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SOCIAL PHOBIA

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Social phobia (also known as social anxiety disorder [SocAD]) has at its core the fear of being negatively evaluated by other people. In community samples, social phobia is the most prevalent anxiety disorder; in Western society, lifetime prevalence estimates range from 4% to 13% among adults (Grant et al. 2005; Kessler et al. 2005; Narrow et al. 2002) and adolescents (Essau et al. 1999; Romano et al. 2001). In children from community samples, it is the second most prevalent disorder after simple phobia (Costello et al. 2003; Gau et al. 2005). In clinical samples, social phobia is the most prevalent anxiety disorder among adults and children (Barrett et al. 1996; Nauta et al. 2003). Mean age of onset is between 10 and 17 years, and new cases are rarely seen after the age of 25 (Grant et al. 2005; Wittchen and Fehm 2003). Social phobia seriously affects quality of life (Simon et al. 2002), and the economic costs of the disorder are huge (Lipsitz and Schneider 2000). Social phobia is a chronic illness; duration of 10–25 years is retrospectively reported in epidemiological and clinical studies (Davidson et al. 1993; DeWit et al. 1999; Kessler et al. 1998; Perugi et al. 1999). A prospective study found complete remission in an 8-year period to occur only in one-third of the cases (Yonkers et al. 2001).

Although social phobia is the most prevalent anxiety disorder, little is known about its etiology. Family studies suggest that social phobia is familial; in one study, an odds ratio of 4.7 was found between parental and offspring social phobia (Lieb et al. 2000). Moreover, specific familial transmission for social phobia (rather than anxiety disorders in general) has been found, suggesting that the disorder “breeds true” (Cooper et al. 2006; Feyer et al. 1995; Reich and Yates 1988), although there is also evidence that social phobia is part of an affective spectrum (Hudson et al. 2003). Behavior genetic studies suggest that genetic factors influence susceptibility to social phobia and that the underlying structure of the genetic and environmental risk factors for social phobia is similar between men and women (Hettema et al. 2005). Underlying traits thought to predispose to social phobia include personality characteristics such as behavioral inhibition and fear of negative evaluation (e.g., Biederman et al. 2001; Robinson et al. 1992; M.B. Stein et al. 2002). With regard to behavioral inhibition, new data suggest possible links between this childhood trait and variation in genes that encode for corticotropin-releasing factor (Smoller et al. 2003, 2005).

Little is known about specific individual and shared environmental factors that might promote or protect against social phobia. There is hardly any evidence of a causative role for specific life events, and the existing evidence is nonspecific—that is, it concerns life events that form a risk for psychopathology in general. For example, Tiet et al. (2001) found that of 26 life events assessed in youth, only having a family member with an alcohol or drug problem predicted social phobia, but this life event also predicted most other forms of psychopathology. Models that have been tested with respect to shared environment or rearing merely concern general rearing factors, such as overprotection and rejection, that are thought to

predispose to many forms of psychopathology (Rapee and Spence 2004). More recently, Hirshfeld-Becker et al. (2004) failed to find significant associations between behavioral inhibition and any of the following psychosocial factors: socioeconomic status; an index of adversity factors found in previous studies to be additively associated with child psychopathology; family intactness, conflict, expressiveness, and cohesiveness; exposure to parental psychopathology; sibship size; birth order; and gender.

Our goal in this chapter is to review the DSM criteria of the social phobia disorder in order to stimulate research on the pathways toward development of this severe and common disorder. Increased knowledge of the etiology of social phobia will eventually inform prevention and treatment. We start with a brief overview of the history of the DSM definition of social phobia and its consequences for prevalence ratings. Then we critically review the criteria, with a specific focus on the subtype definitions of this heterogeneous disorder. Finally, we propose promising hypotheses to be tested concerning etiology and pathophysiology, based on the proposed dimensions of social phobia.

