

Gender Differences in Patients with Panic Disorder: Evaluating Cognitive Mediation of Phobic Avoidance

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Epidemiologic reports have consistently found that females are at greater risk for the development of panic disorder, in particular, when it is accompanied by agoraphobia. Although gender appears to be a well-established risk factor for the development of phobic avoidance, the mechanisms that account for this increased risk have yet to be delineated. Often, gender differences in phobic avoidance are speculated to arise from differences in courage (e.g., men are expected to be brave and endure fear-provoking situations). Our study evaluated this popular but unsubstantiated theory and advanced another hypothesis: Differences in panic- and arousal-related cognitions may account for gender differences in phobic avoidance. Male (n = 27) and female (n = 61) patients meeting DSM-IV criteria for panic disorder with or without agoraphobia were evaluated. Data did not support gender differences in courage; nor were these indices related to phobic avoidance. In contrast, there were significant gender differences in several cognitive domains. Moreover, anxiety sensitivity and panic-related appraisals mediated gender differences in phobic avoidance.

KEY WORDS: agoraphobia; mediation; panic disorder; gender.

Epidemiologic studies of panic disorder consistently indicate a higher prevalence among females (Robins et al., 1984; Katerndahl & Realini, 1993; Weissman & Merikangas, 1986). According to findings from the Epidemiological Catchment Area (ECA) study, females have approximately twice the prevalence rate for panic disorder relative to males (Robins et al., 1984). Other reports indicate that this gender difference may be even greater, with prevalence rates ranging up to three times higher among females (Cameron & Hill, 1989).

Patients receive an additional diagnosis of agoraphobia when fear of panic results in phobic avoidance. Interestingly, gender differences become much more apparent when phobic avoidance is considered. Cameron and Hill (1989) found a

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1:2 ratio of males to females among panic disorder patients with agoraphobia but found no gender differences for those patients without agoraphobia. Similarly, ECA data (Myers et al., 1984) indicate significantly smaller gender ratios for panic disorder (approximately .5:1 male:female) compared to agoraphobia (approximately 1:3.5 male:female). Several studies indicate a greater percentage of females as phobic avoidance increases (Reich, Noyes, & Troughton, 1987; Sanderson, Rapee, & Barlow, 1987). For example, Sanderson et al. reported that approximately 90% of the severe agoraphobic patients were female compared to only 70% for mild agoraphobic patients.

Apart from epidemiologic studies of prevalence rates, only a handful of reports explored gender differences in panic disorder. These studies indicated few differences in symptomatology (Katerndahl & Realini, 1993; Macaulay & Kleinknecht, 1986) or other associated clinical and psychological features (Mavissakalian, 1985; Chambless & Mason, 1986) with one exception in which females were rated by clinicians as more anxious and depressed (Oei, Wanstall, & Evans, 1990). Despite significant differences in the nosologic relationship between panic disorder and agoraphobia during the recent evolution of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), studies consistently suggest that phobic avoidance is uniquely distinguished as one clinical facet of panic disorder that is associated with gender differences.

It has been speculated that gender differences may arise simply from an underreporting of symptoms by males (Richardson, 1991). It may be more culturally acceptable for women to report fears, whereas men are expected to appear "tougher," and therefore are less apt to report their anxiety. Most believe, however, that gender differences in phobic avoidance exist. One of the main psychological explanations that has been advanced is that gender differences in courage lead to differential avoidance behaviors. Men are expected to be brave and endure fear-provoking situations, whereas women are more apt to act on their fears by avoiding (Maccoby, 1988; Gelfond, 1991).

Apart from a few studies by Rachman and colleagues (McMillan & Rachman, 1988; O'Connor, Hallam, & Rachman, 1985), courage has received little attention in studies of anxiety. In our study, we used Rachman's definition of courage, which is discriminable from related constructs including fearlessness, bravado, and phobic avoidance. *Courage* is defined, in light of Rachman's early work, as a specific discordance of three components of an anxiety response—that is, courage is approach behavior to a threatening stimulus in the context of subjective fear (and/or physiological arousal). *Fearlessness* is a different type of discordance, defined by approach behavior to an objectively threatening stimulus with no subjective fear.

However, phobic avoidance in the context of panic disorder is avoidance of situations because of fear of having panic. *Phobic avoidance* can be defined as activation of the behavioral component of the three systems model without any necessary activation of subjective or physiological components. It would seem that phobic avoidance is created mainly by a threat of fear, whereas courage is demonstrated in the context of fear. Conceivably, one could avoid quite a number of situations due to fear of having panic (high phobic avoidance) but persist in situations

when experiencing fear (high courage), such as persevering when experiencing a spontaneous panic attack. It seems most likely, however, that an individual who avoids many situations (high phobic avoidance) would also be more likely to flee a situation immediately if fear is experienced (low courage). In the context of these definitions, *bravado* is the pretense of fearlessness but is essentially demonstrating courage. The idea is that males will approach objectively threatening situations (perhaps for fear of social scrutiny) and report no fear despite subjective and/or physiological fear because they believe it is more socially acceptable to report fearlessness than courage.

