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## Introduction

Worry and fear can be normal. However, excessive, uncontrollable worry represents the core diagnostic criteria of generalised anxiety disorder (GAD). Youth meeting criteria typically worry about many areas of life, report physical symptoms associated with worry and as a result experience significant distress, impairment and disability. This chapter presents a review of the diagnostic history of GAD as it relates to changes across revisions of the *Diagnostic and Statistical Manual (DSM)*; it then reviews the available research on the symptom presentation, aetiology, epidemiology, comorbidity and impairment of GAD in childhood and adolescents, with a particular focus on the developmental considerations relevant to this age group. The chapter concludes with a description of available treatments and reviews their efficacy in youth. While the focus is on providing a review of GAD in childhood and adolescents, at times, research on overanxious disorder (OAD), the earlier diagnostic form of GAD in childhood and research on GAD in adults will be drawn on where limited research is available on youth.

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## The History of GAD Diagnosis

Categorisation of anxiety disorders, particularly generalised anxiety disorder (GAD), has undergone significant changes across revisions of the *Diagnostic and Statistical Manual (DSM)*. For adults, in DSM-III (American Psychiatric Association [APA], 1980), anxiety neurosis (as it was known in DSM-II) was separated into two categories reflecting the presence or absence of panic attacks. In DSM-III the presence of generalised, persistent anxiety (of duration greater than 1 month) was diagnosed when three of four categories of physical symptoms (motor tension, autonomic hyperactivity, apprehensive expectations and vigilance and scanning) were present without panic attacks. However, this generalised anxiety was recognised only in the absence of other Axis I disorders.

Despite the DSM-III criteria, evidence suggested that worry could be present independently of other disorders (Brown, O’Leary, & Barlow, 2001). As a result, in DSM-III-R (APA, 1987), GAD could be recognised as a discrete disorder. In DSM-III-R, GAD was defined by the presence of excessive or unrealistic worry. GAD was categorised by worry across two or more areas that were unrelated to other Axis I disorders, for example, social threat, physical threat and minor life consequences (Butler, Gelder, Hibbert, Cullington, & Klimes, 1987; Craske, Rapee, Jackel, & Barlow, 1989; Sanderson & Barlow, 1990). DSM-III-R

also placed emphasis on the physical symptoms associated with worry – requiring the presence of 6 out of 18 symptoms grouped into three broad categories – motor tension, autonomic hyperactivity and vigilance/scanning. Despite changes to the diagnostic criteria for GAD, studies found mixed results as to the reliability of a diagnosis, and there was debate about the ability to distinguish GAD from “normal” worry (Craske et al., 1989) or other anxiety disorders like social phobia or obsessive-compulsive disorder (Barlow, Blanchard, Vermilyea, & Di Nardo, 1986). Poor reliability was thought to particularly stem from the limited definition of the two life areas of worry. As a result, it was proposed that more detailed criteria would maximise the reliability of a GAD diagnosis (Rapee, 1991).

Prior to DSM-IV, anxiety disorders in youth were classified separately to those in adults under the category “Anxiety Disorders of Childhood and Adolescence”. In youth, DSM-II identified overanxious reaction (APA, 1968), and by DSM-III-R (APA, 1987), a diagnosis of overanxious disorder could be made. Children were diagnosed with overanxious disorder (OAD) if they frequently displayed four of a possible seven criteria within a 6-month period. These criteria included (1) a pattern of excessive worrying about past behaviour, (2) a pattern of excessive worry about future events, (3) excessive concern about competence across more than one area (e.g. social, academic, athletic), (4) somatic complaints where a physical basis could not be ascertained, (5) an excessive need for reassurance, (6) marked self-consciousness and (7) marked feelings of tension or difficulty relaxing. Similar to the concerns about adult diagnostic categorisation, symptoms of OAD overlapped with other anxiety disorders in youth (Bernstein, Layne, Wiener, & Dulcan, 2004) and were present in typically developing youth (Beidel, 1991; Bell-Dolan, Last, & Strauss, 1990). Reliability in making a diagnosis of OAD was also limited (Silverman, 1987). Thus, significant changes were made in DSM-IV to the diagnosis of GAD for adults and children.

In DSM-IV adults and children with excessive, uncontrollable worry that occurred more days than not for a duration greater than 6 months

with associated physical symptoms were together categorised as generalised anxiety disorder. The focus of worry for youth diagnosed with generalised anxiety disorder in DSM-IV was not specific to a situation or event and did not occur within the context of another Axis I disorder (e.g. worry about a panic attack, as in panic disorder, or worry about negative evaluation from others, as in social phobia). Instead, worries were broad ranging and typically focused on concerns for performance, concerns about past events, future events (e.g. natural disasters, pollution or crime), appearance and competence. Physical symptoms could include restlessness, fatigue, difficulty sleeping, irritability, difficulty concentrating and muscle tension. In adults, three or more symptoms were required to be present more days than not for 6 months, while children were only required to endorse a single physical symptom. To meet DSM-IV criteria for generalised anxiety disorder, the worry and/or physical symptoms must cause clinical significant interference and distress, or impairment in important areas of functioning should not be due to the physiological effects of a substance and medical condition or be confined to the features of another Axis I disorder (APA, 1994).

The most significant diagnostic change was that youth with excessive worry were no longer diagnosed with OAD, but instead a diagnosis of GAD could be made for children. Although limited research had been conducted on DSM-III-R OAD before it was incorporated into GAD, as defined by DSM-IV (Werry, 1991), diagnosing GAD in youth reflected the developmental trajectory of the disorder (Andrews et al., 2010). Research investigating the overlap between OAD and DSM-IV-defined GAD is mixed. Diagnosis of DSM-III-R OAD has been shown to overlap almost entirely (93–100% agreement) with DSM-IV GAD using parent and child diagnostic interview (Kendall & Warman, 1996; Tracey, Chorpita, Douban, & Barlow, 1997); however, epidemiological data has found smaller rates of agreement (23.5%; Costello, Egger & Angold, 2003), and longitudinal data suggests that children diagnosed with OAD and GAD may have different long-term trajectories (Bittner et al., 2007).

