

Peter Muris

Introduction

Fear and anxiety are normal phenomena that occur throughout childhood. Most children and adolescents show these emotional reactions every now and then, but normally symptoms are mild and of short duration. Many of these fears and anxieties are closely related to the specific challenges that young people face during their development towards adulthood. For example, toddlers may display clear signs of separation anxiety when they enter school for the first time, latency-aged children may worry about performance at school when they take their first tests, and adolescents invest in personal relations and thus may show fear of being rejected by their peers. In some youths, fear and anxiety symptoms are so frequent, severe, and persistent that they interfere with daily functioning. In these cases, the diagnosis of an anxiety disorder may be appropriate. This chapter will focus on anxiety disorders in children and adolescents, inasmuch as most research on the intersection of anxiety and autism has been conducted in young persons. Normal and abnormal affective experiences of fear and anxiety, and their expressions, in children and adolescents will be discussed. Special attention will be devoted to the classification of anxiety disorders as well as to their

epidemiology, course, and comorbidity in youths. Next, a variety of factors will be described that have been shown to be involved in the etiology of this type of psychopathology. Finally, evidence-based treatment options for anxiety disorders will be briefly discussed.

Phenomenology

Normal Fear and Anxiety

Fear and anxiety are interchangeably used terms that refer to an innate basic emotion that, at its core, is adaptive in nature. This emotion typically involves the activation of a threat circuitry in the brain which produces a characteristic set of cognitive (anxious thoughts) and physical (increased heart rate, sweating, etc.) symptoms that lead to a defensive behavioral response (i.e., fight, flight, or freeze) that serves to protect the organism against danger and to increase the chances of survival. Sometimes, fear and anxiety are out of proportion to the actual threat posed by the stimulus or situation. This regularly occurs in young people who are still unfamiliar with a wide range of specific objects and events, and have not yet acquired adequate coping skills. Indeed, various studies have documented that children and adolescents without clinical diagnoses report a fairly large number of fears and anxieties pertaining to the themes of “danger and death” (e.g., being hit by a car), “the unknown” (e.g., the dark), “animals”

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(e.g., snakes), and “failure and criticism” (e.g., being teased; see Ollendick et al. 1989).

Research has also shown that normal fear and anxiety follow a predictable course during childhood (Marks 1987). This probably has to do with the developmental challenges posed to children and adolescents as well as the progression of cognitive abilities, which strongly guides youths’ conceptualization of threat (Vasey 1993). Thus, at a very young age, fear and anxiety are primarily directed at concrete threats (e.g., loud noises, loss of physical support). As cognitive abilities develop, fear and anxiety become more sophisticated. For example, around 9 months, children learn to differentiate between familiar and unfamiliar faces and, consequently, separation anxiety and fear of strangers become manifest. Following this, fears of imaginary creatures occur and these are thought to be closely linked to the magical thinking of toddlers (e.g., Bauer 1976). Fears of animals also develop during this phase. These fears are believed to be functionally related to the increased mobility of the child and its exploration of the external world. From age 7 onwards, children are increasingly able to infer physical cause–effect relationships and to anticipate potential negative consequences. These cognitive changes broaden the range of fear-provoking stimuli and enhance the more cognitive features of anxiety (e.g., worry). Further cognitive maturation, at the beginning of adolescence, enables youths to develop fear or anxiety of more abstract, psychological threats and to misinterpret physical symptoms in a threatening way (Muris 2007).

Taken together, fear and anxiety in children and adolescents are quite prevalent and often developmentally sequenced. Although occasionally producing considerable distress, they usually dissipate within a short period of time. However, in some youths, fear and anxiety persist and become so intense that they start to interfere with daily life and functioning. These emotional symptoms then hinder the young person in his/her interactions with other people and undermine performance at school and in other domains. In these cases, fear and anxiety can no longer be consid-

ered as “normal,” and the diagnosis of an anxiety disorder may be warranted.

Anxiety Disorders

The latest edition of the *Diagnostic and Statistical Manual of Mental Disorders* (i.e., DSM-5; American Psychiatric Association (APA) 2013) describes various anxiety disorders which can be diagnosed in children and adolescents as well as adults. DSM-5 adopts a developmental life span perspective, which means that (a) the anxiety disorders are chronologically ordered according to their age of onset, beginning with separation anxiety disorder and concluding with panic disorder, and (b) the anxiety disorders of children and adolescents are comparable to those of adults, although the specific criteria may be slightly different (i.e., different requirements for duration, symptom expression, or symptoms count). Table 3.1 provides an overview of the main characteristics of the anxiety disorders that are listed in DSM-5, with special attention for the adjustments in the criteria made for children and adolescents. The table also indicates differences from the previous edition of the DSM (i.e., DSM-IV-TR; APA 2000).

For reasons of completeness, it should be mentioned that DSM-5 also includes substance/medication-induced anxiety disorder, anxiety disorder due to a medical condition, other specified anxiety disorders, and unspecified anxiety disorder in the anxiety disorders section. These classifications mainly “borrow” symptoms of the other anxiety disorders, have a fairly low prevalence in youths, and therefore will not be discussed further in this chapter.

