Sleep disturbances, such as difficulty falling asleep and/or staying asleep, are also common in youth with anxiety (Alfano, Ginsburg, & Kingery, 2007; Garland, Stores, & Wiggs, 2001; Kendall & Pimentel, 2003). Further evidence of difficulties was noted in a study by Masi and colleagues, in which they found youth with GAD to be highly symptomatic with more than 75% of subjects reporting symptoms such as marked feelings of tension, apprehensive expectations, negative self-images, the need for reassurance, irritability, and physical complaints (Masi et al., 2004).

GAD is most likely to co-occur with other anxiety disorders as well as depression in youth. A careful, multi-informant assessment is likely to help differentiate GAD from these other disorders. However, as noted by Comer, Kendall, Franklin, Hudson, and Pimentel (2004) differentiating GAD from obsessive-compulsive disorder (OCD) can be quite challenging. The “worry” and “obsessions” that are characteristic of GAD and OCD respectively can be difficult or nearly impossible to differentiate. Yet, at least from a treatment perspective, it would be important to do so. Although treatments for both disorders involve anxiety management and exposure tasks, the treatment for OCD also involves response prevention. In their review article, Comer et al. (2004) note that there is almost no empirical work conducted with youths that can help
guide researchers and clinicians in differentiating the two disorders, although they draw from the adult literature and provide preliminary considerations. For example, assessment of metacognitive beliefs regarding the worry may be helpful – youth with OCD are likely to believe that having an intrusive thought increases the probability that the thought is actually likely to occur (i.e., thought-action fusion; see Shafran, Thordarson, & Rachman, 1996) whereas this is not necessarily the case in youth with GAD. Further, to distinguish the compulsive behavior often seen in both youth with GAD and OCD, Comer et al. (2004) suggest that the frequency, rigidity, quality, and function of the behavior are considered. It could be that, in comparison to the compulsions evidenced by youth with GAD, compulsions of youth with OCD occur with greater frequency, are more rigid, are more illogical, and serve the function of reducing immediate distress as opposed to future negative events.

**Epidemiology**

Research finds the anxiety disorders in general to be among the most prevalent type of disorder in youth (Kashani & Orvaschel, 1988, 1990). Rates of occurrence for anxiety have been found to be as high as 25.7% in 8-year-old children (Kashani & Orvaschel, 1990) and 17% (6-month prevalence) in 14 to 16-year-olds (Kashani & Orvaschel, 1988) although some investigators reported rates ranging from 0.9% to 4.6% (3-month prevalence) in a sample of nine to 16-year-olds (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003).

The literature investigating the prevalence of GAD specifically has shown a wide range of results. Kashani and Orvaschel (1990), for example, investigated rates and symptoms of anxiety in a community sample of children aged 8, 12, and 17. Results indicated that OAD becomes the most prevalent type of anxiety disorder in young adolescents with rates of 8.6% for 8-year-olds, 11.4% for 12-year-olds, and 17.1% for 17-year-olds, respectively. Other investigators have reported estimates of 3.7% to 12.1% (Clark, Smith, Neighbors, & Skerlec, 1994). In addition, a New Zealand community sample of adolescents revealed a prevalence rate of 5.9% (McGee, Feehan, Williams, & Partridge, 1990). Whitaker, Johnson et al. (1990), however, reported a prevalence rate of 3.7% for GAD in a sample of 14 to 17-year-old students. Although some investigators found that in comparison to childhood samples, middle adolescent samples report a higher prevalence of GAD (Costello et al., 2003; Kashani & Orvaschel, 1990), the research presented here does not fully support this conclusion. It is probable that these findings conflict as a result of differing methodological approaches. For example, studies using diagnostic interviews and DSM criteria tend to yield more conservative estimates of prevalence, whereas those relying on self-report measures of anxiety symptoms report higher estimates of prevalence.

Results regarding gender differences in GAD are conflicting. For example, in a sample of adolescents and young adults, Wittchen et al. (1998) found no significant gender differences in the prevalence of GAD. Costello et al. (2003) found a higher incidence of anxiety disorders in girls between the ages of 9 and 16, and Kashani and Orvaschel (1988) found prevalence rates in 14 to 16-year-old adolescents of 12% and
23% for males and females, respectively. Abe and Masui (1981) suggest that during adolescence, symptoms of anxiety may peak at an earlier age in females than in males.

Research in the area of cultural differences in youth GAD and the anxiety disorders is lacking. Kashani and Orvaschel (1988) reported lower prevalence rates of anxiety disorders in white adolescents than nonwhites. Treadwell, Flannery-Schroeder and Kendall (1995) also addressed the issue of ethnic differences in the anxiety disorders. Although they did not focus on GAD specifically, the researchers found that there are more similarities than differences in anxiety between African American and Caucasian adolescent groups. Bird, Canino, Rubio-Stipec, and Gould (1988) investigated the prevalence of anxiety disorders in a Puerto Rican sample of children ages 4 to 16. They found that 81 out of their sample of 777 (10.4%) met the criteria for an anxiety disorder diagnosis. Ginsburg and Silverman (1996) specifically examined GAD in Hispanic populations. They reported rates of GAD of 1.0% and 3.5% for Hispanics and Caucasian youth, respectively. It is important to note, however, that these findings were not significantly different.