Other changes to the GAD diagnosis from DSM-III-R to DSM-IV were made to overcome the limitations in categorisation of the disorder. Instead of two or more areas of worry, DSM-IV required that worry about *a number* of life events/activities was “excessive”. Worry was considered excessive if the intensity, duration and frequency of the worry were out of proportion to the likelihood or impact of the feared event or activity (APA, 1994). DSM-IV GAD also required that the worry was difficult to control. Lack of control over worry rather than the content of worry was found to differentiate clinical from non-clinical worry (Borkovec, 1994; Craske et al., 1989) and GAD from other anxiety disorders (Brown, Moras, Zinbarg, & Barlow, 1993; Meyer, Miller, Metzger, & Borkovec, 1990). The number of physical symptoms that could be endorsed was reduced from a possible 18 symptoms to only 6. Many of the physical symptoms representing autonomic hyperactivity were dropped, while symptoms of motor tension and vigilance more frequently endorsed by patients with GAD were retained (Marten et al., 1993).

The diagnosis of generalised anxiety disorder in DSM-5 has remained unchanged from that of DSM-IV. Criterion A includes excessing anxiety and worry (apprehensive expectation) about a number of events or activities (such as work or school performance) that occur more days than not for at least 6 months. Criterion B specifies that an individual must find the worry difficult to control. Criterion C indicates that the worry is associated with three (or more) physical symptoms [only one symptom is required for children], with at least some symptoms occurring more days than not for the past 6 months. Physical symptoms include restlessness or feeling keyed up or on edge, being easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension or sleep disturbance (including difficulty falling asleep or staying asleep, or restless, unsatisfying sleep). Criterion D specifies that the anxiety, worry or physical symptoms cause clinically significant distress or impairment in social, occupational or other important areas of functioning. Criterion E ensures that the disturbance is not attributable to the physiological effects of a substance (e.g. a drug of abuse, a medication) or another medical

condition (e.g. hyperthyroidism). Finally, Criterion F indicates that the disturbance should not be better explained by another mental disorder (e.g. anxiety or worry about having a panic attack in panic disorder, negative evaluation in social anxiety disorder, contamination or other obsessions in obsessive-compulsive disorder, separation from attachment figures in separation anxiety disorder, reminders of traumatic events in posttraumatic stress disorder, gaining weight in anorexia nervosa, physical complaints in somatic symptom disorder, perceived appearance flaws in body dysmorphic disorder, having a serious illness in illness anxiety disorder or the content of delusional beliefs in schizophrenia or delusional disorder) (APA, 2013).

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## Aetiology

*Intergenerational Transmission* There is unequivocal evidence to support the intergenerational transmission of anxiety disorders (Gregory & Eley, 2011; Hettema, Neale, & Kendler, 2001; Merikangas, Avenevoli, Dierker, & Grillon, 1999). A child of a parent with an anxiety disorder is at greater risk of developing anxiety disorders than a child of a non-anxious parent (Johnson, Cohen, Kasen, & Brook, 2007). The mechanisms by which this transmission occurs are likely to be the result of both genetic heritability and specific familial environments that may increase the child’s chances of developing an anxiety disorder such as anxious modelling, overprotective parenting or transmission of threat information and avoidant coping (Eley et al., 2015; Rapee, Schniering, & Hudson, 2009). Twin studies of anxiety in children and adults suggest a moderate degree of heritability, with approximately 30–40% of variance in anxiety symptoms accounted for by genetic factors (Eley et al., 2003; Hettema et al., 2001). A significant amount of genetic overlap is evident across different types of anxiety symptoms in childhood and adolescence (e.g. separation anxiety, social anxiety and generalised anxiety) indicating shared genetic risk.

There is also evidence of shared genetic risk between anxiety and depressive disorders. For example, one study by Silberg and colleagues

(Silberg, Rutter, & Eaves, 2001) showed one distinct genetic factor influenced childhood OAD, adolescent depression and childhood phobic symptoms. Further evidence identifying a shared genetic link between GAD and depression has also been observed in studies of adult psychopathology. In a sample of 2163 female adult twins, Kendler and colleagues showed that GAD and major depression were largely influenced by the same genetic factor (Kendler, Neale, Kessler, Heath, et al., 1992). This finding fuelled debate that GAD should be classified as a mood disorder instead of being considered among the anxiety disorders. In a large longitudinal family study of 3021 14–24-year-olds, Beesdo and colleagues provided evidence against this proposition showing that the longitudinal associations between GAD and other anxiety disorders were stronger than those between GAD and depression. In this study, parental GAD was associated with an increased risk in the offspring for anxiety disorders and anxiety comorbid with depression but not depression alone (Beesdo, Pine, Lieb, & Wittchen, 2010).

In addition to providing information about genetic influence, the twin study design can also provide information about the degree to which environmental influences explain variance in anxiety symptoms. Studies utilising data from twins during childhood indicate that a child's shared environment accounts for a significant amount of variance in anxiety symptoms, that is, parts of the environment that make siblings similar. This finding is in contrast to data from many studies of adult anxiety that tend to show little impact of the shared environment on adult anxiety symptoms. Instead, twin studies of children suggest that both shared *and* non-shared environments (environmental influences that make siblings different, that is, unique individual experiences not shared with the child's sibling) have an impact on the variance in anxiety symptoms. Ehringer and colleagues demonstrated significant shared and non-shared environmental influences on GAD in adolescent twins and their siblings (Ehringer, Rhee, Young, Corley, & Hewitt, 2006). Although a number of other studies have also shown support for significant shared environmental influence in general anxiety or trait anxiety in children

(Eley & Stevenson, 1999; Eley et al., 2003), there has been two child twin studies of generalised or trait anxiety where little variance was explained by the shared environment (Eaves et al., 1997; Legrand, McGue, & Iacono, 1999).

There has been increasing interest, particular in depression research, in the identification of gene-environment interactions (GxE) to explain the development of psychopathology. A GxE occurs when the environment moderates the genetic influence on a particular trait. Although there are limited studies of GAD in adults and children, one study in adolescent female twins showed that the genetic influence on anxiety symptoms significantly increased for girls who had experienced two or more negative life events (Silberg, Rutter, Neale, & Eaves, 2001). Evidence of interactions between specific genetic markers and related constructs (such as behavioural inhibition and depression) has also shown a similar trend: the presence of a specific marker and negative life events increases the vulnerability towards disorder (Caspi, Hariri, Holmes, Uher, & Moffitt, 2010; Caspi et al., 2003; Fox et al., 2005).

In a recent study utilising a novel children-of-twins design, the heritability of adolescent anxiety was examined by comparing the children of MZ twins and the children of DZ twins (Eley et al., 2015). The results of this study demonstrated a clear environmental pathway, independent of genetics, that explain the association between anxiety in the child and parent. The findings of this study are critical to our understanding of the development of anxiety symptoms as it informs us that even after accounting for the influence of genes, an individual's environment significantly shapes the development of anxiety symptoms. Further, the genes that influenced anxiety in the parents were not associated with the genes that influenced anxiety in adolescence, suggesting that perhaps different genes may exert influence on anxiety symptoms in adolescence and adulthood.