It is important to note that DSM-5 no longer considers obsessive-compulsive disorder (OCD) and posttraumatic or acute stress disorder as anxiety disorders. OCD is characterized by the presence of obsessions (i.e., recurrent and persistent thoughts, urges, or images that are experienced as intrusive and unwanted) and compulsions (i.e., repetitive behaviors or mental acts that an individual feels driven to perform in response to an obsession or according to rules that must be

Table 3.1 Anxiety disorders that, according to DSM-5, can occur in children and adolescents

Anxiety disorder	Essential feature(s) in DSM-5	Difference(s) with DSM-IV-TR	Specific criteria for youths
Separation anxiety disorder	Developmentally inappropriate and excessive fear or anxiety concerning separation from those to whom the individual is attached	In DSM-IV-TR, this anxiety disorder was limited to childhood/adolescence, but according to DSM-5, this diagnosis can be made in all age groups	The disturbance must last for a period of at least 4 weeks in children and adolescents (in adults, duration is typically 6 months or longer)
Selective mutism	Consistent failure to speak in specific social situations in which there is an expectation for speaking (e.g., at school) despite speaking in other situations	In DSM-IV-TR, selective mutism was not listed as an anxiety disorder but belonged to the category of “Disorders first diagnosed in infancy, childhood, or adolescence”	–
Specific phobia	Marked fear or anxiety about a specific object or situation (e.g., flying, heights, animals, receiving an injection, seeing blood)	The DSM-IV-TR criterion “The person recognizes that the fear is excessive and unreasonable” has been changed to “The fear or anxiety is out of proportion to the actual danger posed by the specific object or situation and to the specific sociocultural context”	The fear or anxiety may be expressed by crying, tantrums, freezing, or clinging
Social anxiety disorder	Marked fear or anxiety of social situations in which the individual may be scrutinized by others in social interaction, observation, or performance situations. The individual fears that he or she will be negatively evaluated	DSM-5 covers the essential features in two separate criteria, whereas DSM-IV-TR combined these in one. Further, the “excessive and unreasonable” criterion adopts an “out of proportion to the actual threat” formulation	The anxiety must occur in peer settings and not just during interactions with adults. Further, in children, fear or anxiety may be expressed by crying, tantrums, freezing, clinging, shrinking, or failing to speak in social situations
Panic disorder	Recurrent unexpected panic attacks, which can be defined as abrupt surges of intense fear or discomfort that reach a peak within minutes, and during which physical (e.g., palpitations) and cognitive (e.g., fear of losing control or “going crazy”) symptoms occur	DSM-IV-TR made a distinction between panic disorder with and panic disorder without agoraphobia. DSM-5 unlinks panic disorder and agoraphobia, which is now listed as a separate disorder	–
Agoraphobia	Marked fear and anxiety about certain situations (e.g., using public transport, being in open spaces, being in enclosed places) because of the thought that escape might be difficult or help might not be available in the event of developing panic-like symptoms or other incapacitating or embarrassing symptoms	In DSM-IV-TR agoraphobia was not codable as a separate disorder	–

Table 3.1 (continued)

Anxiety disorder	Essential feature(s) in DSM-5	Difference(s) with DSM-IV-TR	Specific criteria for youths
Generalized anxiety disorder	Excessive anxiety and uncontrollable worry (apprehensive expectation) about a number of events or activities	–	In adults, generalized anxiety disorder is accompanied by at least three symptoms (e.g., restlessness, fatigue, irritability); in children, only one of these symptoms is required

Main differences with criteria as described in the previous edition of the DSM (i.e., DSM-IV-TR; APA 2000) and specific criteria for children and adolescents are also shown
DSM Diagnostic and Statistical Manual of Mental Disorders

applied rigidly), while posttraumatic and acute stress disorders refer to a specific set of symptoms (i.e., trauma-related intrusions, avoidance of trauma-related stimuli, negative cognition and mood, and increased arousal and reactivity) that occur following exposure to one or more traumatic events, differentiated from each other on the basis of duration since trauma. Although fear and anxiety are part of the clinical picture of these disorders, they clearly share features with other mental health problems, thereby justifying their inclusion in other diagnostic categories (i.e., OCD and related disorders and trauma- and stressor-related disorders; see APA 2013).

Prevalence

Epidemiological research has shown that the prevalence of anxiety disorders in children and adolescents varies between 2 and 27% (see Costello et al. 2004). The variation in these figures is quite large, and this is due to how prevalence is defined in the various studies. That is, the 3-month prevalence of anxiety disorders ranges between 2.2 and 8.6%, the 6-month prevalence between 5.5 and 17.7%, the 12-month prevalence between 8.6 and 20.9%, and the lifetime prevalence varies between 8.3 and 27.0%. Other variables that account for differences in the prevalence rates across studies involve the types of anxiety disorder investigated, the diagnostic instrument that was used, as well as characteristics of the population under study (e.g., age of participants; clinical vs. community sample).