History of Social Phobia Diagnosis in Adults and Children

SOCIAL PHOBIA FROM DSM-II TO DSM-IV

The diagnosis of social phobia has been subject to substantial changes from its first appearance in DSM-III (American Psychiatric Association 1980) to DSM-IV (American Psychiatric Association 1994). In DSM-III, phobic disorders and anxiety states were regarded as two types of anxiety disorders, and social phobia was placed with the phobic disorders. The idea that social anxiety generalizes to many different social situations did not exist at the time, as is illustrated by the remark in DSM-III that “[g]enerally an individual has only one social phobia” (American Psychiatric Association 1980, p. 227). The examples given in DSM-III concerned social phobias that were later considered simple social phobias: “speaking or performing in public, using public lavatories, eating and writing in public” (p. 227). A generalized type had not yet been defined. With respect to the boundaries between social phobia and avoidant personality disorder, DSM-III criterion C specified that symptoms must not be due to avoidant personality disorder. Children with social anxiety could, in DSM-III, also be diagnosed under avoidant disorder in children and adolescents, defined as a persistent and excessive shrinking from contact with strangers sufficiently severe as to interfere with social functioning in peer relationships. In addition, the diagnosis of overanxious disorder in childhood and adolescence, which most resembled generalized anxiety disorder, was also considered for children with social fears, because of the criteria: preoccupation with

appropriateness of behavior in the past; excessive concern with competence in various areas, including social; and marked self-consciousness and susceptibility to embarrassment and humiliation.

In DSM-III-R (American Psychiatric Association 1987), examples of social phobic fears were extended to include the reason why individuals would fear rejection: “*being unable to continue talking* while speaking in public, *choking on food* when eating in front of others, *being unable to urinate* in a public lavatory, *hand-trembling* when writing in the presence of others, and *saying foolish things or not being able to answer questions* in social situations” (p. 243, emphasis added). In DSM-III-R a generalized type was defined, and social phobia and avoidant personality disorder were no longer mutually exclusive; in fact, the diagnostic criteria recommended that the clinician “also consider the *additional* diagnosis of Avoidant Personality Disorder” (p. 243, emphasis added).

In DSM-IV and its text revision, DSM-IV-TR (American Psychiatric Association 2000), a new name, “social anxiety disorder,” was introduced for the disorder, put between brackets after “social phobia.” This new synonym is presumed to serve as a reminder that this condition is, indeed, an anxiety disorder. The reason why individuals would fear rejection was further elaborated and extended: “individuals with social phobia...are afraid that others will judge them to be anxious, weak, ‘crazy,’ stupid or that they will appear inarticulate” (pp. 450–451). Furthermore, fear of showing anxiety symptoms was specifically addressed; in fact, in criterion A it was added as the primary source of fear: “The individual fears that he or she will act in a way (*or show anxiety symptoms*) that will be humiliating or embarrassing” (p. 456, emphasis added). Under diagnostic features the anxiety symptoms are more clearly described:

Individuals with social phobia almost always experience symptoms of anxiety (e.g., palpitations, tremors, sweating, gastrointestinal discomfort, diarrhea, muscle tension, blushing, confusion) and in severe cases these symptoms might meet the criteria for a Panic Attack. Blushing may be more typical of Social Phobia. (p. 451)

Other associated features include “observable signs of anxiety (e.g., cold clammy hands, tremors, shaky voice)” (p. 452).

With respect to the overlap with avoidant personality disorder, common associated features previously used to characterize avoidant personality disorder, such as low self-esteem, feelings of inferiority, and hypersensitivity to criticism, are added to the social phobia diagnostic feature description in DSM-IV, and avoidant personality disorder is in fact incorporated in the social phobia diagnosis: “Avoidant Personality Disorder may be a more severe variant of Social Phobia, Generalized, that is not qualitatively different” (p. 455). Test anxiety is indirectly included in the diagnosis of social phobia: “Individuals with social phobia also often fear indirect evaluation, such as taking a test...often underachieve in school

due to test anxiety” (p. 452).

Concerning the diagnosis of social phobia in childhood, major changes were made in DSM-IV. Both avoidant disorder and overanxious disorder in childhood and adolescence were removed from the childhood section, the former because of its high overlap with social phobia (65%–100% comorbidity; Francis et al. 1992). Instead, for the first three criteria, specific child notes were added as in the previous avoidant disorder criteria: children have to be capable of age-appropriate social relations with familiar people, the anxiety must occur in peer settings and not just in interaction with adults, and the anxiety can be expressed by crying, tantrums, freezing, or shrinking from unfamiliar people. Finally, children, unlike adults, do not have to be able to recognize their fear is excessive or unreasonable.

