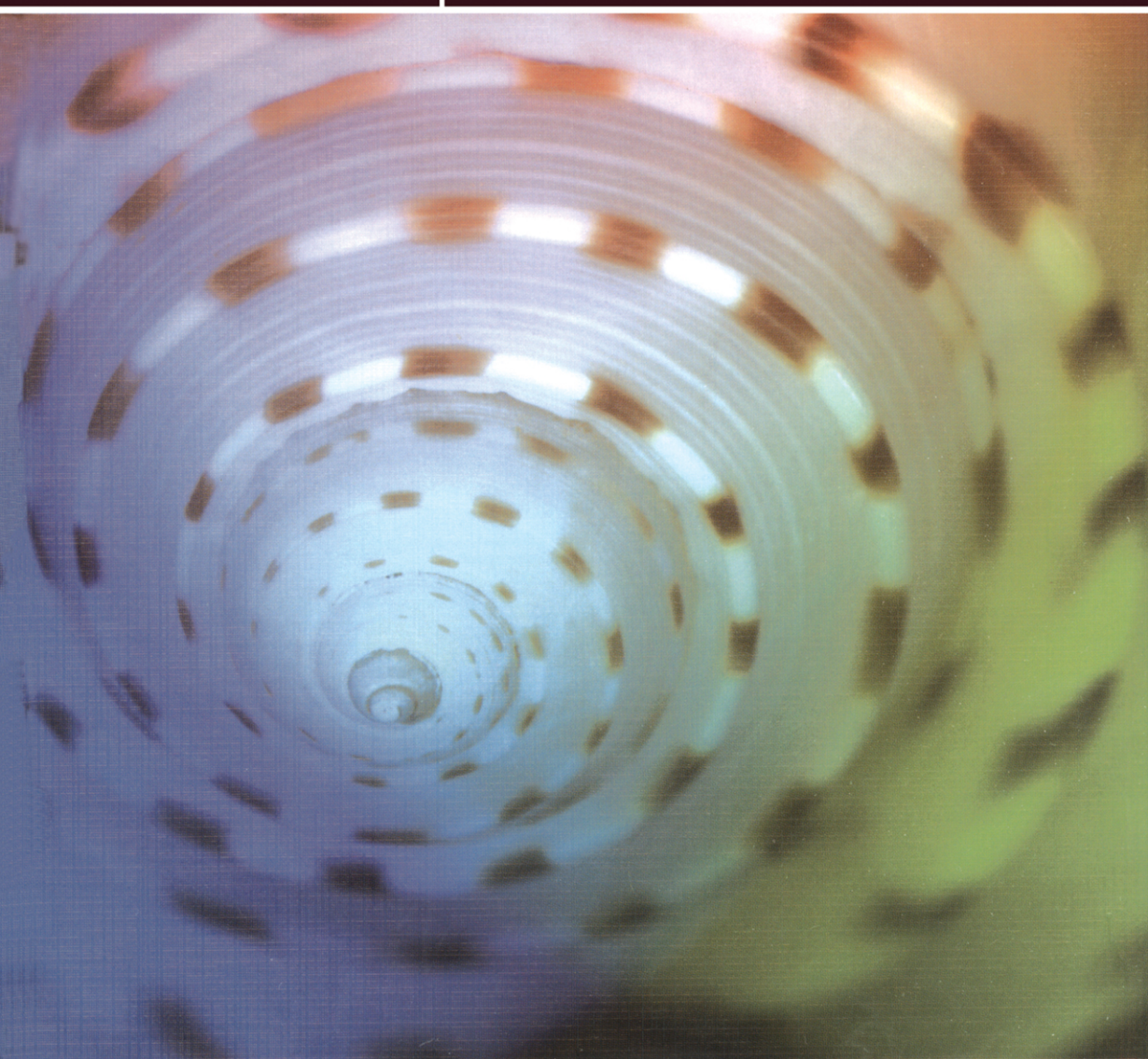


# Origins of Phobias and Anxiety Disorders:

Why more women than men?



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2003



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First edition 2003


Library of Congress Cataloging in Publication Data

A catalog record from the Library of Congress has been applied for.

British Library Cataloguing in Publication Data

A catalogue record from the British Library has been applied for.

ISBN: 0 08 044032 0

 The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper). Printed in The Netherlands.