Etiology

Although the etiology of GAD in youth is not clearly understood, several potential precipitating factors have been identified. Research has examined the role of genetic, biological, familial, and environmental influences, cognitive processes, and personality traits and temperamental factors. An existing limitation is that much of this research focuses primarily on anxiety disorders in general, without specifying a distinct relationship to GAD.

Genetic and biological factors

The majority of research advocates that GAD is most influenced by genetic and non-shared environmental factors (Kovacs & Devlin, 1998), with uncertainty regarding the influence of shared environmental factors. Several twin studies have documented these findings, indicating that GAD aggregates in families. The major source of familial risk is genetic with heritability estimates of approximately 30-32%. The largest amount of variance is believed to be a result of non-shared environmental factors (Ehringer, Rhee, Young, Corley, & Hewitt, 2006; Hettema, Neale, & Kendler, 2001; Kendler, Neale, Kessler, & Heath, 1992a). Interestingly, after indicating this genetic influence, further research by Kendler and colleagues (Kendler, Neale, Kessler, & Heath, 1992b) identified a shared genetic risk for GAD and major depressive disorder (MDD), also noting little impact of shared family environment. Kendler et al. (1992b) found that non-shared environmental factors contribute to whether a woman develops GAD or MDD, and others have suggested that a common familial environment may play a role in GAD for women only (Hettema et al., 2001). Overall, these twin studies provide strong evidence of a genetic influence for GAD and non-shared environmental factors.
Several neurotransmitters and hormones have been implicated as potential causal factors of GAD. Biological research in this area primarily centers on pharmacological treatments, which have shown to be effective in treating most of the anxiety disorders. Nevertheless, due to the fact that these treatments are successful for most anxiety disorders, it is difficult to determine which neurotransmitter abnormalities are specific to GAD (Schulz, Gotto, & Rapaport, 2005). Dysregulation of norepinephrine and/or serotonin (Nutt, 2001), as well as the hormone cortisol (Tafet et al., 2001) are all suggested to be involved in the pathogenesis of GAD, yet there is no conclusive evidence of their precise functioning.

Family factors

Evidence also suggests a role for family factors such as parenting style, attachment quality, and/or presence of parental psychopathology in the etiology of GAD. Data from self-report and observational studies consistently show that parents of anxious children (including samples of youth diagnosed with GAD or OAD), tend to be more controlling and less granting of autonomy than are parents of controls. In a study by Siqueland et al. (1996), children with anxiety disorders perceived their mothers and fathers as less accepting when compared with control children who completed the same measures. Further, observers unaware of diagnostic status rated parents of anxious children as less granting of psychological autonomy than parents of non-anxious children during an observation task. Hudson and Rapee (2001) studied interactions during a puzzle task between mothers of anxiety-disordered children and compared them with mothers of non-clinical children. Results indicated that mothers of anxiety-disordered children were more controlling during the puzzle task than mothers of children without anxiety disorders. Hudson and Rapee (2001) suggest that this tendency may be due to a bidirectional relationship; while parental over-involvement may be an effortful attempt to reduce the child’s distress, parents are simultaneously reinforcing the child’s anxiety by discouraging independence and promoting the perception that the world is an unsafe place where the child needs protection. Similarly, in the case of GAD in youth, parents may serve to maintain the child’s anxiety if they become angry and irritated as a result of their child’s repeated requests for reassurance, which may then result in even greater anxiety for the child due to the parent’s negative reaction (Kendall & Ollendick, 2004).

Attachment style may also be relevant to the etiology of anxiety in youth. For example, Warren et al. (1997) found a relationship between anxious/resistant attachment and later anxiety disorders. Several studies by Muris and colleagues (Muris, Meesters, & Spinder, 2003; Muris, Meesters, & van den Berg, 2003; Muris, Meesters, van Melick & Zwambag, 2001) also found that insecurely attached children more often displayed anxiety symptoms than children who were securely attached. A study by Hale and colleagues (2006) examined the link between adolescents’ perceived parental attachment, rejection, and over-control as compared with adolescent GAD symptom scores. Results of the study demonstrated that all 3 of these domains were significantly correlated
to adolescent GAD symptom scores, with adolescents’ perceptions of parental alienation and rejection identified as particularly good predictors of GAD symptom scores.

With respect to the impact of parental psychopathology on the development of GAD in children, top-down and bottom-up studies suggest that children with anxiety disorders are more likely to have parents with anxiety disorders, and that parents with anxiety disorders are more likely to have children with anxiety disorders (Last, Hersen, Kazdin & Francis, 1987; Last, Phillips & Statfeld, 1987). For example, Last, Phillips, and Statfield (1987) found that approximately 42% of mothers of children with OAD also experienced OAD themselves as children. However, top-down studies also find that children of anxious parents who have comorbid depression are also more likely to have an anxiety disorder than normal controls (Biederman, Rosenbaum, Bolduc, & Faraone, 1991). Further, bottom-up studies find that parents of anxious children are just as likely to be depressed as anxious (Livingston, Nugent, Rader & Smith, 1985). These findings suggest that it may not be “anxiety” specifically that is transmitted in the family, but rather an etiological factor that is common to both anxiety and depression.