A comparison of these prevalence figures with those of other psychological disorders reveals that anxiety disorders are among the most prevalent types of psychopathology among children and adolescents. For example, in a large community sample of British youths between 5 and 15 years of age, a 3-month prevalence of 3.7% was found, indicating that anxiety disorders belonged to the top three of psychological problems in this population. Only disruptive behavior disorders (including oppositional defiant disorder, conduct disorder, and attention-deficit/hyperactivity disorder) were more prevalent. Similar results were obtained in a prospective epidemiological research carried out in the Great Smoky Mountains in the USA (Costello et al. 2003). Moreover, this study indicated that by the age of 16 the cumulative prevalence of anxiety disorders was 9.9%, indicating that 1 out of 10 children had fulfilled the diagnostic criteria for an anxiety problem at some point during their childhood.

Estimated prevalence of the anxiety disorders in children and adolescents shows that specific phobia, social anxiety disorder, generalized anxiety disorder, and separation anxiety disorder are most common, with mean percentages varying between 2.2 and 3.6% each. Other anxiety disorders such as agoraphobia, panic disorder, and selective mutism are less frequent among youths (<2%; Bergman et al. 2002; Costello et al. 2004).

Research in adults has demonstrated that there is a clear gender difference in the prevalence of anxiety disorders: Most of these problems occur more often in women than in men (APA 2013).

This gender difference is also present in children and adolescents. In the aforementioned study by Costello et al. (2003), for instance, it was found that, before the age of 16, 12.2% of the girls had fulfilled the diagnostic criteria of any anxiety disorder, whereas this percentage was 7.7% in boys. Other research has confirmed that the girls to boys ratio in the prevalence of anxiety disorders is about 2:1, and that this difference already emerges at a fairly young age: Around 6 years of age, these problems are already far more prevalent in girls than among boys (Lewinsohn et al. 1998).

Course, Severity, and Comorbidity

Anxiety disorders in youths typically show fairly low stability or persistence over time (Beesdo et al. 2009). For example, in a study of 1,035 German adolescents from the general population, Essau et al. (2002) found that only 22.6% of the youths still suffered from the same type of anxiety problem at 1-year follow-up (i.e., homotypic continuity). About one third (35.5%) had developed a new anxiety disorder or another psychological problem (i.e., heterotypic continuity; somatoform disorder, depressive disorder), while the remaining 41.9% no longer fulfilled diagnostic criteria for a psychological disorder. However, the researchers also noted that many of the adolescents in the latter categories still had symptoms of their initial anxiety disorder. These findings seem to indicate that anxiety disorders in children and adolescents remit spontaneously although symptoms often remain in a subclinical form, and thus the disorder or a related problem may reappear at a later point during development. This notion is also supported by retrospective research of adult patients with anxiety disorders who indicate that their problem on an average had started around the age of 11 (Kessler et al. 2005), which obviously suggests that when looking over longer time periods, anxiety disorders of children and adolescents may have a chronic course.

Although anxiety disorders in youths by definition are associated with significant impair-

ment in daily functioning (APA 2013), there is a tendency among clinicians to consider fear and anxiety problems as fairly mild (Carr 2002). Research, however, shows that this is not the case. For example, Newman et al. (1996) who followed an epidemiological sample of youths from age 11 onwards noted that, by age 21, a substantial proportion of those who had developed an anxiety disorder had sought professional help for their problem (29.5%), used medication (9.9%), were admitted to a psychiatric hospital (4.2%), or had attempted to commit suicide (7.2%). In addition, a study by Van Ameringen et al. (2003) demonstrated that anxiety disorders have a negative impact on young people's performance in school. Adult anxiety patients were interviewed about their functioning in secondary school. Almost half of the patients (49%) reported that they had dropped out of school, and a considerable proportion of them (24%) indicated that anxiety was the main reason for this event (Van Ameringen et al. 2003).

Comorbidity is a common phenomenon in children and adolescents with anxiety disorders. First of all, youths frequently suffer from multiple anxiety disorders. In community samples, about one in five children with an anxiety disorder are also diagnosed with a second anxiety disorder (Essau et al. 2000). In clinically referred youths, this comorbidity is even higher: in about half of these children, the primary anxiety disorder is accompanied by one or more other anxiety disorders (Kendall et al. 2001). In particular, generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, and specific phobia often co-occur in children and adolescents.

Second, anxiety disorders in youths also show high comorbidity with other psychological disorders. Most notable in this regard is the co-occurrence of anxiety disorders and depression. Costello et al. (2003) found an odds ratio of 8.2, indicating that the chance for a child with an anxiety disorder to suffer from a depressive disorder is 8.2 times greater than the risk faced by a child without an anxiety disorder. This high comorbidity of anxiety disorders and depression may in part be explained by commonalities

in etiology, but there is also some evidence for a temporal link between both disorders, with most of the research showing that depression arises as a secondary problem because the anxiety disorder hinders the child so much in his/her daily functioning (Seligman and Ollendick 1998).