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*To Robert and Margeaux*

# Preface

I had two main goals when writing this book. The first was to provide a comprehensive review of the factors that contribute to excessive fear and anxiety disorders. This necessitated coverage of research from various domains of psychology, including psychopathology, cognitive psychology, experimental psychology, neuroscience, and developmental psychology, particularly given my aim of understanding the trajectory of fear and anxiety across the life span. By so doing, I hope to have achieved an up-to-date synthesis of temperament and experience in the formative months and years of life and later anxiousness, and to have highlighted the many complementary and converging theories and findings. In addition, the literature review provides a useful resource for inquiring minds (although clearly not every published finding of relevance is cited) as well as a treatise for understanding excessive fear and anxiety.

The second main goal was to delve into the factors responsible for why more women than men suffer from excessive fear and anxiety; again with a developmental perspective in mind. A comprehensive overview, let alone model, for understanding the gender differences in anxiety disorders was sorely needed. I evaluated whether the risk factors for anxiety disorders are moderated by sex-typed variables, and/or whether sex-typed variables mediate risk for anxiety disorders. From my synthesis of the available literature across the various domains of psychology, I reached the conclusion that many of the variables that place individuals at risk for anxiety disorders are more strongly associated with being female than male, and that the expression of anxiety itself is strongly female sex linked. The details of this model are outlined herewith.

Overall, I attempted to provide an objective viewpoint and give due consideration to controversial issues in the literature. I propose an interactive layer model in which broad vulnerability factors contribute to more specific pathways to excessive fear and anxiety, which in turn strengthen broad vulnerabilities. Hence, there is a continuous drawing together of issues raised in one chapter with what is presented in preceding chapters as well as in the chapters to follow.

For me, the most intriguing concepts discussed throughout the book are as follows: that early experiences from the first few days and months of life may be critical for the development of prediction and control; that prediction and control are intricately tied with attentional processes, which in turn are linked with the ability to clearly discriminate between what is threatening and what is not; that females are more sensitive than males to facial expressions, and hence more vulnerable to vicarious

acquisition of fears and the communication of impending danger; that females may be less reliant on their own internal cues and more reliant on social interpersonal cues than are males for judging emotional state and thus their emotional experiences; and that females may be both biologically and socially driven to avoid threat, but by so doing become more vulnerable to persistent anxiousness. Conversely, males are more prone to face threat, and thus are more often traumatized but by the same token more likely to overcome fears and learn active means of coping that decrease their vulnerability to excessive fear and anxiety.

## Chapter 1

# Features of Fear and Anxiety

This chapter sets the scene by providing an overview of anxiety disorders and associated forms of distress, and their developmental trajectory. Themes and issues that are relevant to the discussion throughout the ensuing chapters are introduced. For example, the evidence that early expression of circumscribed fear confers very little risk upon later emotional development introduces the notions that “fear” is distinct from “disorder” and the latter is mediated and moderated by an array of factors other than fear itself. A similar conclusion is made from the evidence that occasional symptoms of distress in adulthood carry little predictive value for the development of anxiety disorders without the additional influence of other risk factors. Females are at greater risk than males for anxiousness and anxiety disorders across all ages. The epidemiology of sex differences is reviewed in this chapter before concluding with an overview of the principal factors believed to contribute to anxiety disorders, thus providing a structure for the chapters to follow.

## Prevalence of Anxiety Disorders and Associated Forms of Emotional Distress

### *Diagnostic Criteria*

The anxiety disorders refer to a cluster of fears and anxieties that persist at a level that interferes with normal functioning. The American Psychiatric Association (*Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV)) provides a convenient way of categorizing the major types of anxiety disorders, but quickly evident are the commonalities among them. That is, the anxiety disorders all involve fear, anxiety, worry, and avoidant or corrective behaviors. They differ from each other in the primary object of threat. In brief, panic disorder refers to recurrent unexpected panic attacks accompanied by persistent apprehension over their recurrence or their consequences. Panic disorder may occur with or without agoraphobia, which refers to anxiety about places or situations from which escape might be difficult or help not available in the event of a panic attack. Agoraphobia without a history of panic disorder refers to the same situational anxiety but in the absence of full-blown panic attacks. Generalized anxiety disorder refers to excessive and uncontrollable worry about a number of different life events and accompanying symptoms of motor tension and vigilance.