Finally, DSM-IV introduced *Taijin Kyofusho* (TK), a culture-bound syndrome (e.g., Japan and Korea) referring to an individual’s “intense fear that his or her body, its parts or its functions, displeases, embarrasses, or are offensive to other people in appearance, odor, facial expression, or movement” (p. 849).

In summary, the diagnosis of social phobia has evolved in the following ways: social phobia 1) was once conceptualized as a circumscribed phobia but is now thought to be an anxiety state, with addition of a generalized type; 2) was once discriminated from avoidant disorder in childhood and avoidant personality disorder in adulthood, but now has both of these disorders subsumed under its diagnosis; 3) now takes into account that anxiety symptoms are a primary source of fear of rejection and includes test anxiety; and 4) recognizes cultural differences in the expression of the disorder.

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Prevalence of Social Phobia as a Function of Changing Criteria

As DSM-defined social phobia has evolved from a narrowly defined phobia to a broader anxiety state, prevalence ratings have increased. For adults, early (pre-1990) studies based on DSM-III revealed low lifetime prevalence estimates ranging between 1% and 4%. Subsequent studies, relying on the thoroughly revised DSM-III-R criteria, revealed lifetime rates ranging between 4.1% and 16%. Finally, in line with the only minor differences between DSM-III-R and DSM-IV, studies relying on DSM-IV criteria reported lifetime prevalence rates between 3.9% and 13.7%, comparable to the DSM-III-R studies (Bourdon et al. 1988; Kessler et al. 1994, 2005; see Fehm et al. 2005 for an overview of European com-

munity studies). Studies that have focused on social phobia with clear evidence of impairment (not merely distress) have tended to report lifetime prevalence rates of 4%–5% (Grant et al. 2005; Narrow et al. 2002).

For children, prevalence estimates of social phobia in New Zealand and the United States, based on DSM-III and DSM-III-R, were only 1% at various ages (Anderson et al. 1987; Kashani et al. 1991; McGee et al. 1990). Higher prevalence ratings for childhood social phobia could be expected based on DSM-IV criteria. Indeed, a recent epidemiological study in Taiwan based on DSM-IV reported a much higher prevalence of childhood social phobia: a 3-month prevalence of 3.4% in seventh-grade children (Gau et al. 2005).

Strengths and Weaknesses of Current Criteria for Social Phobia

SOCIAL PHOBIA OR SOCIAL ANXIETY DISORDER

The name “social phobia” might be misleading, because it suggests that *avoidance* of a *circumscribed* object, activity, or situation is an essential element of the disorder. However, many persons meeting criteria of social phobia do not overtly avoid social situations, because there is societal pressure to execute social roles despite discomfort or fear, and social interaction is hard to avoid because it is everywhere. Moreover, the stimuli that persons with social phobia fear can often not be narrowly circumscribed, because rejection may be feared in many different social situations (e.g., job interview, dating), in relation to many different types of people (e.g., authority figures, romantic figures), and on the basis of different concerns (e.g., blushing, making mistakes, being boring). As a result of the suggestion that social phobia concerns avoidance of a circumscribed situation, the condition might not be recognized by clinicians in patients with more generalized social phobia if they do not use a structured diagnostic interview. Therefore, we advise the preferential use of the name “social anxiety disorder” in DSM-V. In line with this, we only use the name social anxiety disorder for the remainder of this chapter. We do not use “SAD,” because this acronym is also used to describe separation anxiety disorder and seasonal affective disorder.

GENERALIZED SOCIAL ANXIETY DISORDER

The main problem with the generalized subtype in contrast to the nongeneralized is that it is defined as a quantitative (or severity) rather than a qualitative difference. Research so far on the difference between the two subtypes has, consistent with the quantitative distinction, simply shown that generalized SocAD cases are more severe—that is, they have earlier onset and longer duration; report more anx-

iety, more avoidance, more skill deficits (reported and objective); have greater impairment and more problems with work, family, friends, and daily activities; have more suicidal behavior; and have a poorer response to psychological and psychopharmacological treatment (Furmark et al. 2000; M.B. Stein et al. 2000; see also Hook and Valentiner 2002 for a summary).