Other comorbid problems of anxiety disorders are oppositional defiant disorder and attention-deficit/hyperactivity disorder, for which odds ratios of 3.1 and 3.0, respectively, have been found (Costello et al. 2003). Various studies have demonstrated that there is also an association between anxiety disorders and substance use disorders in adolescents, although it is also true that this relation disappears when controlling for concurrent psychological problems (Armstrong and Costello 2002). Finally, anxiety disorders frequently occur in youths with autism spectrum disorders, and this will be discussed in more detail in Chapters 7–12 of this handbook.

Etiology

Contemporary models of the etiology of anxiety disorders assume that normal and abnormal fear and anxiety are part of the same dimension (Craske 2003; Muris 2007). Accordingly, an anxiety disorder should be seen as a radicalized normal fear or anxiety, and so the critical issue is: why do fear and anxiety for most young people stay within the normative range, whereas for some children and adolescents these emotional reactions are so frequent and intense that they start to interfere with daily functioning? Research has made clear that the origins of anxiety disorders in children and adolescents cannot be attributed to a single variable. As with other types of childhood psychopathology, the principle of equifinality applies, which means that the origins of anxiety disorders in youths should be ascribed to multiple factors. The DSM-5 refers to three categories of etiological factors: temperamental, environmental, and genetic/physiological. In the following sections, examples of relevant factors for each of these categories will be examined.

Temperamental Vulnerability

Neuroticism (in the literature also known as negative affectivity or emotionality) is a basic temperamental trait that is characterized by a proneness to experience negative emotions, and is generally considered as a predisposing factor for various types of psychopathology, including the anxiety disorders (Eysenck and Eysenck 1985). The latter has been explained by the fact that neuroticism is associated with a hypersensitivity of subcortical brain areas in which the threat detection system is located (Pine 2007). Extraversion is a second temperamental factor that is relevant for the etiology of anxiety disorders. When extraversion is low, the person is more likely to display a tendency towards avoidance behavior (Eysenck and Eysenck 1985), which according to learning theorists makes an important contribution to the development and continuation of anxiety problems. A combination of neuroticism and low extraversion would constitute a temperamental vulnerability factor for developing pathological anxiety (Muris and Ollendick 2005; Nigg 2006). Interestingly, some children show this temperamental constellation at a very young age. For instance, Kagan (1994) described the typology of behavioral inhibition, which can be defined as the habitual tendency to exhibit fearfulness, restraint, and withdrawal in the face of novel events or situations, including unfamiliar rooms, toys, peers, and adults.

Research has provided support for the idea that behavioral inhibition is indeed a mixture of neuroticism and low extraversion (Muris et al. 2009) and even more importantly that youths with this temperament characteristic are at increased risk for developing anxiety disorders. In a longitudinal study, Biederman et al. (1990, 1993) followed a group of inhibited and noninhibited 3-year-old children for a period of 3 years. At the baseline assessment, inhibited children already displayed clearly more anxiety disorders than the noninhibited children, and this difference became even more prominent at the follow-up assessment. Various other studies have replicated these findings and converge on the notion that behavioral inhibition should be regarded as

a temperamental vulnerability factor for the development of anxiety in problems in children and adolescents (Fox et al. 2005).

While neuroticism and (low) extraversion (and their combination, known as behavioral inhibition) increase youths' vulnerability to a broad range of anxiety problems, there are also more specific temperamental factors at work. A case in point is disgust sensitivity, which can be defined as the predisposition to experience feelings of revulsion for stimuli that convey a risk of contamination with disease, and is thought to be involved in the etiology of certain types of childhood phobias (especially animal and blood-injection-injury phobias; Muris and Merckelbach 2001). Another example is anxiety sensitivity, which refers to the fear of sensations experienced in anxiety-eliciting situations, and appears to be of particular importance for the development of panic disorder and agoraphobia during adolescence (e.g., Hayward et al. 2000).

Environmental Risk

It is widely assumed that family factors play a role in the etiology of anxiety disorders in children and adolescents (Bögels and Brechman-Toussaint 2006). A variable that seems to be relevant in this context is the bonding between parent and child. Research has shown that an early attachment relationship is predictive of anxiety problems in later childhood. For example, in their prospective study, Warren et al. (1997) examined whether insecurely attached infants run a greater risk for developing anxiety disorders than infants who are securely attached. At 12 months of age, infants were classified as either securely or insecurely attached using the "strange situation" observation procedure (Ainsworth et al. 1978). When children reached 17.5 years of age, current and past anxiety disorders were assessed by means of a structured diagnostic interview. Results indicated that insecurely attached children more frequently displayed anxiety disorders than children who were securely attached.