Cognitive factors

Worry is often conceptualized as the cognitive component of anxiety (Silverman, La Greca & Wasserstein, 1995). Borkovec and colleagues (2004) propose that worry serves as an avoidance strategy in response to perceived threats, and that worry is maintained by negative reinforcement related to the long-term nonoccurrence of expected fear events. This avoidance behavior may contribute to the maintenance of anxiety because an anxious child will not have the opportunity to learn that the specific circumstances or situations are harmless (Muris, 2006; Ollendick, Vasey, King, Vasey & Dadds, 2001). An alternative hypothesis suggests an information-processing approach to the understanding of GAD that is characterized by attentional vigilance (Craske & Waters, 2005). In this case, a person with GAD selectively attends to threatening stimuli during the processing of information, and has the tendency to interpret ambiguous information in a threatening or negative manner (Barrett, Rapee, Dadds, & Ryan, 1996). Youth with GAD may overestimate the likelihood of negative events and may be biased in perceptions of threat. Intolerance of Uncertainty (IU), an unwillingness to tolerate the possibility that negative events may occur in the future, regardless of how unlikely they may be (Holaway, Heimberg, & Coles, 2006) may also play a role in the etiology and maintenance of GAD (Dugas, Gosselin & Ladouceur, 2001). Individuals experiencing IU have the excessive inclination to view the potential occurrence of future negative events as unacceptable, regardless of the probability of them happening (Dugas et al., 2001). A study by Laugesen, Dugas, and Bukowski (2003) demonstrated a strong correlation between IU and adolescent worry scores, and IU was shown to be the most important factor in distinguishing between moderate and high adolescent worryers.
Temperamental/personality factors

Temperamental and personality variables have also been implicated in the development of GAD in youth. Childhood temperament can be thought of in terms of inborn individual differences in behavioral style that are reflected in the child’s interaction with his or her environment (Chess & Thomas, 1996; Rothbart, Posner, Cicchetti, & Cohen, 2006). Behavioral inhibition, persistent, fearful, and avoidant behavior when faced with novel situations and stimuli (Kagan, 1984), can be considered one aspect of temperament and has been shown to be a risk factor for the development of anxiety disorders in youth (Bernstein et al., 2004; Biederman, Rosenbaum, Chaloff, Kagan, & March, 1995; Muris, 2006). A study by Biederman et al. (1990) reported that behaviorally inhibited (BI) children were more likely to meet criteria for OAD when they were between the ages of 5 and 8 than children who were not BI. Results of a study by Muris et al. (2003) indicated that elevated levels of behavioral inhibition (based on child and parent reports) were also accompanied by high levels of anxiety symptoms.

Negative affect is a personality characteristic that may also contribute to the etiology of anxiety. Negative affect is the tendency to experience a preponderance of negative emotions sometimes with great intensity, even in the absence of an objective stressor (Watson & Clark, 1984). Watson and Clark have postulated a tripartite model comprised of three factors, positive affect (PA), negative affect (NA), and physiological hyperarousal (PH), that describes the relationship between anxiety and depression (Clark & Watson, 1991). In the tripartite model, anxiety and depression are both characterized by negative affect, anxiety is also characterized by high levels of physiological arousal, and depression is characterized by low positive affect (Clark & Watson, 1991; Laurent et al., 1999). Studies have shown a strong relationship between negative affect and GAD in adults (Brown, Chorpita, & Barlow, 1998), as well as in youth (Chorpita, Plummer, & Moffitt, 2000).

More recent research has attempted to examine specific components of emotional functioning that may contribute to the etiology or maintenance of anxiety in youth (Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004; Suveg, Zeman, Flannery-Schroeder, & Cassano, 2005). For example, Southam-Gerow and Kendall (2000) examined several components of emotion understanding in a youth diagnosed with an anxiety disorder (GAD was included among the anxiety disorders) and found that anxious youth demonstrated significantly less understanding of how to hide and change emotions – important components of emotion expression management. Using self- and mother-report measures, Suveg and Zeman (2004) found that anxious children indicated more dysregulated management (i.e., culturally inappropriate emotional expression) and less adaptive coping with anger, sadness, and worry than did non-clinical youth, perhaps as a result of experiencing their emotions with high intensity and not having confidence in their ability to regulate the emotions. Mothers of anxious children also perceived their children as significantly more inflexible, labile, and emotionally negative than did mothers of non-anxious children. Finally, Suveg et al. (2005) examined emotion socialization in families with an anxious child by coding an emotion discussion
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Results indicated that mother-child emotional discussions were qualitatively different depending on the composition of the dyad. Mothers of anxious children discouraged the discussion of emotion and used fewer positive emotion words during the discussion, suggesting that the interactions were not very pleasant. Mothers of children with anxiety disorders appeared less comfortable overall with the discussion. This tenet was evidenced in the finding that they spoke less time than their children during the discussion in contrast to mothers of non-clinical children who spoke the majority of the time during the discussions. Further, both anxious children and their mothers independently rated less family expressivity compared to nonanxious youth. Collectively, there appeared to be a theme of truncated emotion expression and communication in families with an anxious youth. Given that families are one of the primary ways that children learn about emotion functioning, anxious youth are at a disadvantage relative to their peers.