It has been argued that the different subtypes of SocAD, as defined in DSM, can be conceptualized as lying on a continuous spectrum, with nongeneralized SocAD as the least severe, generalized SocAD in middle, and generalized SocAD plus avoidant personality disorder as the most severe form (e.g., M.B. Stein et al. 2000). There is little evidence that generalized and nongeneralized SocAD are characterized by qualitatively different treatment response (D.J. Stein et al. 2001), although this is an area in which additional research is required. It is unclear whether the current subtypes add to our understanding of the etiology, maintenance, and treatment response of social phobia, as long as we cannot define the subtypes in a more qualitative way. Based on the empirical literature, one may argue for a new qualitative description of subtypes, if any.

Hook and Valentiner (2002) also argued for a qualitative description of the former generalized subtype—that is, to view it as interpersonal social anxiety, rooted in beliefs of the self being unlovable that were probably developed in early childhood, given the early onset of generalized SocAD. In support of possible qualitative distinctions, individuals with generalized SocAD reported higher childhood shyness, higher neuroticism, and lower extraversion than individuals with nongeneralized SocAD (Stemberger et al. 1995). Moreover, Norton et al. (1997) found that anxiety sensitivity and neuroticism are two different traits underlying SocAD, of which anxiety sensitivity was the stronger predictor of nonclinical nongeneralized SocAD, and neuroticism the stronger predictor of nonclinical generalized SocAD. This research suggests that there is a form of SocAD that originates from a certain personality development.

Chartier et al. (2001) investigated potential childhood risk factors for social phobia and found that lack of a close relationship with an adult, especially for severe (probably generalized) SocAD cases, was a strong risk factor. It could be speculated that lack of a close relationship in early childhood may cause self schemas of being unlovable, which may lead to interpersonal behaviors of avoiding intimacy and being distant, submissive, or even aggressive in interpersonal relationships (Alden and Taylor 2004). More recently, in a Japanese clinical sample of SocAD patients, a relationship subtype emerged from a cluster analysis, which supports cross-cultural validity for an interpersonal subtype (Sakurai et al. 2005).

Taken together, there seems to exist a form of SocAD that may be called the interpersonal subtype, rooted in early schema of the self being unlovable, boring, or weak and characterized by a more neurotic, shy, and less extroverted early personality development, which may have resulted from lack of closeness with an adult. This subtype hypothesis should be tested in future, preferentially in pro-

spective longitudinal studies.

NONGENERALIZED, SIMPLE, OR CIRCUMSCRIBED SOCIAL ANXIETY DISORDER

The nongeneralized “subtype” is, as DSM-IV-TR acknowledges, a heterogeneous group “that includes persons who fear a single performance situation as well as those who fear several, but not most, social situations” (p. 452). Within nongeneralized SocAD, there seems to be a “performance” subtype that appears to be different from other types of SocAD in a number of ways. *Performance* refers to situations in which a person has to perform for a real or imagined audience (e.g., music, drama, dance, sports, speech) as well as a testing situation. A performance requires an active role of the performer and little or no interaction with the public; the person is the object of others’ attention and evaluation.

Research on psychophysiological differences between generalized and nongeneralized SocAD consistently shows that individuals with SocAD of the nongeneralized type have stronger heart rate acceleration during a speech task than individuals with generalized SocAD (Boone et al. 1999; Heimberg et al. 1990; Hofmann et al. 1995; Levin et al. 1993), a difference not found in a social interaction task (Boone et al. 1999). Because most of the people in the nongeneralized group in the referred studies had speech phobia, the finding that they have a higher heart rate response only in a speech task supports a performance subtype. Individuals with nongeneralized SocAD—mostly people with performance anxiety—respond to beta-blockers, unlike people with generalized SocAD (Liebowitz et al. 1992; Turner et al. 1994). Furthermore, those with performance anxiety report more traumatic experiences related to their social phobia than other individuals with social phobia (Stemberger et al. 1995), and this suggests a stronger conditioning history in performance anxiety. Further support for a performance subtype comes from social anxiety questionnaire research in which performance anxiety appears a separate factor from interaction anxiety (Mattick and Clarke 1998). On the basis of these differences, it could even be argued that performance anxiety bears more resemblance to other specific phobias than to more generalized SocAD and might be better placed within that category. Nonetheless, for the time being, the comparable nature of the cognitions (i.e., concern about embarrassment) in nongeneralized and generalized SocAD could argue for their retention within the single SocAD diagnostic category. In any case, there seems to be substantial evidence to suggest a performance subtype of social phobia.