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Social phobia (or social anxiety disorder) represents excessive fear of social or performance situations in which embarrassment might occur. Obsessive–compulsive disorder refers to recurrent intrusive thoughts, images or impulses (obsessions) and/or repetitive behaviors designed to prevent or lessen distress (compulsions) that are time-consuming or cause distress or impairment. Posttraumatic stress disorder refers to a set of symptoms following exposure to a traumatic event at which time intense fear, helplessness, or horror is experienced; the symptoms include re-experiencing of the trauma, avoidance of associated stimuli, and increased arousal. Specific phobia refers to marked and persistent fear of clearly discernible and circumscribed objects or situations. Other anxiety disorders include acute stress disorder, and anxiety disorders due to medical conditions or substance abuse.

### ***Prevalence***

Epidemiological studies of adult community samples indicate that anxiety disorders are one of the most commonly occurring forms of psychological disturbance. The National Comorbidity Survey (NCS; Kessler, Davis, & Kendler, 1997) is the most recent large-scale epidemiological study of mental health in the United States, superceding the earlier Epidemiological Catchment Area Study (ECA) published in 1984 (Myers *et al.*, 1984). NCS findings of diagnostic prevalence are based on an earlier version of DSM (third edition — revised (DSM-III-R); American Psychiatric Association, 1987) and slightly different diagnostic criteria for some of the anxiety disorders in comparison with DSM-IV. Nonetheless, from the NCS community sample of 8098, aged 15–54 years, approximately 29 percent reportedly met criteria for a lifetime history of at least one anxiety disorder, and that was without diagnosing obsessive–compulsive disorder. Although this rate is derived from a fully structured instrument (the Composite International Diagnostic Interview) that was administered by lay interviewers, and therefore is susceptible to error, the figure is comparable to the rate for substance-use-related disorders (27 percent) and higher than the rate for lifetime history of mood disorders (20 percent) obtained from the same diagnostic instrument. Weissman *et al.* (1994) examined prevalence of obsessive–compulsive disorder across seven different countries, to find a lifetime range of 1.9–2.5 percent. Thus, the NCS figure of 29 percent may well be an underestimate of the actual rate of anxiety disorders in total given the likelihood of at least some non-overlapping cases of obsessive–compulsive disorder. Moreover, the upper age limit of 54 years in the NCS sample may lead to a further underestimate of the prevalence of anxiety disorders in the adult population.

### ***Co-occurring Distress***

Anxiety disorders cluster with various forms of emotional distress. They tend to co-occur not only with other anxiety disorders, but also with mood disorders, substance-use-related disorders, somatoform disorders and personality disorders. From the NCS

community sample, 74 percent of those who met criteria for an anxiety disorder also met criteria for at least one lifetime co-occurring mental disorder (Kessler, 1997). Similar rates are apparent in patient samples, where from 50 to 80 percent of adults with a principal diagnosis of an anxiety disorder meet criteria for at least one other concurrent mental disorder diagnosis (e.g., Brown & Barlow, 1992; Brown, Chorpita, & Barlow, 1998; Flick, Roy-Byrne, Cowley, Shores, & Dunner, 1993; Kessler, Nelson, McGonagle, Liu, Swartz, & Blazer, 1996; Kessler, 1997; Rief, Hiller, Geissner, & Fichter, 1995; Westermeyer, Tucker, & Nugent, 1995). In the most recent report of 1127 adults seeking help for anxiety or mood disorders, Brown, Campbell, Lehman, Grisham, and Mancill (2001) reported current and lifetime rates of co-occurrence with other Axis I disorders as 57 and 81 percent, respectively. As with previous data sets, other anxiety or mood disorders accounted for most of the co-occurring distress. Differential patterns of clustering existed among the disorders. For example, high rates of co-occurrence existed for posttraumatic stress disorder, major depression/dysthymia, and generalized anxiety disorder (Brown *et al.*, 2001). Particularly strong associations occurred between panic disorder/agoraphobia and posttraumatic stress disorder, between social phobia and mood disorders, and between posttraumatic stress disorder and mood disorders (Brown *et al.*, 2001).

The study of clustering amongst anxiety disorders and mood disorders may provide important insights into etiological factors and common pathways for emotional distress. However, the specific relationships among disorders are dependent on the sample studied, the diagnoses assessed, and the method of diagnostic assessment. For instance, the NCS community sample analyzed by Kessler (1997) and the patient sample analyzed by Brown *et al.* (2001) yielded significantly different patterns of co-occurrence. The most likely reason for this discrepancy is that the former included a considerably larger subset with posttraumatic stress disorder than the Brown *et al.* (2001) study, excluded obsessive-compulsive disorder that was included in the Brown *et al.* (2001) study, and was based on a fully structured lay-administered interview, compared with the semi-structured clinician-administered interview in the Brown *et al.* (2001) study.