Other factors likely contribute to the etiology of GAD in youth, but have not been sufficiently studied. For example, research has found an association between significant negative life events (e.g., parental death, divorce) and child anxiety (Muris, 2006). Additionally, there is a scant amount of research regarding the potential role of the school environment or peer relationships in the etiology of GAD. Some studies have also differentiated early versus late onset GAD and the etiological factors that may be distinctly related to each (Silberg, Rutter, & Eaves, 2001).

Developmental course

Onset and course

There are few studies investigating the course of GAD in childhood and adolescence. With respect to the age of onset for the anxiety disorders, a retrospective epidemiologic study with adults reported a median age of onset of 15 (Christie, Burke, Regier, & Rae, 1988). Research on GAD specifically has employed mostly adult samples and retrospective methods in order to examine the specific age of onset. According to the Epidemiologic Catchment Area survey, one third of adults with GAD reported an onset in the late teens or early adulthood (Blazer, George, Hughes, Salzman, & Lebowitz, 1991). Other investigators have reported mean ages of onset of 10.8 (Last, Strauss & Francis, 1987) and 13.4 (Last, Hersen, Kazdin, & Finkelstein, 1987) for OAD.

The course of GAD is characterized by a chronic and episodic wax and wane of symptoms over a fairly long period of time (Allgulander, 2006). Whereas the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC; Grant et al., 2005) reported a duration of 11.1 months for a single episode and a mean number of 3.4 episodes, other investigators have reported much longer estimates of duration (Angst & Vollrath, 1991; Mancuso, Townsend, & Mercante, 1993; Noyes, Holt, Woodman, Mavissakalian, & Prien, 1996; Yonkers, Dyck, Warshaw, & Keller, 2000; Yonkers, Warshaw, Massion, & Keller, 1996). GAD is characterized...
by high recurrence and low remission rates (Yonkers, Bruce, Dyck, & Keller, 2003; Yonkers et al., 2000). Investigators have reported that GAD peaks in adolescence (Costello et al., 2003), which is likely related to the notion that the ability to worry is intertwined with children’s cognitive development (Vasey, Crnic, & Carter, 1994).

Stability and continuity

The findings related to the stability of anxiety in childhood are inconsistent. Cole and colleagues (1998), for example, found stability estimates for anxiety ranging from .94 over a 6-month interval to .74 over a 30-month interval. The investigators argue that although symptoms change over time, there is a clear consistency in the core symptomatology. Gullone, King, and Ollendick (2001) followed a sample of 68 children and adolescents between the ages of 10 and 18 for a period of 3 years. In contrast to Cole et al.’s (1998) findings, Gullone and colleagues reported more transient symptoms of anxiety; initial symptoms only accounted for 13%-17% of the variance associated with later symptoms of anxiety (Gullone et al., 2001).

Although current research supports some degree of continuity of anxiety from childhood into adulthood (Clark, Smith et al., 1994; Gullone et al., 2001), an investigation by Costello and colleagues (2003) found that the stability of GAD specifically is not as high (Costello et al., 2003). Research investigating early versus late onset of GAD has concluded that there is a certain heterogeneity in the course of GAD depending on the onset of symptoms (Hoehn-Saric, Hazlett, & McLeod, 1993). In their retrospective study of 103 adults with GAD, Hoehn-Saric et al. (1993) found that those individuals with an early onset of GAD (in the first two decades of life) reported more dysfunction and severity of symptoms as well as neuroticism than those with a later onset. Furthermore, adults in the late onset group tended to report a specific precipitating factor such as severe life stress, whereas those in the early onset group did not report such factors. The investigators concluded that the marked severity, heightened maladjustment, and vulnerability found in the early onset group suggest an underlying anxiety trait for this group (Hoehn-Saric et al., 1993).

Comorbidity

The NESARC study investigating the prevalence and comorbidity of GAD in the United States reported that only 10.2% of those with 12-month GAD had a pure diagnosis of GAD with no other comorbid diagnosis (Grant et al., 2005). The literature reports comorbidity estimates for anxiety and depression of 15.9% and 28.3% in outpatient samples to 55.2% in hospitalized children and adolescents (Brady & Kendall, 1992; Kendall, Kortlander, Chansky, & Brady, 1992; Strauss, Last, Hersen, & Kazdin, 1988). The literature suggests that approximately one third of adolescents with a diagnosis of anxiety met criteria for comorbid depression (Clark, Smith et al., 1994; McGee et al., 1990). Although to a lesser extent, various investigators have also found anxiety disorders to co-occur
with externalizing disorders and related traits (e.g., aggressiveness; Kashani, Deuser, & Reid, 1991; Myers, Burket, Lyles, & Stone, 1990). The presence of an anxiety disorder has been identified as a risk factor for suicide attempts (Gould et al., 1998), nicotine dependence, alcohol dependence, as well as illicit drug dependence (Woodward & Fergusson, 2001). Clark and Jacob (1994) suggest that in most cases of comorbid anxiety and alcohol abuse or dependence, the anxiety usually presented first.