AUTHOR: Paragraph above OK as edited? Particularly sentence beginning "Individuals with nongeneralized SocAD" and the sentence immediately following.

What other social anxieties have been included under the simple or nongeneralized social phobia? Fears of eating or writing in public have been classified as simple social phobias. Such fears are, in most cases, directly related to fear of trembling, just as is fear of drinking, lighting a cigarette, or singing. Fears of eating and writing have also been called "performance fears," suggesting that eating or writing—daily activities in human life—are a performance. Many patients with SocAD have bodily symptoms such as blushing, trembling, or sweating, and for almost half of the patients in a Dutch clinical sample this was the primary source of fear (Bögels and Reith 1999). These bodily reactions have in common that they are observable by others and therefore can attract attention to the person and become a fear themselves. What they also have in common is that they are bodily reactions that are not readily inhibited. Like panic attacks, they can play both stimulus and response roles in the conditioning of social fears (Evans 1972; McNally 1990). Fear of blushing is most common in Dutch referred patients with SocAD, followed by fear of trembling and fear of sweating (Bögels 2006). A similar order was found in Japanese SocAD patients: most frequent was fear of blushing; second, fear of feeling tense; third, fear of emitting body odor (Matsunaga et al. 2001). However, fear of showing bodily symptoms such as blushing cannot be regarded as a nongeneralized fear according to a quantitative definition (although it has been categorized under nongeneralized [Scholing and Emmelkamp 1993]) because visible bodily reactions occur in many different social situations and therefore have the power to condition the social fear to many different social situations of the performance and the interaction type.

Research from various areas suggests that fear of showing bodily symptoms is indeed a distinct social fear. Several studies investigating ratings of objective social behavior of SocAD patients found that social skills ratings comprised two factors: a visible anxiety factor and a social behavior factor (Voncken and Bögels 2006). Even more convincing, the same visible anxiety and social behavior factors were found in children with SocAD while they performed social tasks (Cartwright-Hatton et al. 2003). Patients with fear of blushing as the primary source of fear had indeed higher blushing responses, as measured by a photo-plethysmograph, than SocAD patients without this primary fear in two studies (Bögels and Voncken, in preparation; Gerlach et al. 2001), and they were also identified by independent observers as blushing more often and more intensively (Bögels and Voncken, in preparation). Interestingly, they did not show higher skin conductance response, which is an indication of general fear. Another argument for distinguishing a fear

of showing bodily symptoms subtype is that this problem seems highly common in Asiatic cultures (Kleinknecht et al. 1997) and is the predominant fear in SocAD patients with TK (Matsunaga et al. 2001). With respect to the learning history of a fear of blushing, Mulkens and Bögels (1999) found that people with subclinical, as well as clinical, SocAD with fear of blushing as the primary complaint reported more traumatic experiences preceding the fear, suggesting that, just as in performance anxiety, conditioning may play an important role in the learning history.

AUTHOR: No reference for Bogels and Voncken, in preparation, is provided in the reference list. Please provide a reference and as much current information as possible.