Nonetheless, regardless of specific clustering weights, the overall high rate of co-occurrence among anxiety and mood disorders raises the possibility of shared etiological factors. Indeed, common vulnerability factors may explain why family transmission studies show increased risks for depression and substance abuse in relatives of probands with anxiety disorders who themselves do not suffer from anxiety (e.g., Biederman *et al.*, 2001; Chassin, Pitts, DeLucia, & Todd, 1999).

## **Anxiety Disorders in Youths**

### ***Diagnostic Issues***

Although certain anxiety disorders do not become full fledged until adulthood, some youths are afflicted with excessive anxiety, and some anxiety disorders typically emerge during childhood years (e.g., separation anxiety disorder, and specific phobias of animals and blood, injury, and injection). Systematic diagnostic criteria for anxiety

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disorders in youths did not emerge until DSM-III (American Psychiatric Association, 1980). Significant changes have since been made, such that the only remaining childhood anxiety disorder in the current nosology (DSM-IV; American Psychiatric Association, 1994) is separation anxiety disorder. Other youth anxiety disorders are subsumed under adult disorders, for which diagnostic criteria have been revised to include descriptors for children and adolescents. This change represents an emphasis upon continuity of anxiety disorders in children and adults (Allen, Leonard, & Swedo, 1995), a point re-emphasized below. Unlike adults, children are not required to acknowledge that their fears are unreasonable or excessive, and persistence of symptoms is required for at least 6 months for specific and social phobias in order to minimize the overdiagnosis of transitory, normal developmental fears.

Separation anxiety disorder is characterized by excessive anxiety and fear concerning separation from home or from significant attachment figures, to a degree that is beyond normal developmental expectations (i.e., 7 months to 6 years old; Bernstein & Borchardt, 1991). Overanxious disorder of childhood/adolescence, which is now subsumed under the diagnosis of generalized anxiety disorder, is characterized by excessive and uncontrollable worry and symptoms of motor tension and vigilance (although children are required to report only one symptom, in comparison with three symptoms for adults). Mean ages of onset for youths range from 5 to 10 years, although estimates for adult samples average the early 20s (Öst & Treffers, 2001). Thus, as with other anxiety disorders, the modal ages of onset differ between youth and adult samples. This discrepancy may be due to a number of factors, including reporting errors, given that much age of onset data is gathered from retrospective recall. Alternatively, as reviewed below, clusters of anxiety symptoms tend to shift throughout childhood and early adolescence, and stabilize in later adolescence and adulthood, such that ages of onset for a given anxiety disorder may well vary across different age cohorts. Avoidant disorder of childhood/adolescence is now subsumed under social phobia, and because it was conceptualized as excessive withdrawal from unfamiliar people, the diagnostic criteria for social phobia have been expanded to include fears of unfamiliar people as well as fears of social evaluation. The modal age of onset for social phobia in youths varies from 8 to 12 years of age (Weiss & Last, 2001), compared with the late teens in adult samples (Öst & Treffers, 2001). Symptoms of obsessive-compulsive disorder in youths are similar to adult symptoms, although children tend to experience fewer obsessions and more compulsions (e.g., Rapoport, Swedo, & Leonard, 1992). The mean age of onset in youth samples is 10 years (Albano, Chorpita, & Barlow, 1996), compared with the late teens in adult samples (Öst & Treffers, 2001). Several descriptors are altered for childhood posttraumatic stress disorder. For example, children may demonstrate their anxiety through repetitive play in which themes of the trauma are expressed. Naturally, posttraumatic stress disorder has no average age of onset. Common specific phobias include fear of heights, darkness, loud noises, injections, insects, dogs and other small animals, and school (Silverman & Rabian, 1994). Many of these begin before the age of 7 years, and elevations occur between the ages of 10 and 13 years (Strauss & Last, 1993). In adult samples, animal, blood, injury, and injection phobias are cited as developing around 8 years of age, whereas situational phobias develop during the 20s (Öst & Treffers, 2001).