There is limited evidence to support this hypothesis. The sociocultural explanation of gender differences in *bravado*, although commonly cited, appears to be untested (Pickersgill & Arrindell, 1994; Pierce & Kirkpatrick, 1992). The high and generally stable prevalence of agoraphobia in women across cultures has led many to speculate that “men are expected to be stronger and braver and to ‘tough it out’ by neither reporting fear nor demonstrating avoidance” (Barlow, 1988, p. 361). Yet, studies of gender differences in courage and demonstration that courage is associated with less avoidance or greater endurance of phobic situations have not been conducted.

One strategy that may elucidate gender differences in agoraphobia is to evaluate the relationship between gender and psychological factors linked with phobic avoidance. Several cognitive variables are associated with phobic avoidance, including anxiety sensitivity (i.e., beliefs regarding aversive and threatening consequences of physiological arousal) and panic-related appraisals (i.e., specific predictions regarding the likelihood and consequences of experiencing a panic attack, as well as self-efficacy in coping with panic attacks). These variables represent somewhat different cognitive elements of anxiety and panic. *Anxiety sensitivity* is conceptualized as a cognitive vulnerability factor for the development of anxiety in the context of arousal (Reiss & McNally, 1985), whereas *panic-related appraisals* are cognitions associated with the experience of having a panic attack.

Individuals with panic disorder plus agoraphobia, compared to patients with other anxiety disorders and nonclinical controls, score higher on anxiety sensitivity measures (Reiss, Peterson, Gursky, & McNally, 1986). Among panic disorder patients, anxiety sensitivity is significantly associated with avoidance (Saviotti et al., 1991). Panic appraisals are also predictive of severity of phobic avoidance (Craske, Rapee, & Barlow, 1988; Cox, Endler, & Swinson, 1995; Schmidt, Jacquin, & Telch, 1994). For example, Telch, Brouillard, Telch, Agras, and Taylor (1989) found that the likelihood of anticipated panic was the strongest correlate of phobic avoidance among patients with panic disorder.

Our study evaluated gender differences on a number of factors that have been presumed to contribute to phobic avoidance in order to identify potential mediating variables. These factors included (1) courage (i.e., as defined by Rachman, 1978, in terms of persisting in the presence of fear), and (2) cognitions associated with panic and physiological arousal (i.e., anxiety sensitivity, panic-related appraisals). Specifically, it was hypothesized that both courage and panic-related cognitions would mediate the relationship between gender and phobic avoidance.

METHOD

Participants

The sample consisted of consecutive patients ($N = 88$; male = 27, female = 61) presenting at an academic research center for treatment who met the following entry criteria: (a) principal DSM-IV Axis I diagnosis of panic disorder; (b) no change in medication type or dose during the previous 8 weeks; and (c) no evidence of current or past schizophrenia, bipolar disorder, or organic mental disorder. Medication status and medical history were assessed by the project physician based on a semistructured clinical interview.

Diagnostic assessment was based on a structured diagnostic interview using the Structured Clinical Interview for DSM-IV–Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1994). Interviews were conducted by graduate students in clinical psychology with extensive training in SCID administration. Each interview was reviewed by a licensed clinical psychologist during weekly staff meetings. Sixteen (16) videotaped interviews were selected at random and assessed by an independent evaluator for reliability. Kappa coefficients were high for panic disorder diagnoses ($\kappa = 1.00$) and for all Axis I diagnoses ($\kappa = .86$) but somewhat lower for agoraphobia diagnoses ($\kappa = .64$). Demographic information was obtained using a self-report measure.

Procedure and Statistical Analyses

Data for our study were gathered during an evaluation consisting of the SCID and a battery of self-report measures indexing demographics, panic frequency, anxiety symptoms, phobic avoidance, anxiety sensitivity, panic-related appraisals, depression, overall disability, and courage. Self-report measures were administered in a random order and completed in the context of a comprehensive evaluation including the structured diagnostic interview and other clinical and diagnostic procedures (e.g., biological challenge, cardiac evaluation) not reported here.

Gender differences were assessed using ANOVAs for continuous measures and χ^2 tests for categorical measures. Mediation was tested through a series of regression analyses in accordance with Baron and Kenny's (1986) methodology. According to this methodology, there must be a significant relationship between the predictor variable and the hypothesized mediator variable, the predictor variable must predict the criterion variable, and finally, there must be a strong relationship between the mediating variable and the criterion variable with a simultaneous reduction in the effect of the predictor variable when controlling for the mediator.