A last form of more circumscribed SocAD, not mentioned in any DSM, is social appearance anxiety or social physique anxiety (Hart et al. 1989). Some individuals with SocAD, when their physiques are observed by others, become anxious and are concerned about being negatively evaluated because of their physical appearance. For example, their concerns may focus on aspects of their bodily appearance, hair growth on their body, clothes, or way of walking. With respect to the learning history of social physique anxiety, Cash et al. (1986) found that being teased about one's appearance as a child is a risk factor, but so is actual appearance (e.g., body fat [Hart et al. 1989]). In line with this, D.J. Stein et al. (2004) included body-focused concerns as one of the dimensions in their social anxiety disorder spectrum approach. It is unknown to what extent these types of pathological social concerns about body image overlap with the DSM-IV diagnostic category of body dysmorphic disorder; however, based on the frequent comorbidity between that and SocAD (Coles et al. 2006), the possibility of a social physique “subtype” of SocAD overlapping with current conceptualizations of body dysmorphic disorder should be strongly considered.

RECOGNITION OF IRRATIONALITY OF FEAR

Criterion C states that adults—but not necessarily children—should recognize that their fear is irrational or exaggerated. It is our clinical impression that some adult SocAD patients do not recognize the “irrationality” of their fears. This criterion was formulated to distinguish SocAD from psychotic disorders but is not included in some other anxiety disorders, such as panic disorder. In other anxiety disorders the criterion is less stringent, for example, in obsessive-compulsive disorder, *at some point during the course of the disorder*, the person has recognized that the obsessions or compulsions are excessive or unreasonable. It might not be necessary to mutually exclude social phobia and psychotic disorders, because psy-

chotic patients with a comorbid diagnosis of SocAD might benefit from treatment for SocAD. In fact, there are indications that treating social phobia might prevent psychotic relapse (Bögels and Tarrrier 2004). Another reason to reevaluate criterion C is that some SocAD patients with TK lose insight into their symptoms (Matsunaga et al. 2001). Poor insight tended to be more frequent in nonresponders to (pharmacological) treatment. They argue for a “poor insight” specifier in SocAD just as DSM-IV has recognized in some other anxiety disorders (e.g., obsessive-compulsive disorder). It might be sufficient that the interviewer recognizes the fear as exaggerated, that is, that the fear of being rejected because of X is larger than necessary, given X.

AUTHOR: Above, next-to-last sentence, “They argue”: Who is “they”? Matsunaga et al?

SUBTHRESHOLD SOCIAL ANXIETY DISORDER

Criterion E concerns the interference as a result of social anxiety: the SocAD should interfere with social or professional (school) functioning. In clinical samples, the failure to discern demonstrable psychosocial impairment (as opposed to distress about having the illness) is a prime reason for failing to meet full diagnostic criteria for DSM-IV social phobia (Zimmerman et al. 2004). Subthreshold SocAD concerns social fears that might bother the person and lead to suffering but do not clearly interfere with functioning. Structured diagnostic interviews such as the Anxiety Disorder Interview Schedule (Albano and Silverman 1996; DiNardo et al. 1994) allow for such subthreshold diagnoses by assigning interference scores below 4. Including subthreshold social phobia in DSM-V would have certain advantages in the light of research findings. First, the diagnosis of SocAD is more stable over the life course when subthreshold levels of SocAD are included. Second, because social phobia is the precursor of many other severe types of psychopathology, such as depression (D.J. Stein et al. 2001), conduct disorder, psychotic disorder, and addictions (Bögels and Tarrrier 2004), preventing SocAD by intervening in subthreshold stages might preclude such severe outcomes. On the other hand, there is merit to excluding from diagnostic status a set of symptoms that merely serve as a risk factor for other disorders. As such, it might be better to educate clinicians about subthreshold social anxiety symptoms without codifying them as a diagnostic entity.

SOCIAL ANXIETY DISORDER AS A COMORBID STATE IMPORTANT FOR TREATMENT

Criterion G states that pervasive developmental disorder (PDD) and social phobia are mutually exclusive, that is, the social anxiety should not be attributed to PDD. As was already argued in the context of psychotic disorder, persons with PDD and excessive social anxiety might benefit from SocAD treatment (Sverd 2003; Tan-tam 2000). These individuals also present a different clinical picture from those with PDD with conduct problems or depression. Therefore, it could be considered to change this statement to “Consider also a diagnosis of PDD if the social fears are related to symptoms of PDD.”