Twin studies can inform us about the degree of heritability of anxiety symptoms but do not identify which specific genes might influence the development of anxiety. Molecular genetic studies, utilising a candidate gene approach, have identified a number of different genes (particularly

serotonin markers) each with a likely small effect that may be associated with an increased risk for anxiety and related disorders (e.g. Evans et al., 1997; Lesch et al., 1996; Schinka, Busch, & Robichaux-Keene, 2004). Recently, the first genome-wide association study of anxious children was published but unable, due to the sample size, to identify any markers at the genome-wide significance level (Trzaskowski et al., 2013). This suggests that there are no common genetic variants with a large effect that contribute to the heritability of anxiety symptoms in children. Instead it is likely that anxiety symptoms are influenced by many genes of small effect.

*Temperament and Generalised Anxiety Disorders* Perhaps the most widely studied temperament construct that has been associated with an increased risk for the development of anxiety disorders is behavioural inhibition (BI). BI is defined as chronic avoidance of or withdrawal from the unfamiliar (Kagan, Reznick, & Snidman, 1987). Children identified as behaviourally inhibited show distress and a reluctance to participate in novel interactions. They also have a tendency to seek proximity to attachment figures. Although BI shares some overlap with the construct of anxiety, it is generally considered to be a distinct construct that confers increased vulnerability to the development of anxiety disorders. There is strong evidence to suggest that BI is associated with an increased risk for later social anxiety disorder, and accumulating evidence to suggest that children identified as behaviourally inhibited is also at risk for GAD (Biederman, Rosenbaum, Chaloff, & Kagan, 1995; Hudson, Dodd, & Bovopoulos, 2011).

There are a number of other temperament and related constructs such as high negative affectivity, effortful control and poor emotion regulation that may also play a role in the development of GAD in children. Lonigan, Phillips and Hooe (2003) showed that negative affectivity was associated with anxiety and changes in anxiety over a 7-month period, in children and adolescents. This is consistent with studies of adults showing a strong relationship between negative affectivity and GAD (Brown, Chorpita, & Barlow, 1998). Muris and Ollendick (2005) proposed that it was

the presence of negative affectivity in combination with low effortful control (inhibitory control, attentional control, low intensity pleasure and perceptual sensitivity) that interacts to increase risk for anxiety and depression, such that the child with high negative affect is unable to effectively regulate these intense and frequent emotions. Support for the notion that children who develop anxiety disorders have difficulties regulating emotions comes from clinical studies of anxious children presenting for treatment. These studies suggest that children with anxiety disorders not only have difficulty regulating fear and worry, but they also demonstrate a more general deficit in the regulation of and understanding of a range of emotions (Hurrell, Hudson, & Schniering, 2015; Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004).

*Parent Factors* Two styles of parenting have been primarily associated with anxiety disorders in children: control (overprotection, overinvolvement) and rejection (negative, critical parenting). Although few studies have examined the link between parenting style and the presence of GAD specifically, there is a significant body of research identifying a small but significant relationship between parenting styles and the anxiety disorders (Hudson & Rapee, 2001; McLeod, Wood, & Weisz, 2007). The control variable has been more strongly linked to the development of anxiety disorders, while negative parenting has been consistently linked with depression. There is also some evidence to suggest that parenting styles of overprotection and overinvolvement may occur in response to the child's anxiety or anxious vulnerability. A child who is generally anxious and worried may elicit more help and reassurance from a parent. In turn, however, this additional protection and reassurance limits the child's chances to learn accurate threat and coping information about the situation and hence maintains and may further exacerbate the child's anxiety.

More recently there have been a number of studies examining the longitudinal associations between parenting and child anxiety. Hudson and Dodd (2012) showed that maternal overprotection at age 4 predicted later anxiety symptoms, even after accounting for baseline symptoms. In this



study, another strong predictor of later anxiety was maternal anxiety symptoms. Maternal anxiety, as discussed earlier, increases the child's risk of also developing anxiety. An anxious parent may be more likely to model anxious behaviour and more likely to transmit negative coping and threat information to the child, placing the child at greater risk of developing pathological anxiety (Field & Lawson, 2003; Murray, Cooper, Creswell, Schofield, & Sack, 2007; Murray, Creswell, & Cooper, 2009).

*Cognitive Bias* Information processing biases play an integral role in the maintenance of anxiety disorders during childhood and adulthood (Ehrenreich & Gross, 2002; Vasey & MacLeod, 2001). Specifically, anxiety disorders in children are characterised by attention and interpretation bias towards threat. For example, children with anxiety are more likely to *interpret* ambiguous situations in a threatening way and more likely to *attend* to threat in their environment. Although the evidence for an interpretation bias in anxious children is quite robust, support for an attention bias is less clear due to numerous non-replications and mixed results. One study specifically examining an attentional bias in adolescents showed individuals with GAD demonstrated a significant bias for negative emotional material compared to non-anxious controls (Taghavi, Dalgleish, Moradi, Neshat-Doost, & Yule, 2003). More recently, Waters, Bradley and Mogg (2014) have provided preliminary evidence that children with GAD show different biases to children with other anxiety disorders. Using a visual probe tasks with angry, neutral and happy faces, children with a diagnosis of GAD showed an attentional bias towards threatening faces, while children with other anxiety disorders show a bias away from threat. If this effect is replicated in future studies, it may help to explain the inconsistent findings observed in the field and help us to understand the unique pathways in the development of GAD in children.

A key criterion in the diagnosis of GAD is the experience of excessive and uncontrollable worry. Worry has been defined as “an anticipatory cognitive process involving repetitive, primarily verbal thoughts related to possible threatening outcomes

and their potential consequences” (Vasey & Daleiden, 1994; p.186). A number of adult cognitive models of pathological worry have been developed in an effort to understand the development of GAD and related emotional disorders (Borkovec, Alcaine, & Behar, 2004; Dugas, Gagnon, Ladouceur, & Freeston, 1998; Wells, 1995, 2005). Borkovec et al. (2004) proposed that individuals use worry as a form of cognitive avoidance of fear-provoking imagery. The avoidance in turn maintains the worry through the short-term reduction of the threatening images and associated physical sensations.