Several studies investigating the association between anxiety disorders and personality have found a relation between GAD and cluster C personality disorders (avoidant, dependent, obsessive-compulsive, and passive-aggressive; Sanderson, Wetzler, Beck, & Betz, 1994). In particular, the two most common were avoidant and obsessive-compulsive. Other investigators also report an association with Cluster A personality disorders (paranoid, schizoid) (Grant et al., 2005). Sanderson and colleagues (1994) reported that along with social phobia (61%), GAD had the strongest association with personality disorders (49%). Some argue that this evidence supports the idea that GAD is a trait-based disorder much like a personality disorder. Current findings of a relation between GAD and cluster C personality disorders have been based primarily on adult samples. Much less research is available with respect to child and adolescent samples.

**Evidence-based assessment of GAD in youth**

Several instruments for assessing anxiety in youth exist (see Langley, Bergman, & Piacentini, 2002; Velting, Setzer, & Albano, 2004) and include child-, parent-, teacher-report and clinician-administered interviews. Undoubtedly there are advantages and disadvantages to each method of assessment, the choice of which are impacted by practical factors (e.g., time and resources available to the assessor, as well as the training of the individual who is conducting the assessment). Regardless of which tool one chooses to utilize, the assessment of anxiety in youth should be multimethod, developmentally sensitive, assess various domains of development (e.g., physical, emotional, social, cognitive, academic), consider the onset, development, and duration of symptoms, and include a careful intake of the family psychiatric history and the child’s medical background (Bernstein, Borchardt, & Perwien, 1996; Bernstein & Kinlan, 1997). The majority of self-, parent-, and other-report measures assess for global anxiety as opposed to GAD specifically, though diagnostic interviews assess for specific diagnoses.

**Self-report assessments**

Although most self-report assessments evidence strong reliability, validity is sometimes questionable as the questionnaires often have very high correlations with measures of depression in youth. The *Multidimensional Anxiety Scale for Children* (MASC; March, Parker, Sullivan, & Stallings, 1997) is a self-report questionnaire for youth that yields an overall anxiety score and scores for the following subscales: Physical Symptoms, Harm Avoidance, Social Anxiety, and Separation/Panic.
are also subscales within some of these scales). The Anxiety Disorders Index is unique to the MASC and is intended to identify those who may have an anxiety disorder, as opposed to anxiety symptoms. Reliability estimates for the MASC Total Anxiety score are strong (.88 for girls and .89 for boys) and range from acceptable to strong for the subscales (March et al., 1997). Validity has also been established by demonstrating positive relations with other reports of anxiety and lack of strong relations with a measure of childhood depression. The MASC-10, a psychometrically sound short form of the MASC can be used as a brief screening instrument for anxiety disorders (March, Sullivan, & Parker, 1999).

The *Screen for Child Anxiety Related Disorders* (SCARED; Birmaher, Khetarpal, Brent, & Cully, 1997) is another self-report questionnaire consisting of 41 items assessing anxiety disorder symptoms in children and adolescents. The SCARED consists of 5 subscales: Panic/Somatic, Generalized Anxiety, Separation Anxiety, Social Phobia, and School Phobia. Children and adolescents are asked to indicate how frequently they experience each anxiety symptom (0=almost never, 1=sometimes, 2=often). The SCARED has demonstrated reliability (.75 to .89 for the individual subscales, .91 for the total score; Muris, Merckelbach, Ollendick, King, & Bogie, 2002).

The *Revised Children’s Manifest Anxiety Scale* (RCMAS; Reynolds & Richmond, 1997) is a commonly used questionnaire designed to assess manifest anxiety in children and adolescents ages 6 to 19 years. The RCMAS yields a total anxiety score as well as four subscales: Worry/Oversensitivity, Social Concerns/Concentration, Physiological Anxiety, and Social Desirability/Lie. The internal consistency of the RCMAS ranges from .79 to .95 (Lonigan, Carey, & Finch, 1994; Ollendick & Yule, 1990; Pela & Reynolds, 1982). Three-week test-retest reliability for the total anxiety scores have been reported at .97 for boys and .98 for girls (Pela & Reynolds, 1982), whereas a 9-month test-retest reliability for the total score indicated a coefficient of .68 (Reynolds & Paget, 1981). Numerous investigations have established the discriminant validity of the RCMAS with respect to differentiating between anxious and control children (e.g., Bell-Dolan et al., 1990; Perrin & Last, 1992), however, the ability of the RCMAS to distinguish between anxiety disorders and other psychiatric disorders in children is relatively poor (Hodges, 1990; Lonigan et al., 1994; Wolfe et al., 1987). Thus, the RCMAS is best utilized as a screening rather than as a diagnostic instrument.