Other studies have examined the contribution of specific parental rearing behaviors in the

development of anxiety disorders in youths. For example, there is increasing evidence that over-protective parenting plays an important role in this regard (e.g., Hudson and Rapee 2001). Parents with this parenting style are often anxious themselves, and hence try to shield their child from potential danger and distress by intrusively providing unnecessary help and restricting exposure to a broad range of situations. The net effect is that children's fears and worries are enhanced because parents increase the awareness of danger, reduce the level of perceived control, and promote avoidance behavior in their offspring.

Negative learning experiences also seem to be involved in the etiology of childhood anxiety disorders. For example, conditioning events may be important in the formation of the anxiety problem in youths. Systematic research examining the role of this environmental variable is sparse, although there is of course the widely known Little Albert case (Watson and Rayner 1920) which demonstrated that it was possible to elicit pervasive fear in an 11-month-old boy by repeatedly pairing a neutral stimulus (a white rat) with an aversive stimulus (a loud noise produced by striking a steel bar behind the boy's head). Considerably more studies have since been conducted examining the contributions of learning via modeling (Askew and Field 2007) and negative information transmission (Muris and Field 2010) in the acquisition of fear and anxiety, which may also typically occur within families (e.g., Muris et al. 1996, 2010).

Finally, stressful life events may also exacerbate fear and anxiety in children. Clinical support for this idea comes from youths who develop an adjustment disorder with symptoms of nervousness, worry, jitteriness, and/or separation anxiety after being exposed to an identifiable stressor (APA 2013). Empirical studies reveal a clear link between negative life events and fear and anxiety problems in youths. For instance, Tiet et al. (2001) demonstrated that events such as death of a family member, arguing parents, being bullied by peers, changing school, learning difficulties, and psychiatric problems of parents increase the risk for young people to develop an anxiety disorder considerably, and this appeared especially true for generalized anxiety disorder and separation anxiety disorder.

Genetic and Physiological Vulnerability

Behavioral-genetic studies have examined the genetic contribution to childhood fear and anxiety and related disorders. For example, in a recent study by Trzaskowski et al. (2012), parents of more than 3,500 twin pairs completed a questionnaire rating of their children's fear and anxiety symptoms twice, at 7 and 9 years of age. The results indicated that the influence of heritability was moderate (with an average of 54%). Further, it was found that fear and anxiety were fairly stable from 7 to 9 years and that the genetic factor explained most of the homotypic continuity of these symptoms (68%), which of course provides additional support for the notion that heritability plays a significant role. Similar results have been obtained when studying clinical anxiety symptoms in youths. Noteworthy in this regard is a study by Feigon et al. (2001) who asked the mothers of 2,043 3- to 18-year-old twin pairs to rate DSM-defined symptoms of separation anxiety disorder. Results revealed significant effects of genetics (47%). Interestingly, these effects were significantly moderated by gender and age. More precisely, the genetic influence was larger for girls and also appeared to increase as children became older. Admittedly, not all studies have obtained comparable findings, but a qualitative overview of the literature by Eley and Gregory (2004) concluded that the genetic influence on fear and anxiety problems in youths was moderate but nonetheless significant and accounted for roughly 30% of the variance.

It has been proposed that anxiety-prone children and adolescents have hyperexcitable subcortical brain circuits that promote fear and anxiety (Blackford and Pine 2012). In particular, the amygdala is considered highly important in this regard. This medial temporal brain structure is thought to be involved in the detection of threat and the initial formation of a fear/anxiety response. Evidence for the link between anxiety vulnerability and heightened amygdala sensitivity comes from a study by Grillon et al. (1997) who elicited startle responses in behaviorally inhibited and noninhibited children. Briefly, the startle reflex is thought to be an amygdala-mediated defensive response to a

sudden and unexpected stimulus. Grillon et al. (1997) demonstrated greater startle responsivity in behaviorally inhibited children as compared to control children. The greater responsivity of the at risk children was not only observed for the first startle but also for the full series of startles, suggesting that these children displayed greater reactivity of the amygdala system as well as less habituation over time.

Some youths may also have a biological predisposition to react with panic and anxiety to respiratory irregularities (Klein 1993). Support for this idea comes from studies showing that children with panic and other anxiety problems more frequently display respiratory abnormalities and respond more intensely to a CO₂ challenge than control children (Pine et al. 2000). Further, there is also research showing that anxiety disorders are more prevalent among children with asthma (Katon et al. 2004).

Maintaining Variables: Avoidance and Cognitive Biases

Once children and adolescents have developed an anxiety disorder, this condition is likely to be maintained, or even intensified, by a variety of influences. The two-stage model proposed by Mowrer (1960) suggests that avoidance behavior is largely responsible for the maintenance of anxiety problems. More precisely, avoidance would minimize direct and prolonged contact with the fear-provoking stimulus or situation, and, hence, the anxious child would not have the opportunity to learn that the stimulus or situation is in fact harmless or safe. While the role of avoidance behavior in the maintenance of anxiety disorders seems self-evident (Ollendick et al. 2001), it is not the only maintenance mechanism. A number of cognitive distortions also promote prolongation of these psychopathological problems. Cognitive distortions refer to cognitive processes that are biased and erroneous, and therefore yield dysfunctional and maladaptive thoughts and behaviors. Typically, in anxiety disorders, such distortions reflect the chronic overactivity of schemas organized around themes of danger and threat (Muris and Field 2008).