Wells (1995, 2009) developed a metacognitive model which focuses on the role of metacognitive beliefs (thoughts about thinking) in the development and maintenance of worry and GAD. In this model, Wells proposed that beliefs about the benefits (positive beliefs) and dangers (negative beliefs) about worry maintain pathological worry. With strong support in studies of adult worriers, this model has also been applied to GAD in children (Ellis & Hudson, 2011). For example, Ellis and Hudson (2011) showed that children with an anxiety disorder (both GAD and non-GAD youth) self-reported higher metacognitive beliefs than children without anxiety disorders. There were no significant differences in metacognitive beliefs about worry in anxious children with and without a diagnosis of GAD. This study provides evidence for the role of metacognitive beliefs in anxiety disorders more generally rather than providing support for a unique role in the maintenance of GAD.

There are a number of other cognitive factors that have been hypothesised to play a role in adult worry, such as intolerance to uncertainty (IU) and a negative problem orientation (Dugas et al., 1998). IU has been defined as a tendency to react negatively to situations of uncertainty. In support of its role in worry development, adults with GAD show greater intolerance to uncertainty than adults with anxiety disorders (Ladouceur et al., 1999). Negative problem orientation is defined as a dysfunctional cognitive set involving the tendency to appraise problems as unsolvable threats and lacking confidence in the ability to solve problems (Dugas, Freeston, & Ladouceur, 1997). Borkovec (1985) noticed that although

high worriers are experts in identifying potential problems, they are ineffective problem solvers as they seem to have difficulty implementing solutions. Adults with GAD have also been shown to have poorer problem orientation compared to moderate worriers (Ladouceur, Blais, Freeston, & Dugas, 1998). There is limited research examining these cognitive variables in samples of children with GAD, yet the emerging evidence suggests that like in adults, these cognitive variables are associated with excessive worry in young people (e.g. Parkinson & Creswell, 2011). For example, in a recent community study of 80 8–12-year-olds, Kertz and Woodruff-Borden (2013) demonstrated that IU was strongly associated with clinical levels of worry (Kertz & Woodruff-Borden, 2013). Similarly others have shown that IU was associated with worry in children and discriminated clinically anxious from non-clinical children and adolescents (Comer et al., 2009; Fialko, Bolton, & Perrin, 2012). In one study of clinically anxious children, Read, Comer and Kendall (2013) showed that IU was uniquely associated with a composite diagnosis of GAD; child-reported IU differentiated children with a diagnosis of GAD from children with another principal anxiety disorder (Read et al., 2013). There seems to be an emerging evidence that these cognitive variables are associated with excessive worry in children. However, given the primarily correlational nature of the research, the extent to which these factors are involved in the development and maintenance of GAD in children remains unclear.

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## Symptom Presentation and Developmental Considerations

Worry is common in youth. Children as young as 7 years of age report worrisome thoughts (Vasey, Cnric, & Carter, 1994), and approximately 67% of children aged between 4 and 12 years report worrying at times (Muris, Merckelbach, Gadet, & Moulart, 2000). The types of worries reported by children vary during developmental phases. Research indicates that younger children (4–6 years) worry about separation from parents (Muris et al., 2000) or their physical well-being

(Vasey et al., 1994), and older children (age 10–12 years) worry about test performance.

While worry and fear can be normal, the excessive, uncontrollable worry that represents the core diagnostic criteria of GAD means that youth meeting criteria typically worry about many areas of life. Specifically, children who meet criteria for GAD typically worry about social situations (e.g. their appearance, friendships), performance (e.g. academic, sport, musical), natural events (e.g. pollution, crime, war, natural disasters), perfectionism (e.g. not making mistakes or getting in trouble), health (their own, others, death, illness) or family (e.g. divorce, financial strain) (Masi, Mucci, Faville, Romano, & Poli, 1999; Suveg, Jacob, & Thomassin, 2009). As with the worries reported by non-clinical children, developmental differences in youth diagnosed with GAD occur. Pina, Silverman, Alfano and Saavedra (Pina, Silverman, Alfano, & Saavedra, 2002) found that a diagnosis of GAD in children was most often associated with child report of worries about their own health, family, and school and parent report that the child worries about the health of others, interpersonal relationships and school. In adolescents, self-reported worries about health (self and others) and parent report of worries about health (self and others) and family were associated with a diagnosis of GAD (Pina et al., 2002). Both children and adolescents with GAD appear to worry about health and family, while school concerns may be more common in children rather than adolescents.

In GAD, worry is also typically associated with many physical symptoms, especially in children and adolescents (Ginsburg, Riddle, & Davies, 2006; Masi et al., 2004). In fact, Ginsburg et al. (2006) found that children and adolescents diagnosed with GAD reported significantly more physical symptoms (6.9 physical symptoms) than youth with social or separation anxiety disorders (4.8 physical symptoms). Feeling restless, experiencing stomach aches and chills or hot flushes were more commonly reported by anxious youth diagnosed with GAD compared to other anxiety disorders. Interestingly, of the three symptoms endorsed more frequently among youth with GAD, restlessness was the only symptom that appears in the diagnostic criteria for the disorder.

Again, the physical symptoms endorsed by youth with GAD may also differ in line with developmental stages. Pina et al. (2002) found that irritability, trouble sleeping and trouble concentrating were the physical symptoms most commonly reported by children who worried at diagnostic levels. In adolescents, inability to sit still or relax, difficulty concentrating and trouble sleeping were associated with a GAD diagnosis.

Overall, children and adolescents with GAD are highly symptomatic. Masi et al. (2004) found that 50% of all children and adolescents (7–18 years) diagnosed with GAD reported the presence of all 11 assessed symptoms (feelings of tension, apprehension, negative self-image, the need for reassurance, irritability, physical complaints, brooding, sleep disturbances, fatigue, psychomotor agitation and difficulty concentrating). Of these, feelings of tension, apprehension, negative self-image, the need for reassurance, irritability and physical complaints were endorsed by 75% of the sample (Masi et al., 2004). Symptoms were not significantly different between children (7–12 years) and adolescents (13–18 years) or males and females (Masi et al., 2004).

Despite high levels of symptomatology, children and adolescents with GAD are, ironically, often overlooked because their concerns mean that they are motivated to behave and perform appropriately and meet high self-standards. They are typically overly mature (for their age) and highly perfectionistic (Suveg et al., 2009). It is not uncommon for children diagnosed with GAD to be sensitive to criticism because they seek to please others and/or to avoid unfamiliar situations because of the uncertainty surrounding these situations. Furthermore, high levels of self-doubt mean that youth with GAD often seek excessive reassurance (Masi et al., 1999). These symptoms of GAD are often misinterpreted as adaptive qualities, at least until the interference associated with the symptoms becomes pronounced (Suveg et al., 2009). As a result, individuals with GAD, especially children and adolescents, are most likely to present to health professionals with physical or sleep problems (Grant et al., 2005; Wittchen & Hoyer, 2001). This help-seeking trend has an impact on the accurate recognition of

the disorder and speed and types of treatment that are recommended.