Overlap Between Social Phobia and Avoidant Personality Disorder

The overlap between avoidant personality disorder and social phobia, especially of the generalized subtype, is enormous (i.e., up to 89%; Schneier et al. 1991, 1992). The distinction, as described in DSM-III, is that in both disorders humiliation is a concern, but a specific situation, such as public speaking, is avoided rather than personal relationships. Note that in DSM-III, SocAD was still regarded as a phobia rather than an anxiety state. In DSM-III-R, there was one criterion of avoidant personality disorder that clearly differentiated SocAD from avoidant personality disorder, concerning avoidance of situations because of fear of physical vulnerability; in DSM-IV, however, this criterion was removed. This makes it questionable whether the current distinction between (generalized) SocAD and avoidant personality disorder is still valid. The pattern of family aggregation of SocAD and avoidant personality disorder also suggests that the latter and social phobia represent a dimension of severity of social anxiety rather than separate disorders, because the relatives of both avoidant personality disorder and SocAD patients are at risk for having social phobia (Tillfors et al. 2001), and both avoidant personality disorder and generalized SocAD are seen at markedly elevated rates among first-degree relative of patients with generalized SocAD (M.B. Stein et al. 1998).

Emerging Hypotheses That Can Be Tested in the Not Too Distant Future

Generalized social phobia is characterized by altered amygdala reactivity to salient social cues (e.g., emotional faces) (Phan et al. 2005; M.B. Stein et al. 2002). Moreover, it is likely that greater amygdala activation in this context is associated with higher levels of social anxiety and may not be restricted to persons with SocAD.

As such, heightened amygdala activation to certain types of emotional processing demands may characterize an endophenotype for SocAD and related disorders, such as enduring childhood behavioral inhibition (Schwartz et al. 2003). When technological advances enable the conduct of multicenter neuroimaging studies, it will be possible to study enough individuals to test this hypothesis.

As noted earlier, there exist compelling data for genetic and environmental contributors to SocAD, but with the exception of twin studies, these two areas of research have not been well integrated. It seems likely that gene–environment interactions might explain the propensity for some individuals with high familial risk to develop SocAD, whereas others do not. Testing for gene–environment interactions is impossible with certain study designs and, even when possible, requires large sample sizes. Once specific candidate genes for SocAD are identified, testing for such interactions will be possible (see Caspi et al. 2003 for an example in major depression) although large samples will still be required.

Another interesting research area concerning the etiology of SocAD concerns the specific psychophysiological responses that may underlie social phobia. Already in 1983, the landmark study of Amies, Gelder and Shaw revealed that the only bodily symptom that is more pronounced in social phobia, compared with agoraphobia, is blushing (Amies et al. 1983). The study relied on self-report, but now that blushing is being assessed with a cheek photo-plethysmograph (e.g., Mulken et al. 2001), it can be tested whether a more intense blushing response is a pathway toward either SocAD in general or a certain subtype of SocAD: social anxiety due to fear of showing bodily symptoms. Because such a blushing response can be assessed very early in childhood, it can be used as a potential early marker for a socially anxious development.

Conclusion

Social anxiety disorder has, in recent decades, emerged from a phobic reaction to a circumscribed social situation to an anxiety state with large variety in severity, content of fears, and insight in irrationality of fears. Despite the progress that has been made in understanding maintenance factors and developing effective treatments, the etiology of SocAD is largely unknown. The subtype classification as defined in DSM concerns a quantitative (severity) rather than a qualitative differentiation, and one can argue that such subtyping does not add to our understanding of the etiology. On the basis of the empirical literature, we argue for qualitative subtypes or dimensions, if any. SocAD can be conceptualized in four dimensions: 1) performance fear, 2) fear of showing bodily symptoms, 3) social physical fear, and 4) interpersonal anxiety. Different etiological routes in terms of predisposition (e.g., psychophysiology), rearing, and life events may underlie these dimensions and can be tested, preferably with experimental and longitudinal de-

signs, starting from early childhood. Perhaps most progress in this field may come from testing gene (or predisposition)-environment interactions. Finally, testing the stability of etiological routes and SocAD subtypes across cultures may enhance our understanding of the essential characteristics of SocAD.

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