One typical cognitive distortion that is involved in the anxiety disorders is attentional bias. Fearful or anxious individuals display increased attention towards (potentially) threatening stimuli (e.g., Bar-Haim et al. 2007). Attentional bias can be demonstrated by means of an experimental procedure known as the dot probe task (Vasey and MacLeod 2001). During this task, two competing stimuli (words or pictures) are briefly presented on a computer screen: one stimulus is threat-relevant, whereas the other is emotionally neutral. Following the disappearance of the stimuli, a small probe appears on the location previously occupied by one of the stimuli. The latency to identify this probe provides an index of the extent to which a child's attention was directed towards the stimulus that just disappeared. Thus, faster latencies to detect a probe following threatening stimuli relative to neutral stimuli would indicate an attention bias towards threat, whereas the opposite pattern would reflect a tendency to direct attention away from the threat. An illustrative study in children and adolescents has been conducted by Roy et al. (2008) who administered a dot probe task involving pictures of faces with threat and positive and neutral expressions to 101 young participants with generalized anxiety disorder, social anxiety disorder, and/or separation anxiety disorder and 51 nonclinical controls (all aged between 9 and 18 years). Compared to non-clinical youths, the children and adolescents with anxiety disorders displayed a greater attentional bias towards threat faces.

Another cognitive distortion that plays a role in anxiety problems is interpretation bias, which refers to the tendency to disproportionately impose threat upon ambiguous situations. An ambiguous vignette paradigm has been successfully used to demonstrate this type of bias in youths. For instance, in an early investigation by Barrett et al. (1996), children with anxiety disorders, children with oppositional defiant disorder, and nonclinical control children (aged between 7 and 14 years) were presented with brief stories of ambiguous situations and asked what would happen in each situation. Then, youths were given two possible neutral outcomes and two possible negative (threatening) outcomes and asked which outcome was most likely to occur. Results indicated

that both anxious and oppositional children more frequently interpreted the ambiguous situations as threatening than normal controls. Interestingly, anxious youths more often chose avoidant negative outcomes, whereas oppositional youths more frequently chose aggressive negative outcomes.

Multifactorial Model

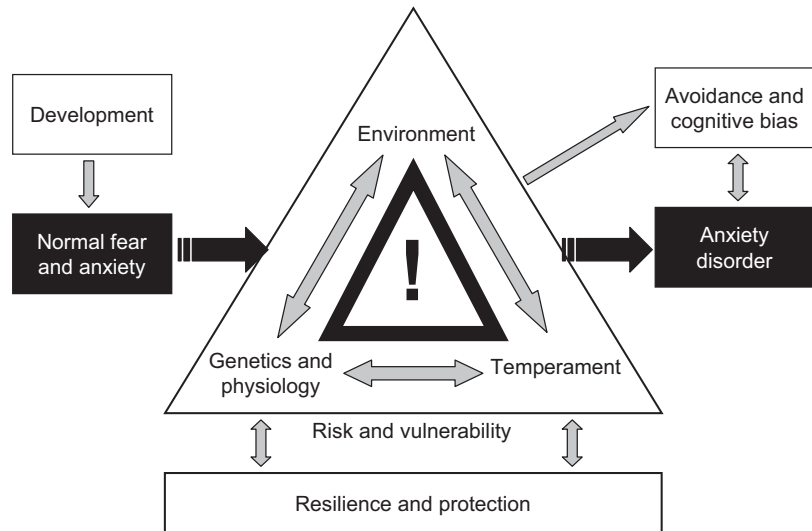
During the past decades, knowledge of the factors that are involved in the etiology of anxiety disorders in children and adolescents has steadily increased. This chapter has mainly focused on a number of important variables that seem to be involved. It is important to note that these etiological factors do not operate in isolation. Rather, we should consider multifactorial models in which genetic/physiological, environmental, and temperamental variables as well as resilience and protective influences (e.g., emotion regulation capacity, supportive friends and family) interact with each other to produce an adaptive or a maladaptive outcome (Vasey and Dadds 2001). An example of such a model has been provided by Muris (2007) who assumes that anxiety disorders in children and adolescents are essentially normal fears and anxieties that have radicalized due to an accumulation of risk and vulnerability which exceeds levels of resilience and protection (Fig. 3.1; see also Beesdo-Baum and Knappe 2012).