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## Prevalence, Age of Onset and Course

Epidemiological research on GAD in youth is limited, being hindered by the removal of OAD and introduction of a diagnosis of GAD for youth. Available data suggests that GAD is less prevalent in youth than it is in adults with lifetime prevalence of 0.8% and 12-month prevalence of 0.5–2% (Canino et al., 2004; Ford, Goodman, & Meltzer, 2003; Wittchen, Nelson, & Lachner, 1998). Prevalence of OAD was typically higher than rates of GAD in youth; 12-month prevalence was found to be approximately 2.9% in 11-year-olds in the community (Anderson, Williams, McGee, & Silva, 1987) and 4.6% in primary care settings (Costello, 1989). The 1-year prevalence of DSM-IV GAD in adults generally ranges from 0.8% to 3.6%, with lifetime prevalence rates between 1.4 and 9.5% (typically between 4.1% and 6.6%) (Carter, Wittchen, Pfister, & Kessler, 2001; Grant et al., 2005; Kessler et al., 2005). While anxiety disorders generally appear to be more prevalent in young females than males (Costello, Mustillo, Erkanli, Keeler & Angold, 2003), equal lifetime (Wittchen et al., 1998) and 12-month prevalence rates for GAD (Ford et al., 2003; Wittchen et al., 1998) have been found in boys and girls.

While the tendency to worry excessively can occur early in life, GAD develops later than other anxiety disorders (e.g. specific phobias or separation anxiety disorder) (Kessler et al., 2005). GAD has a varied age of onset beginning at about age eight (Ford et al., 2003; Kessler et al., 2005), but more commonly reaching diagnostic levels during late adolescents or adulthood (Ford et al., 2003; Kessler et al., 2005). Kessler and colleagues found that the average age of onset for GAD was 31 years. Rates of GAD typically increase until about 45–59 years of age, after which point rates reduce significantly (Kessler et al., 2005).

Some research has found the onset of GAD occurs slightly later for males than females (Beesdo,



Knappe, & Pine, 2009). Research suggests that GAD onset during childhood or adolescents is typically associated with increased symptom severity, greater comorbidity and poorer treatment response compared to GAD that develops later in life. Later-onset GAD has been associated with environmental stressors immediately preceding diagnosis (Suveg et al., 2009).

Developmental considerations play a big part in understanding the age of onset of GAD. Worry is considered to be a cognitive thought process that involves anticipation of future outcomes and consequences that are perceived as potentially threatening (Borkovec, Robinson, Pruzinsky, & De Pree, 1983; Vasey & Daleiden, 1994). Vasey (1993) suggested that according to Piaget's theory of cognitive development, children younger than 7 or 8 years may be able to predict the future and therefore worry. As children's cognitive development becomes more advanced and abstract during middle childhood and adolescences, worries are likely to become more prevalent. Research supports the proposal that young children (even as young as pre-school age) have the cognitive capacity for worry but that the capacity to worry increases in line with cognitive development (Ellis & Hudson, 2010). For example, across two studies, Muris and colleagues found that children with average and below-average intellectual abilities (aged between 3 and 14) all reported worries, but worries were more common in children who passed tasks measuring the cognitive developmental milestones associated with the capacity to worry (i.e. ability to predict the future, anticipate multiple potential outcomes) (Muris, Merckelbach, & Luijten, 2002; Muris, Merckelbach, Meesters, & van den Brand, 2002).

The development of metacognition is also likely to impact the onset of GAD. Research on the development of theory of mind suggests that children as young as 3 years of age have an awareness of their own mental state (see Flavell, Green, Flavell, Harris and Astington (1995) for a review). Studies show that 5-year-olds are aware of their own thoughts but that this awareness increases in 8-year-olds and adults (Flavell, Green, & Flavell, 2000) awareness of thinking as a mental state). Finally, studies have assessed the

ability for children, adolescents and adults to understand that thoughts can be difficult to control. Results suggest that 9- and 13-year-old children, adolescents and adults understand that thoughts can be difficult to control, while 5-year-olds do not have this awareness (Flavell, Green, & Flavell, 1998). Overall, these research findings investigating developmental considerations parallel data that the age of onset of GAD is rarely younger than 8 years of age and that the prevalence of GAD increases with age.

Research examining the course of GAD suggests that in children and adolescents, GAD appears to have low to moderate stability (Angst & Vollrath, 1991; Gregory et al., 2007). However, in cases where a diagnosis of GAD is not made at follow-up periods, children and adolescents typically meet criteria for other anxiety disorders, demonstrating a continuity of anxiety psychopathology in general (Beesdo et al., 2009). Like other anxiety disorders, a diagnosis of GAD in youth is also associated with increased risk of later developing depression and other mental health concerns (like substance use or suicide; Gould et al., 1998; Woodward & Fergusson, 2001). The comorbidity associated with GAD is also an important consideration when understanding the course of the disorder in youth.

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## Comorbidity

GAD is associated with high rates of comorbidity. In fact, comorbidity is more common than not for youth diagnosed with GAD. GAD in youth is commonly comorbid with depression, as was a diagnosis of OAD (Bernstein, 1991; Kashani & Orvaschel, 1990; Masi et al., 1999; Strauss, Lease, Last, & Francis, 1988). Approximately 56% of children and adolescents who meet criteria for GAD will also meet criteria for a depressive disorder (Masi et al., 2004). Similarly, GAD is commonly comorbidity with other anxiety disorders. Approximately 75% of children and adolescents who met criteria for GAD also met criteria for another anxiety disorder (35.7% reported only one other anxiety disorder, and 39.4% reported two or more other anxiety disorders; Masi et al.,

2004). Approximately 21% of youth with GAD also met criteria for an externalising disorder (attention deficit hyperactivity disorder, oppositional defiant disorder or conduct disorder). These rates of comorbidity are mirrored in research on GAD into adulthood, where comorbidity is high, especially with depression (Carter et al., 2001; Grant et al., 2005).