Researchers have also developed self-report measures of worry in particular. For example, Chorpita, Tracey, Brown, Collica, and Barlow (1997) adapted the *Penn State Worry Questionnaire* (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) for adults for use in children ages 6-18. The PSWQ for children (PSWQ-C) demonstrates strong reliability and convergent and discriminant validity. In particular, Chorpita et al. (1997) found that the PSWQ-C could discriminate between children diagnosed with GAD, those with other anxiety disorders, and those without an anxiety or mood disorder. Other measures of worry exist (e.g., *The Worry Inventory for Children*, Wasserstein, La Greca, & Silverman, 1992; *The Worries Inventory*, Orton, 1982) though the psychometric properties of the questionnaires are questionable (Vasey, Daleiden, Davey, & Tallis, 1994).
Zeman, Cassano, Suveg, and Shipman (2007) developed a worry management scale for children. Rather than assessing what children worry about, the scale assesses what children do when they worry on a 3-point scale. A parallel form to the Children’s Emotion Management Scales (Anger and Sadness; Zeman, Shipman, & Penza-Clyve, 2001), the worry items comprise 3 different subscales: Coping (culturally appropriate methods of worry management), Dysregulation (culturally inappropriate, externalizing types of worry management), and Inhibition (suppression of worry experience). Initial reliability and validity data for the scale are strong (Zeman, Cassano, Suveg, & Shipman, 2007) though the usefulness of the measure to the assessment and treatment of clinical levels of worry remains to be evaluated.

Diagnostic assessments

Although several diagnostic interviews exist to assess for Generalized Anxiety Disorder as well as other anxiety disorders in youth (e.g., National Institute of Mental Health Diagnostic Interview Schedule for Children-fourth version, Shaffer et al., 2000), the Anxiety Disorders Interview Schedule for Children (ADIS-IV-C; Silverman & Albano, 1996) is among the most widely used in recently published research. The child (ADIS-C) and parent (ADIS-P) versions are semi-structured interviews that were designed for use in clinical-research settings and in response to the low reliability coefficients that were previously found for childhood anxiety disorders using other structured interviews. The interviews assess anxiety disorders according to the DSM-IV criteria (APA, 1994) and provide quantifiable data regarding anxious symptomatology, cause, course, and a functional analysis of the disorder (Silverman & Eisen, 1992). The interviews focus on anxiety and affect-related disorders, and thus permit the interviewer to rule out alternative diagnoses. Clinical judgment is required to determine the diagnosis and also to distinguish between primary and secondary diagnoses (Silverman & Albano, 1996). Agreements and disagreements from the child and parent interview are compared and subsequently combined in order to form composite diagnoses that reflect both child and parent data. Discrepancies between child and parent data are resolved by considering severity rating and interference with functioning.

Examination of the psychometric properties of both the child and parent versions of the ADIS-IV indicate an overall kappa coefficient of .75 (Silverman & Nelles, 1988). Kappa coefficients for the specific anxiety disorders range from .64 (Overanxious Disorder) to 1.00 (Specific Phobia). Test-retest reliability has been reported from .64 (overanxious disorder) to .84 (specific phobia). Inter-rater reliability of the child and parent versions yield kappa coefficients ranging from .59 to .82 (Rapee, Barrett, Dadds, & Evans, 1994). Adequate validity has also been demonstrated (Silverman & Albano, 1996).

In an effort to examine the diagnostic efficiency of the DSM-IV criteria for GAD, Pina, Silverman, Alfano, and Saavedra (2002) administered the ADIS-IV to 111 youth ages 6 to 17 years old who either met full criteria for GAD or who evidenced sub-clinical levels of worry. The usefulness of diagnostic criteria in domains A and B (excessive uncontrollable worry) and C (physiological symptoms associated with
excessive worry) were all examined. Overall, results indicated that across both youth and parent reports, nearly all symptoms were useful for assigning a diagnosis. Within the uncontrollable excessive worry domain, Health of Self had the highest diagnostic value in comparison to the mean of uncontrollable excessive worries as reported by youth parents’ reports of adolescents. In contrast, worry about Health of Others had the highest diagnostic value based on parents’ reports of children. Within the physiological symptoms associated with uncontrollable excessive worries domain, the following items had the highest diagnostic value: Irritability and Trouble Sleeping as reported by children, Can’t Sit Still and Relax, Can’t Concentrate, as reported by adolescents, Can’t Concentrate reported by parents of children, and Can’t Sit Still and Relax, and Trouble Sleeping as reported by parents of adolescents. Although these findings await replication, Pina and colleagues (2000) suggest that clinicians can use these findings to facilitate a more efficient assessment of GAD by first asking about those symptoms with the highest diagnostic value and skipping those with average or lower than average diagnostic value.

Behavioral observations

During Behavioral Avoidance Tests (BATS) youth are exposed to the feared stimulus. Components of BATS often include ratings of the child’s distress before, during, and after the exposure. Implementing BATS with GAD youth can be challenging given the often diffuse nature of the worry. Nonetheless, they are often a very helpful assessment tool and are considered a major component of CBT treatments (see Kendall et al., 2005).