Treatment

Cognitive-Behavioral Therapy

In the case of anxiety problems, psychotherapy generally implies that youths are taught more effective ways of coping with anxious emotion and acquire more effective strategies for dealing with perceived threat. It is beyond any doubt that cognitive-behavioral therapy (CBT) is the most appropriate psychological intervention for children and adolescents with anxiety problems (March 2009; Seligman and Ollendick 2011). The main principle of CBT is exposure, which involves helping the child to gradually confront with the

Fig. 3.1 Multifactorial model for the etiology of anxiety disorders in children and adolescents. (Based on Muris 2007)



feared situations through completion of a fear hierarchy, so that extinction of fear takes place and avoidance or escape behavior is no longer the dominant response (Marks 1987). Exposure is often combined with cognitive restructuring, which pertains to the identification and modification of dysfunctional, anxiety-promoting thinking patterns (Beck and Emery 1985), and various other active treatment components such as psychoeducation, relaxation, problem-solving, self-evaluation, and reinforcement (Albano and Kendall 2002).

Since the pioneering work by Kendall (1994) and Kendall et al. (1997), a host of randomized controlled outcome studies has appeared in the literature, all indicating that CBT is effective in treating anxiety disorders in children and adolescents (see Rapee et al. 2009). A meta-analysis of this research has yielded a mean Cohen's *d* of 0.86 for the pre- to posttreatment decrease in anxiety, which indicates that the effect size as achieved by this intervention can be qualified as "large" (In-Albon and Schneider 2007). In general, about two-thirds of the youth who complete this type of psychotherapy no longer meet the criteria for their principal anxiety disorder. Importantly, various studies have demonstrated that the effects produced by CBT remain clearly visible after long time periods of up to 10 years after treatment (Barrett et al. 2001; Kendall et al. 2004).

The exposure and cognitive restructuring components of CBT are appropriate for all childhood anxiety disorders, but it is important to note that special protocols have been developed that employ specific treatment strategies for tackling characteristic features of the various anxiety disorders. For instance, the cognitive restructuring component is less prominent in the treatment of specific phobias, where the emphasis of the intervention should be on gradual real-life exposure to the feared stimulus or situation, as is done in a one-session therapy (Ollendick et al. 2009). CBT can be delivered to children in an individual or a group format, which in general have been shown to be equally effective (e.g., Flannery-Schroeder and Kendall 2000). Various considerations may guide a clinician in choosing the appropriate CBT format. In case a number of children apply for this type of treatment, a group format could be appropriate simply because it may be more efficient in terms of costs and time. However, an individual treatment may still be indicated for some children. For instance, severely traumatized youth may find it difficult to discuss their experiences, fears, and anxieties in front of other children.

Based on the notion that family factors play a role in the etiology of childhood anxiety problems, it is important to involve parents in the treatment. As for controlled treatment outcome research conducted in this domain, studies have

mainly focused on CBT-based family interventions, which primarily focus on guiding parents to help their children to handle fear- and anxiety-provoking situations in a more optimal way. Some studies have demonstrated that including parents in the intervention yields better results than a child-focused CBT and that this is especially true when parents suffer from anxiety problems themselves (e.g., Cobham et al. 1998). However, there is also research showing that the addition of a parent component does not always improve the efficacy of a CBT intervention (Nauta et al. 2003; Bodden et al. 2008). Thus, at present, there is still debate on the benefits of the inclusion of parents in CBT for anxiety-disordered youth.

Pharmacotherapy

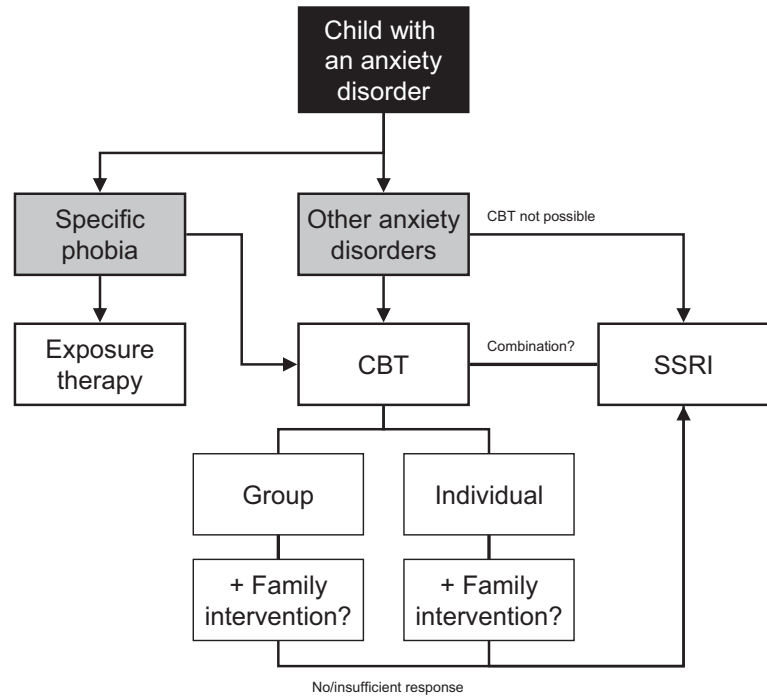
In the past two decades, there is accumulating evidence indicating that pharmacotherapy, and in particular treatment with selective serotonin reuptake inhibitors (SSRIs), should be considered as an effective intervention for children and adolescents with anxiety disorders (March and Ollendick 2004). In a placebo-controlled trial by the RUPP Anxiety Study Group (2001), 128 children and adolescents (aged between 6 and 17 years) with separation anxiety disorder, generalized anxiety disorder, and/or social anxiety disorder were randomly allocated to a treatment with fluvoxamine or placebo for 8 weeks. Outcome was evaluated using clinician ratings of anxiety symptoms and global improvement. Results indicated that the decline in anxiety symptoms was more than three times larger in the fluvoxamine treatment group as compared to the placebo group. The majority (76%) of the children in the fluvoxamine group responded favorably to the intervention as compared to only 29% in the placebo group. Comparable findings have been obtained with other SSRIs such as sertraline (Rynn et al. 2001), paroxetine (Wagner et al. 2004), and fluoxetine (Birmaher et al. 2003).