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## Burden and Impairment

A diagnosis of GAD is associated with marked impairment. Wittchen et al. (1998) showed that GAD in youth affects work, school and household management, leisure activities and social contacts, with the greatest impairment to social contacts. In fact, GAD was associated with more impact on social contacts among adolescents and young adult compared with any other mental health problem. Across domains of impairment, GAD (along with recurrent depressive disorder and obsessive-compulsive disorder) led to the most interference in the month preceding assessment, with 84%, 61% and 46% of youth diagnosed with GAD reporting that social contacts, leisure and work/school/home management, respectively, were very much impacted (Wittchen et al., 1998).

While GAD in youth is associated with high rates of help-seeking, GAD was the only anxiety disorder where youth only sought help from physicians rather than mental health professionals (Wittchen et al., 1998; Wittchen, 2002). These findings parallel others, where a diagnosis of GAD in youth is associated with high rates of health-care utilisation (Wittchen et al., 1998). Certainly GAD is one of the most common mental disorders seen in primary care settings, yet poor recognition of GAD in general practice means that appropriate treatments are either not provided or access to effective treatment is delayed (Lieb, Becker, & Altamura, 2005; Wittchen, 2002). Despite evidence of the impact of GAD in youth, few studies thoroughly investigate the burden associated with the disorder in children and adolescents (Lieb et al., 2005). Adult research shows that the impairment and disability caused by GAD lead to large direct and indirect

costs. Studies indicate that the direct economic cost associated with GAD is high (between approximately \$ US 733 and \$ US 1208 per patient per 3 months). Direct economic costs increase by about 65% when GAD is comorbid with other mental disorders. In addition, indirect costs associated with things like work absence are estimated at an additional \$ US 243 and \$ US 416 for adults diagnosed with GAD without and with comorbidity, respectively (Souetre et al., 1994).

The disability, impairment and economic costs associated with GAD, coupled with the secondary impact of poor provision of treatment, demonstrate the significant burden on both individuals and the broader community. While many youth present to primary care settings rather than mental health professionals, a range of psychological and pharmacological treatments are available to treat GAD.

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## Treatment

Although there are currently no specific guidelines for the treatment of GAD in children, practice parameters and clinical guidelines have been developed more broadly for childhood anxiety disorders (American Academy of Psychiatry; Hudson, Creswell, & McLellan, 2014). Given the strong empirical support for the use of cognitive behavioural therapy (CBT), it is typically recommended as the first line of treatment for children with anxiety disorders. There is also preliminary evidence of the short-term efficacy of selective serotoninreuptakeinhibitors(SSRIs)andserotonin-norepinephrine reuptake inhibitors (SNRIs). First, we will provide a summary of the structure and content of CBT for GAD and then provide an overview of the evidence for psychological and pharmacological treatments for GAD.

*Cognitive Behavioural Therapy* A number of cognitive behavioural programmes have been developed for children with GAD including Brave (Spence, Holmes, Donovan, & Kenardy, 2006), Cool Kids (Rapee et al., 2006), Coping Cat (Kendall & Hedtke, 2006), Take Action (Waters et al., 2014) and Friends (Shortt, Barrett, & Fox, 2001). These programmes were developed for

children with a range of anxiety disorders including GAD, separation anxiety disorder (SAD) and social anxiety disorder (SoAD) and are between 10 and 16 sessions in length. This transdiagnostic rather than disorder-specific approach is the result of the high rates of comorbidity among anxiety disorders during childhood and adolescence. Although GAD can be clearly differentiated in childhood, it is generally understood that there is an underlying construct of anxiety that can be treated within a transdiagnostic protocol (Barlow, 2004). Treatment components differ slightly across these transdiagnostic CBT protocols but typically share common skills such as relaxation, cognitive restructuring, gradual exposure, problem solving and parent training. The principle underlying these strategies is that they directly modify the key processes thought to be involved in maintaining anxiety in children. The programmes have been developed to run individually or in a group of similar aged children. Parents are involved in the treatment of children with GAD, yet the degree and manner of parental involvement varies considerably across different protocols, nevertheless resulting in consistent outcomes. Below we describe common components across transdiagnostic CBT programmes, with particular reference to the Cool Kids programme (Rapee et al., 2006).

*Psychoeducation* In the first session, the therapist provides the child and his/her parents with education about the nature of anxiety as a normal emotion accompanied by (i) bodily feelings (physiological symptoms), (ii) thoughts (cognitions) and (iii) actions (behaviours). The therapist explains the treatment rationale, that is, the programme is designed to teach strategies to manage these three components of anxiety, specifically, emotional awareness and relaxation to identify and manage physical symptoms, cognitive restructuring to think realistically and problem solving and gradual exposure to reduce avoidance.

*Cognitive Restructuring* Cognitive restructuring involves identifying, evaluating and challenging negative, unhelpful and worried thoughts. This skill is referred to in the Cool Kids programme as “detective thinking” for children or “realistic thinking”

for adolescents. The objective of detective thinking is to look for the “facts” – like a detective or scientist – to elicit realistic thinking. The therapist uses examples to assist the child to first understand the link between thoughts and feelings: the way you think affects how you feel. The child is encouraged to identify their worried thoughts like: “Something bad is going to happen”, “If I forget my school books, I will get into trouble” or “I must get it perfect”. The therapist then assists the child to challenge these worried thoughts using detective thinking.

The “detective thinking” process involves the following steps: (1) identifying the event/situation causing anxiety; (2) identifying the thought behind the anxiety; (3) evaluating how realistic the thought is, for example, by looking for evidence; (4) considering how realistic the expected consequence is; and (5) identifying a realistic thought to replace the unhelpful anxious thought. The therapist encourages the child to develop a series of questions the child (and the parent) can ask about the situation to help collect evidence. Evidence-finding questions include: “What happened last time when you worried about this?” “What are the facts?” “Has this ever happened before?” “How likely is it ‘really’ to happen?” Worksheets are used to keep track of the process and can become a useful record in the gradual exposure phase of treatment.

*Gradual Exposure* Gradual exposure is a key component of CBT for GAD in children and involves the child gradually facing anxiety-provoking situations. First, the child and parents are taught about the role of avoidance in maintaining anxiety. That is, avoiding situations that elicit anxiety limits the child’s opportunities for learning accurate, “realistic” information about the situation. By facing situations that elicit anxiety, the child learns that the feared expectations are less likely than predicted. Exposure also teaches the child important coping information. A gradual approach is used to increase the child’s compliance and to build mastery.