Evidenced-based treatment of GAD in youth

Cognitive-behavioral therapy (CBT) has strong empirical support for the treatment of anxiety in youth and has been identified as a “probably efficacious” treatment (King & Ollendick, 2000). Several randomized clinical trials conducted by independent research teams support the efficacy of individual (Kendall, 1994; Kendall et al., 1997; Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008), group (Barrett, 1998; Flannery-Schroeder & Kendall, 2000; Silverman & Ollendick, 1999), and family-based (e.g., Barrett, Dadds, & Rapee, 1996; Cobham, Dadds, & Spence, 1998; Shortt, Barrett, & Fox, 2001) CBT approaches. A 7.4 year follow-up of youth treated for anxiety found that treatment gains were maintained. Further, those who responded positively to treatment were less likely to use alcohol and other substances and had fewer substance use difficulties than those who responded less favorably to treatment. Thus, CBT is efficacious in the short-term, several years later, and has a positive impact on at least some of the negative sequelae associated with anxiety in youth.

Importantly, only few studies have examined the treatment of GAD specifically (Eisen & Silverman, 1993, 1998; Kane & Kendall, 1989) rather GAD has been included among several of the anxiety disorders evaluated. Relatively few studies
have examined the pharmacological treatment of GAD; however, preliminary research suggests that the use of selective serotonin reuptake inhibitors (SSRIs) might be helpful, at least in the short-term, in treating GAD in youth (Pine et al., 2001).

Cognitive-behavioral treatment

Cognitive-behavioral therapy is based on the notion that there are three aspects to anxiety that must be addressed: high physiological arousal, maladaptive cognitions, and behavioral avoidance. Consequently, CBT for youth focuses on having children recognize their physiological responses of anxiety, identify and reframe maladaptive (anxious) thinking, develop a coping repertoire, and expose themselves to their fears in an effort to gain mastery and sense of self-efficacy. Although many adaptations now exist, Kendall and colleagues were among the first to manualize CBT treatment for use with anxiety-disordered youth (Kendall, 1994). In general, youth are first taught skills to manage their anxiety then are given opportunities to practice their skills in actual anxiety-provoking situations. The concepts are presented in a developmentally-appropriate manner and with therapist flexibility (Kendall, Chu, Gifford, Hayes, & Nauta, 1998; Silverman & Ollendick, 1999).

Given that there now exists a relatively large body of research supporting the CBT approach, efforts have now focused on: identifying whether specific variants of CBT (e.g., family-focused) may be better for certain types of children (Kendall et al., 2008), whether CBT can be “enhanced” so that even a greater number of children may benefit from the treatment (Suveg, Kendall, Comer, & Robin, 2006), and dissemination (Khanna & Kendall, 2008; Lyneham & Rapee, 2006). With respect to the former, Barrett et al. (1996) compared individual CBT, CBT plus family anxiety management (e.g., coached the parents in how to manage their child’s and their own emotional distress and in communication and problem-solving skills), and a wait-list condition (38% of the sample had a principal diagnosis of overanxious disorder; which has since been subsumed under GAD). Results indicated that children 10 years and younger responded best in the CBT+FAM condition whereas the older children responded equally well to both active treatment conditions. Cobham et al. (1998) likewise compared individual CBT to a CBT plus parental anxiety management treatment (PAM; 67% of the sample had a principal diagnosis of OAD or GAD). The CBT+PAM condition taught parents strategies for managing their own and their child’s anxiety and to model appropriate anxiety management. Children who had a parent with anxiety responded best in the CBT-PAM condition whereas children who did not have an anxious parent responded equally well in the CBT as the CBT+PAM condition. Most recently, Kendall et al. (2008) randomly assigned 7 to 13-year-old children to individual CBT (ICBT), family CBT (FCBT), or to an education, support, attention condition (ESA; 55% of the sample had a principal diagnosis of GAD). Results indicated that a greater percentage of children in the former two groups showed diagnostic improvement at posttreatment than children in the ESA condition. Few differences between ICBT and FCBT were found, though when present, the former resulted in greater improvement than the latter. In a meta-analysis examining
“family-based” treatment outcome for anxious youth, Barmish and Kendall (2005) concluded that the various ways in which the family has been included in treatments for anxious youth precludes a conclusion that FCBT is better than ICBT.

As discussed previously, CBT addresses the maladaptive cognitions and behavioral avoidance that are associated with anxiety in youth. However, CBT treatment programs have yet to fully address the emotion-related deficits of anxious youth identified through more recent research (e.g., Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004; Zeman, Shipman, & Suveg, 2002). Suveg et al. (2006) developed and found initial empirical support for Emotion-focused CBT (ECBT), a treatment that included all of the empirically-supported components of traditional CBT but also included content to specifically address the emotion-related deficits identified in anxious youth (5 of the 6 included youth had a principal diagnosis of GAD). For example, anxious youth show deficits in emotion understanding and regulation that extend to anger and sadness experiences. Emotion-focused CBT specifically targets such deficits by coaching youth on how to better manage those emotional experiences in addition to anxiety. Youth are also taught about other emotions (e.g., guilt). In a multiple-baseline evaluation of 6 youth with anxiety disorders (5 of whom had a diagnosis of GAD), children generally evidenced significant gains on the diagnostic interview, measures of child emotional functioning, and assessments of global functioning. Although the preliminary data are promising, it is not yet clear whether ECBT may be more effective for youth who initially evidence emotion-related deficits, or whether such improvements could be found with traditional CBT approaches.