Several investigators have studied panic attacks in youths. Hayward *et al.* (1992) examined 754 sixth- and seventh-grade girls, to find that 5.3 percent of the sample reported at least one panic attack. Interestingly, the incidence increased with sexual maturity, regardless of age. King, Gullone, Tonge, and Ollendick (1993) also examined the incidence of panic attacks in a group of 534 adolescents aged 13–18 years. Almost 43 percent reported having a panic attack at some stage in their lives. However, as with adult samples in the general population, the vast majority was not perturbed by these experiences, and only 6.8 percent indicated that the panics created “quite a bit or very much” interference in their lives. What proportion of these panic attacks were “out of the blue” is not clear. Nelles and Barlow (1988) argued that without the cognitive capacity for attributions of losing control or going crazy about bodily sensations, children are unlikely to have unexpected panic attacks. Indeed, youths referred to an anxiety disorders clinic did not endorse fears of bodily sensations if under the age of 12 years (Chorpita, Albano, & Brown, 1996a). Thus, panic symptoms that occur prior to adolescence are most often an associated feature of another anxiety disorder, such as separation anxiety, rather than unexpected panic attacks that are characteristic of panic disorder (Last, Perrin, Hersen, & Kazdin, 1992).

### ***Prevalence and Co-occurring Distress***

Unfortunately, our knowledge of the prevalence of anxiety disorders among youths is hampered by a lack of well-conducted research, differing criteria, and inconsistencies in reliance upon parental report in the absence of confirmatory child report or vice versa. Thus, estimates of prevalence for anxiety disorders in youths vary greatly. In community samples, they range from 10.7 percent (McGee, Fehan, Williams, Partridge, Silva, & Kelly, 1990) to 17.3 percent (Kashani & Orvaschel, 1990). In the most recent study of 1200 Canadian adolescents, the prevalence was estimated at 14 percent (Romano, Tremblay, Vitaro, Zoccolillo, & Pagani, 2001). Estimates for separation anxiety disorder alone similarly vary, ranging from 2 to 12 percent in community youth samples (e.g., Bowen, Offord, & Boyle, 1990; Kashani & Orvaschel, 1990). Notably, the overall prevalence for anxiety disorders appears to be less in youths than in adults: rates for anxiety and depression increase from 11 to 21 years of age (e.g., Newman *et al.*, 1996). For example, in their prospective database of an unselected birth cohort of approximately 1000 from Dunedin, New Zealand (referred to herein as the Dunedin Multidisciplinary Study), McGee, Feehan, Williams, and Anderson (1992) reported prevalence rates for anxiety disorders (excluding obsessive-compulsive disorder) of 5.3 percent at the age of 11 years and 8.7 percent at the age of 15 years. Closer examination reveals different profiles of prevalence for different anxiety disorders. Separation anxiety disorder, for example, generally declines in prevalence from 11 to 15 years of age (McGee, Feehan, Williams, & Anderson, 1992), although rates may resurge in later adolescence (Kashani & Orvaschel, 1990). In contrast, the prevalence for specific phobia increased from 1.7 to 3.1 percent from 11 to 15 years of age (McGee *et al.*, 1992). The same was true for overanxious disorder (2.5–5.2 percent) (McGee *et al.*, 1992), although this may decline again in a slightly

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older age range as another study reported rates of 19 percent in 9–12-year-olds compared with 12.7 percent in 13–18-year-olds (Velez, Johnson, & Cohen, 1989). The replicability of these exact figures is questionable, but the general trends for separation anxiety disorder to decline and other anxiety disorders to increase over adolescence appear robust.

As with adults, high rates of co-occurrence exist among the anxiety and mood disorders in youth samples. For example, co-occurring anxiety disorders are found for up to 39 percent of children with an anxiety disorder in community samples (Anderson, Williams, McGee, & Silva, 1987; Kashani & Orvaschel, 1990; Newman *et al.*, 1996), and youths with depression are likely to meet criteria for anxiety as well (Last, Strauss, & Francis, 1987).

### *Continuity of Anxiety Disorders*

Assessment of the course of anxiety from childhood throughout adolescence and into adulthood is complicated by methodological inconsistencies and the effects of treatment. That is, to study an untreated youth sample over long periods of time is an almost impossible if not unethical task, and thus many studies of the course of anxiety derive from clinic-based treated samples. Several prospective longitudinal studies of community samples exist, but treatment effects are rarely reported let alone factored into the variance for explaining the course of anxiety in such studies. That being said, extrapolation from extant data suggests that specific anxiety symptom clusters tend to shift and even remit throughout childhood and early adolescence. For example, from the Dunedin Multidisciplinary Study, nearly two-thirds of those reporting clinically significant fears at the age of 13 years did not report those same fears at the age of 15 years (Poulton *et al.*, 1997). In addition, only one-quarter of 4–12-year-olds with an “emotional disorder”, defined as elements of overanxious disorder, obsessive–compulsive disorder and affective disorder, were similarly categorized 4 years later in the Ontario Child Health Study (Offord *et al.*, 1992).