The child and parents are encouraged to identify a list of the child’s main fears and worries in order of severity/interference. Then, starting with the child’s smallest fear or worry, a stepladder is

built with a hierarchy of small steps to allow the child to gradually face the situation. For example, a common worry for a child with GAD is that he will forget his schoolbooks. The child fears that if this were to happen, he would get into trouble from his teacher. The child may employ a number of safety behaviours that prevent him from learning valuable information about the situation. For example, he may check his bag at least ten times before leaving the house or on the way to school ask repetitive questions of his mum to make sure he has remembered and to ensure he isn't going to get into trouble. To address this worry, the family identifies a goal to work towards: to be able to go to school without checking or asking questions about schoolbooks. In collaboration with the child and the parents, the therapist designs steps to target the child's feared belief: "I will forget my school books" and "I will get into trouble". The first step may involve only allowing the child to check his bag five times before school and only asking mum two questions on the way to school. The child is asked to repeat this step a few times until it becomes easier and he is ready to move on to a more difficult step. A more difficult step might be only checking twice and asking one question. Before implementing each step in a stepladder, the therapist would encourage the child to complete a "detective thinking" worksheet. This is also useful for the parent to refer to when the child is reassurance seeking.

The therapist and the family work to calibrate the steps so the next step is never too hard or too easy. This typically means several adjustments along the way. It is important to find out the elements that make the situation more or less difficult for the child (e.g. is there a certain day that is hardest or a particular teacher that is perceived as more friendly). Using these elements to produce, or amend, a hierarchy ensures that the process begins with easier steps and gets progressively more difficult in small increments. Eventually, one of the harder steps would involve the child deliberately forgetting his schoolbooks. Doing this kind of step allows the child to learn that what he thinks is going to happen is probably unlikely and even if it does happen he can handle

it. A good hierarchy will include tasks that are practical so they can be repeated regularly, relate closely to the goal and allow the child to break the cycle of avoidance and safety behaviours. Rewards are given at the successful completion of each step to encourage compliance. As the parents and children develop experience in designing stepladders, the therapist involvement in design can gradually be reduced.

*Problem Solving* The aim of problem solving is to assist the child and parents to arrive at alternate, less avoidant and more adaptive solutions to a given situation. Typically children with GAD tend to produce limited solutions to a problem, and they tend to rely on behaviours like seeking help and reassurance rather than thinking about alternative more adaptive solutions. Children and parents are taught to identify a specific problem/situation (e.g. I am worried my friend hasn't responded to my invitation) and brainstorm possible responses to the problem (e.g. check in with her at school, ask her parents). In the brainstorming phase, the child is encouraged to list all possible responses without evaluating them as it can reduce creativity. Once the list of possible responses is complete, the parents and therapist encourage the child to consider the advantages and disadvantages associated with each response, and then choose the most ideal response. An important final step is to consider how effectively the chosen response solved the problem.

*Relaxation Training* Relaxation training can be used as a strategy to assist the child to manage high levels of physiological arousal in challenging situations. First, the child is encouraged to identify the physical symptoms they experience when they worry. These symptoms can then be used as a cue to implement relaxation techniques. Progressive muscular relaxation (PMR) is a common form of relaxation training in which individuals are instructed to alternate between tensing and relaxing different muscle groups. Several scripts for PMR are available and can help guide the child and parents through these techniques both in session and at home. PMR is also sometimes paired with a second relaxation technique

called controlled or deep breathing (for more information on these skills, see Rapee, Wignall, Hudson, & Schniering, 2000).

*Worry Surfing* This is a technique used to increase the child's tolerance to feelings of anxiety and worry and to reduce rumination. The child is taught that worried feelings have an end just like a wave, and sometimes rather than trying to fight the wave, you can just ride it out or surf it. There are four steps in surfing worry and the physical feelings of anxiety:

- Recognise the anxious feeling.
- Put the feeling in perspective (it's just a feeling) and identify the task at hand.
- Surf the feeling by concentrating on the detail of the task. The aim is to refocus attention on other aspects of the current situation.
- Reward successful surfing.

*Parent Management* Importantly, there are a number of parenting strategies that can be taught to enable parents to more effectively manage situations in which the child is anxious or worried. There are a number of common traps that parents may fall into when responding to an anxious child such as providing too much reassurance, jumping in too soon (e.g. being overprotective) or allowing and accommodating avoidant behaviour. To address these issues, parents are encouraged to develop new strategies such as:

- (i) Shifting the conversation from always answering the child's reassurance seeking questions to asking them, with the help of detective thinking worksheets.
- (ii) Using praise and feedback to shape courageous confident behaviour. Rather than focusing on anxious and worried behaviours, parents are taught to pay attention to the child's courage and independence by using affection and praise.
- (iii) Encouraging their child's independence in daily activities.
- (iv) Allowing natural consequences. For example, if a child accidentally forgets his schoolbooks,

instead of bringing the books to the school for the child, the parent is encouraged to allow the natural consequences of the child's behaviour.

The therapist may set specific tasks for the parents to work on at home that focus on a specific behaviour or situation such as "sitting back when the child starts to worry about making a mistake and not rushing in to reassure". The goal is to gradually increase the parent's competence and confidence in responding in more helpful ways to the child's anxiety.

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## Treatment Outcome

Randomised controlled trials have consistently shown that CBT is efficacious in reducing anxiety disorders and symptoms in children and adolescents. A systematic review conducted by James, Soler and Weatherall (2005) reported that overall 59% of anxiety-disordered children experience remission following skills-based CBT packages. There is further evidence that the effects of CBT persist over time with long-term (uncontrolled) follow-up studies showing maintenance of effects several years following the completion of treatment (Kendall et al., 2015; Saavedra, Silverman, Morgan-Lopez, & Kurtines, 2010). Although further controlled follow-up studies are necessary to comprehensively evaluate this, the evidence suggests that CBT produces clinically meaningful reductions in anxiety that can be maintained over time.

Until recently, the majority of treatment trials in the field have provided information about the efficacy of CBT for childhood anxiety disorders in general, rather than specifically for GAD. With the availability of increasingly large samples sizes made possible through large multisite studies, the identification of differential recovery rates of children with GAD is possible. In fact, there has been preliminary evidence to support the notion that children with GAD have superior outcomes following CBT compared to children with other anxiety disorders like SoAD (e.g. Manassis et al., 2002). For example, in a study of 1519 children with anxiety disorders,



Hudson & Rapee et al. (2015b) showed that children with GAD showed superior improvement in symptom severity and rates of remission compared to children with SoAD and specific phobia. This would suggest that a transdiagnostic protocol has sufficient potency to bring about significant symptom reduction for children with GAD. In another overlapping sample of 842 children with anxiety disorders (including 425 children with a primary diagnosis of GAD), Hudson & Rapee et al. (2015b) showed that children with a primary diagnosis of GAD had the highest recovery rates at follow-up (57.6%), with significantly greater remission rates than children with SoAD (30.7%). In contrast, Ginsburg and colleagues in a large multisite study of CBT and SSRIs showed that children with GAD did not differ from children with other anxiety disorders in their rates of remission following treatment (Ginsburg et al., 2011). However, this study is unable to provide recovery rates specifically for CBT, given their study also included SSRI treatment, placebo and a combination of CBT and SSRIs.