In terms of dissemination, Lyneham and Rappe (2006) examined whether anxiety could be treated successfully through the use of bibliotherapy in a sample of 100 youth living in a rural area, 40% of whom had a principal diagnosis of GAD. Families who live in rural areas often do not have appropriate access to specialty or other mental healthy clinic for proper treatments; bibliotherapy provides an opportunity for such youth to receive treatment. All families received anxiety management materials, which encouraged parents to act as therapists and randomly assigned the families to supplemented therapist-initiated telephone, therapist-initiated email, client-initiated contact sessions, or a waitlist control (because not all families had email access, randomization was modified). In the therapist-initiated conditions, therapists followed a manual of questions related to treatment content whereas in the client-initiated group the particular nature of the interaction with the therapist was guided by the parent. In general, results found 79%, 33%, and 31% of children in the therapist-initiated telephone, therapist-initiated email, and client-initiated groups were free of an anxiety disorder at posttreatment. The findings provide initial support for facilitating the dissemination of anxiety treatments for youth through the use of bibliotherapy and therapist-initiated telephone support.

Efforts have also been made to disseminate treatment for anxious youth through computer-assisted technology (Khanna & Kendall, 2008; Spence, Holmes, March, & Lipp, 2006). Several advantages to computer-assisted programs exist. For example, Khanna and Kendall (2008) note that they are less expensive, have the ability to reach a wider population, anxiety-provoking stimuli can still be presented (via the
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particular computer program that is developed), and can be available in multiple settings. Though challenges with this new approach exist, preliminary data are promising. For example, Spence et al. (2006) found support for a CBT program for 7-12-year-old children (27% had a principal diagnosis of GAD) in which half of the child sessions were delivered via the internet. Other research is currently underway to further evaluate the efficacy of computer-assisted approaches for the treatment of anxiety in youth (e.g., “Camp Cope-A-Lot: The Coping Cat CD”; Khanna & Kendall, 2008).

When working with youth with GAD, modifications of the general CBT treatment approach should be considered. First, given the major worry component of GAD, it might be helpful to introduce and/or spend increased time discussing the cognitive components of the disorder early on in the treatment process. This might be especially applicable for younger or cognitively delayed youth, who may have difficulty mastering the cognitive components of treatment (e.g., identification of anxious cognitions and application of coping thoughts). Second, as it is not uncommon for GAD youth to seek reassurance from family members regarding their particular areas of worry (e.g., youth with perfectionist tendencies who ask parents several times whether or not their homework is correct), coaching the parents early on in treatment about appropriate responding to the behavior is often beneficial. Lastly, given that youth with GAD worry about a number of domains, on-going assessment of both previous and newly developed worry areas is essential. This might be especially true when GAD youth show improvement in one domain of worry, only to have substituted another area to worry about.

Pharmacological treatment

The literature on the pharmacological treatment of GAD in youth is much less developed in comparison to the empirical body of research on the psychosocial treatment of the disorder (see Walkup, Labellarte, & Ginsburg, 2002 or Stein, Seedat, Morris, & March, 2004 for reviews). Overall, for the pharmacological treatment of GAD in youth empirical research finds: (a) no or little support for the use of benzodiazepines (Graae, Milner, Rizzotto, & Klein, 1994; Simeon, Ferguson, Knott, & Roberts, 1992), (b) little support for the use of tricyclic antidepressants (TCAs), and (c) preliminary support for the use of SSRIs (Birmaher et al., 2003; Birmaher, Waterman, Ryan, & Cully, 1994; Pine et al., 2001; Rynn, Siqueland, & Rickels, 2001). Side effects for the various medications vary (e.g., daytime drowsiness and fatigue for benzodiazepines and headaches and increased motor activity with SSRIs; as reviewed by Stein & Seedat, 2004) and need to be considered in treatment research for GAD. One study currently underway is comparing the efficacy of individual CBT, sertraline, sertraline + CBT, and placebo in the treatment of GAD, Social Phobia, and Separation Anxiety Disorder in youth (Child/Adolescent Anxiety Multimodal Treatment Study; http://clinicaltrials.gov/ct/show/NCT00052078). This multi-site study funded by the National Institute of Mental Health will yield much-needed knowledge regarding the treatment of GAD in youth.
Summary and future directions

An emerging body of impressive literature contributes significantly to our understanding of the etiology, maintenance, and treatment of GAD in youth. Generalized Anxiety Disorder in youth is characterized by excessive and uncontrollable worry that has the potential to lead to significant distress and/or impairment in a child’s life. Common worries might relate to perfectionism, performance, social situations, family, community or world events, and/or health. As it is sometimes difficult to distinguish GAD from other disorders (e.g., obsessive-compulsive disorder) a thorough, multi-informant assessment is warranted. With respect to treatment, numerous studies provide support for the use of CBT in treating GAD in youth, and preliminary data suggests that SSRIs are also helpful. Though the clinician’s toolbox is quite deep with the availability of several solid assessment instruments and treatment options, much of the reviewed literature did not include samples of youth with GAD only. Rather, the research thus far has primarily included samples of “anxiety-disordered” youth that included those with a principal diagnosis of GAD. Research studies that examine GAD specifically or larger samples that allow for diagnostic group comparisons are needed.

References