A disadvantage of pharmacological treatment alone is that the anxiety problems tend to return once the medication is stopped (e.g., Clark et al.

2005), and therefore it is preferred to combine the pharmacotherapy with a psychological (CBT) intervention. Interestingly, an investigation by Walkup et al. (2008) even indicated that such a combined treatment may yield the most optimal results. In this large-scale multicenter study, the efficacy of sertraline, CBT, a combination of sertraline and CBT, and placebo was compared in 488 youths aged 7–17 years who had a primary diagnosis of separation anxiety disorder, generalized anxiety disorder, or social anxiety disorder. Sertraline proved to be equally effective as CBT, and both produced better treatment effects than the placebo intervention. That is, improvement rates were 54.9% for sertraline and 59.7% for CBT versus only 23.7% in the placebo condition. However, the combination of CBT and sertraline was superior to both monotherapies and by far produced the best effect with an improvement rate of 81%. Highly similar results were documented with a standardized clinician rating scale of anxiety symptoms. At the 12-week assessment, children and adolescents treated with a combination of sertraline and CBT displayed lower anxiety levels than those treated with sertraline or CBT alone, who in turn exhibited lower anxiety levels than those who had received the placebo medication.

Figure 3.2 provides a treatment algorithm for anxiety disorders in children and adolescents. It is clear that CBT has a central position in the clinical management of these disorders. In the case of specific phobias, an exposure-based intervention seems to be the initial choice because a direct correction of fear network by means of real-life experiences with the phobic stimulus is often necessary to produce the therapeutic effect (King et al. 2005). In all other childhood anxiety disorders, exposure certainly needs to be an important part of the intervention, but there is also a clear place for the cognitive restructuring component of CBT. The CBT intervention can be delivered individually or in a group, and as a child-focused or family-based program. There are no clear-cut criteria to guide clinicians in their decision of choosing the appropriate CBT format for a specific child although there is some support for the idea that children will profit more

Fig. 3.2 Treatment algorithm for children and adolescents with anxiety disorders. (Reprinted from Muris 2012). *CBT* cognitive-behavioral therapy, *SSRI* selective serotonin reuptake inhibitor



from a family-based intervention if the parents are highly anxious themselves (Cobham et al. 1998). Here, the professional view of the clinician is important, but preferences of the child and his/her parents also need to be taken into account. There are three considerations for employing pharmacotherapy, and more specifically an SSRI, in the intervention of children and adolescents with anxiety disorders: (1) when the delivery of CBT is not possible (e.g., because a cognitive-behavioral therapist is not available), (2) in case of an insufficient response to the CBT intervention, and (3) as a combination treatment with CBT for youth with severe anxiety problems and/or comorbid disorders. Obviously, the two latter considerations seem certainly relevant when treating anxious youths with autism spectrum disorders (Kolevzon et al. 2006).

Conclusions

Anxiety disorders are among the most prevalent forms of psychopathology seen in children and adolescents. Although they often change form during the course of development, fear and

anxiety problems tend to run a chronic course and tend to persist into adulthood when left untreated. Moreover, anxiety disorders are associated with an increased risk for developing comorbid disorders, notably depression. With regard to etiology, there is increasing consensus on the notion that anxiety disorders have a multifactorial origin, in which temperamental, environmental and genetic/physiological risk, vulnerability, and protective variables are involved. Once an anxiety disorder exists, it is maintained by operant (avoidance) and cognitive (information processing biases) mechanisms. Anxiety disorders can be effectively treated, preferably by means of CBT, while pharmacotherapy with SSRIs should be seen as a viable alternative or additional intervention.

As noted at the beginning of this chapter, development strongly guides youths' fears and anxieties, and hence is also relevant for the study of their abnormal variations as seen in phobias and anxiety disorders. It is clear that youths with autism spectrum disorders typically show pervasive aberrations in their cognitive, emotional, and social development, and therefore the co-occurrence of anxiety problems should not come as a

surprise. In upcoming chapters of this handbook, the phenomenology, etiology, and treatment of anxiety problems in youths with autism and related disorders will be highlighted.

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