Taken together, there is strong evidence that a transdiagnostic approach is working well for children with a primary diagnosis of GAD. Nevertheless, there are still a significant proportion of children who continue to meet criteria for an anxiety diagnosis at the end of treatment. Further developments to enhance treatments for children with an anxiety diagnosis, including GAD, are required.

There have only been a handful of studies that have adopted a disorder-specific approach to the treatment of GAD, and these are predominantly pilot studies and case series (Eisen & Silverman, 1993, 1998; Leger, Ladouceur, Dugas, & Freeston, 2003). Some of these disorder-specific programmes are based on cognitive models of the maintenance of GAD and specifically target factors such as intolerance to uncertainty, negative problem orientation, negative beliefs about worry and cognitive avoidance (Leger et al., 2003; Payne, Bolton, & Perrin, 2011). In line with this, Holmes, Donovan, Farrell and March (2014) published a small randomised controlled trial for the treatment of GAD using a disorder-specific approach. The treatment differed from

broad-based approaches in that it focused on the cognitive factors hypothesised to maintain GAD (e.g. negative beliefs about worry, cognitive avoidance). Children receiving the disorder-specific protocol ( $n = 20$ ) showed significant improvements in anxiety compared to children in the waitlist condition. Approximately 53 percent of children in the treatment group no longer met criteria for GAD compared to no remission in the waitlist condition. Interestingly at the 3-month (uncontrolled) follow-up, an impressive 100% of children no longer met criteria for GAD, yet 50% still met criteria for another anxiety disorder. These figures provide preliminary evidence that while a disorder-specific treatment may lead to promising outcomes for GAD, half of the treated children remain anxious. The high rates of comorbidity among the anxiety disorders need to be a consideration in developing efficacious treatments for anxious children. Future research is needed to compare the efficacy of disorder-specific and transdiagnostic treatments for the treatment of GAD and comorbid anxiety disorders.

The evaluation of the efficacy of pharmacological treatment for GAD has similarly been predominantly transdiagnostic in its approach (i.e. focusing on the treatment response to children with a range of anxiety diagnoses). A large-scale review of high-quality studies testing the efficacy of pharmacological treatments of child anxiety disorders found that 58.1% of participants (compared to 31.5% placebo) responded to anti-depressant medication, particularly selective serotonin reuptake inhibitors (SSRIs; Ipser, Stein, Hawkridge, & Hoppe, 2009). Similarly, Strawn, Welge, Wehry, Keeshin and Rynn (2015) reported an overall moderate effect size (Cohen's  $d = .62$ ) from nine studies using SSRIs in children with GAD, SoAD or SAD with no increases in abdominal symptoms, suicidality or discontinuation from adverse events. In many of these studies, although the specific recovery rates for children with GAD are not provided, the samples are often comprised of a large proportion of children with GAD. For example, in one study using fluvoxamine, over half of the 128 children ( $n = 73$ ) met criteria for GAD. In this study, 76% of children

receiving the active drug showed significant improvements in symptom severity compared to 29% receiving placebo (Birmaher et al., 2003). Taken together, these results provide evidence of the short-term efficacy and safety of SSRIs in the treatment of anxiety disorders in children.

There have been a small number of studies specifically examining the effects of SSRIs in children with a diagnosis of GAD. In a small sample of 22 children with GAD, children treated with sertraline (25 mg for week 1 and then 50 mg for weeks 2–9) showed significantly greater reduction in symptoms compared to placebo, with 90% of children on sertraline showing endpoint improvements (compared to 10% in the placebo; Rynn, Siqueland, & Rickels, 2001). In one of the largest pharmacological studies of GAD in children and adolescents ( $n = 323$  aged 6–17 years), Rynn and colleagues (Rynn, Riddle, Yeung, & Kunz, 2007) evaluated a serotonin-norepinephrine reuptake inhibitor (SNRI; extended release venlafaxine) showing significant improvements compared to placebo. The authors concluded that extended release venlafaxine is an efficacious and well-tolerated medication in the short-term treatment of GAD in children and adolescents.

Finally, studies have begun to evaluate the effects of combining CBT and medication to treat childhood anxiety disorders. In a recent large multisite study of clinically anxious children, Walkup and colleagues were the first to evaluate a combined psychological and SSRI (sertraline) treatment for anxious children (Walkup et al., 2008). The combination of CBT and medication produced superior outcomes to CBT alone, medication alone or placebo. In fact, combining treatments produced more than 20–25% greater improvement than either treatment alone. At 3- and 6-month follow-up, combined treatment continued to show enhanced outcomes (Piacentini et al., 2014). These findings provide preliminary evidence that adding medication may significantly enhance the benefits of CBT. Future research is needed to evaluate the efficacy of combination treatment specifically for children with GAD and also to evaluate whether these enhanced effects are observed over the long term.

## Conclusion

Like DSM-IV, the newest *Diagnostic and Statistical Manual (DSM-5)* defines GAD in children and adolescents as excessive, persistent and difficult-to-control worry about many areas of life. Worry is associated with physical symptoms and causes significant distress or impairment in functioning. While limited research has focused on the developmental of GAD in childhood specifically, a complex interaction between genetic, environmental and cognitive factors is considered to be important. Although GAD occurs in school-aged children, prevalence increases with age in line with developing cognitive and metacognitive capability. Children meeting criteria for GAD experience a broad range of worries that mirror developmentally relevant concerns throughout childhood and adolescents. The disorder is associated with many physical symptoms, high rates of comorbidity and severe impairment, particularly within the social domain. Psychological treatments for GAD and other anxiety disorders in children are typically based on cognitive behavioural principles and are generally considered effective. Pharmacological treatments for GAD and other anxiety disorders include SSRIs or SNRIs and are about equally effective to CBT packages. While the DSM-5 diagnosis of GAD is unchanged from DSM-IV, this provides an opportunity for much needed research to better understand the aetiology, epidemiology, impact and treatment of GAD in children and adolescents.

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