On the other hand, several other pieces of evidence indicate that although symptoms may shift, the syndrome of anxiety is retained in one form or another for a substantial proportion of youths as they mature. Beidel, Fink, and Turner (1996) monitored a group of 7–12-year-olds ( $n = 150$ ) over a period of 6 months. Initially, 21 percent met criteria for an anxiety disorder diagnosis. Although shifting in symptom status was very common even within this short interval of time, anxious children tended to exhibit continuing anxiety. For example, of 12 children initially diagnosed with social phobia, only 8 percent had no diagnostic features 6 months later: 33 percent still met criteria for social phobia, 41 percent continued to endorse social fears but did not meet diagnostic criteria (i.e., subthreshold), and 16 percent were newly diagnosed with overanxious disorder. Of 12 children initially diagnosed with overanxious disorder, 25 percent had no diagnostic features; 50 percent still met criteria, and 25 percent were newly diagnosed with social phobia 6 months later. Notably, 39 percent of the group that initially did not meet criteria for any disorder exhibited subthreshold features of either social phobia or overanxious disorder 6 months later, indicative of the

commonality of anxious *symptoms* throughout childhood. Often these symptoms are transient, but symptoms that persist over a sufficiently long period of time may develop into an anxiety disorder. For example, prodromal symptoms among unselected youths, especially when exhibiting an “increasing” pattern over a 4 year period, predict onset of internalizing disorders at 15 or 16 years of age (Rueter, Scaramella, Wallace, & Conger, 1999).

The emergence of different types of anxiety and mood disorders over time is also seen in samples of treated youths. For example, in their re-examination of clinic-referred children after a 3 year interval, Cantwell and Baker (1989) found that whereas 71 percent of young children initially diagnosed with avoidant disorder, 89 percent with separation anxiety disorder, and 75 percent with overanxious disorder no longer met diagnostic criteria for their entrance disorder, the majority met criteria for a different disorder. Berg *et al.* (1989) also found that whereas only 31 percent of 16 adolescents with obsessive-compulsive disorder still met criteria for that diagnosis 2 years later, 56 percent had additional mood and anxiety disorders. In another study of 54 children treated for obsessive-compulsive disorder who were assessed on average 3.4 years later, 43 percent continued to meet criteria for obsessive-compulsive disorder, and 96 percent had developed additional diagnoses (Leonard *et al.*, 1993). Last, Perrin, Hersen, and Kazdin (1996) found that 3–4 years following initial diagnosis of clinic-referred children and adolescents, the majority of whom were treated, 82 percent no longer met criteria for their initial anxiety disorder: separation anxiety disorder had the highest recovery rate (96 percent), and specific phobia the lowest (69 percent). However, as with the prior studies, albeit not as pronounced, a proportion (30 percent) developed new psychiatric disorders, and half of these developed new anxiety disorders. Together, these data suggest that although instability in the severity and specific type of anxiety disorder exists, anxious children and adolescents often retain some form of emotional distress over time.

Durability of anxiety disorders may increase with the age of the sample. For example, in the Canadian sample of 8–16-year-olds, only 33.1 percent with an “emotional disorder” had a history of either emotional, conduct, or hyperactivity disorder 4 years earlier (Offord *et al.*, 1992). Similarly, only 42 percent of 15-year-olds retained their anxiety disorder that was diagnosed when they were 11 years old in the Dunedin Multidisciplinary Study (McGee *et al.*, 1992). In fact, 81 percent of those with an anxiety disorder at the age of 15 years did not have an anxiety disorder at the age of 11 years. In contrast with these youth samples, only 38.5 percent of 21-year-olds from the same Dunedin sample did not meet diagnostic criteria for an anxiety disorder during adolescence (11, 13, 15, or 18-year-olds). In addition, the percentage of incident anxiety disorder cases at the age of 21 years that emerged in the *absence* of any type of emotional distress throughout adolescence was only 19.5 percent, lower than the rate for mood disorders (27.9 percent). Other follow-up studies similarly lead to the conclusion that anxiety disorders during adolescence result in a high risk of anxiety disorders during adulthood (e.g., Pine, Cohen, Gurley, Brook, & Ma, 1998), including obsessive-compulsive disorder (Berg *et al.*, 1989). In comparison with the childhood samples, these data suggest a pattern of stabilization with age. More direct evidence was reported by Agras, Chapin, and Oliveau (1972), who found that 100 percent of