Assessment Battery

Clinical Symptomatology

Beck Depression Inventory (BDI). Level of depressive symptoms was assessed by the BDI, a reliable and well-validated measure of depressive symptomatology (see Beck, Steer, & Garbin, 1988, for a review).

Sheehan Disability Scale (SDS). The SDS is a self-report measure of global impairment created by the presenting problem (Ballenger et al., 1988). The scale assesses impairment in: (a) work activities, (b) social life and leisure activities, (c) family life and home responsibilities, and (d) overall work and social disability. The SDS has good psychometric properties and is associated with clinician-rated impairment and quality of life in patients with panic disorder (Telch, Schmidt, Jaimez, Jacquin, & Harrington, 1995).

Sheehan Patient-Rated Anxiety Scale (SPRAS). The SPRAS (Sheehan, 1983) is a widely used self-report scale for assessing the intensity of anxiety symptoms. Each of the 35 symptoms (e.g., shaking or trembling) is rated on a 5-point scale ranging from 0 (not at all distressing) to 4 (extremely distressing). The instructions were modified so that symptom ratings were based on a 1-week time frame. The SPRAS has demonstrated adequate test-retest reliability ($r = .67$) and is highly associated with other measures of anxiety and overall impairment in panic disorder samples (Schmidt, Staab, Trakowski, & Sammons, 1997).

Texas Panic Attack Record Form. Panic attacks were assessed using a prospective self-monitoring approach that has been found to reduce overreporting bias (Margraf, Taylor, Ehlers, Roth, & Agras, 1987). Using panic diary forms for each panic episode over a 1-week period, participants recorded the date, time, duration, severity, symptoms experienced, and setting parameters (e.g., place, activity). Panic attacks with three or fewer symptoms (i.e., limited symptom attacks) were not included in the panic attack count. Only the panic attack frequency count was used for analysis.

Potential Mediating Variables

Anxiety Sensitivity Index (ASI). The ASI is a 16-item questionnaire that measures fear of arousal symptoms (Peterson & Reiss, 1987). Each item assesses concern about the possible negative consequences of anxiety symptoms. The ASI has demonstrated adequate internal consistency (Telch, Shermis, & Lucas, 1989b) and test-retest reliability (Maller & Reiss, 1992). Moreover, the ASI appears to measure fear of anxiety symptoms as opposed to state or trait anxiety (McNally, 1994; Reiss, 1997).

Panic Appraisal Inventory (PAI). The PAI is a 45-item self-report measure composed of three separate scales assessing related aspects of panic appraisal, including estimates of panic likelihood across a variety of settings (PAI-Likelihood), perceived catastrophic consequences of experiencing panic (PAI-Consequences), and coping self-efficacy in the context of panic (PAI-Coping). The PAI-Consequences scale is further divided into three subscales assessing physical, social, and loss-of-control threats. Each of the PAI subscales, including the Consequences subscales, possesses high internal consistency (coefficient $\alpha = .85-.94$), test-retest reliability ($r_s = .81-.89$), and is predictive of phobic avoidance and general symptom severity among patients with panic disorder (Schmidt, Telch, & Joiner, 1996; Telch et al., 1989a).

Courage Scale (CS). Courage was assessed using an author-constructed 7-item self-report measure that was modeled after Rachman's (1978) conceptualization of

courage (i.e., behavioral approach or persistence in the context of subjective fear). We are aware of no other standardized instruments for assessing courage so that the CS is our attempt to develop a brief, self-report instrument that captures Rachman's concept.

To increase reliable interpretation of the items, the CS first defines courage (i.e., perseverance despite having fear) and distinguishes courage from fearlessness (i.e., having little or no fear when exposed to objectively threatening or fear-provoking situations). The CS consists of a 3-item subscale assessing general courageousness (e.g., In general, are you a courageous person? Do other people consider you to be courageous?) as well as a 4-item subscale that measures panic-specific courage (e.g., How courageous are you when it comes to dealing with panic attacks? When you have a panic attack, do you behave courageously?). Items are rated on a scale ranging from 0 = Not at all, to 7 = Extremely, and summed for the appropriate subscale. In the present sample, subscales possessed adequate internal consistency (CS-General $\alpha = .85$, CS-Panic $\alpha = .96$) and were only modestly related ($r = .22, p < .05$). Principal components analysis (PCA) was conducted on the CS item responses using orthogonal (Varimax) rotation to enhance interpretability. PCA was used consistent with Nunnally's (1978) recommendation that, in an exploratory analysis, PCA (with unities in the diagonals) is a reasonable analytic strategy. Factor estimation was based on the following criteria: (1) Kaiser's (1961) criterion to retain factors with unrotated eigenvalues of approximately one or greater; (2) the scree test; and (3) the interpretability of resulting factor structures (Gorsuch, 1983), which involves examining solutions with different extraction criteria to determine the point at which trivial or redundant factors emerge (e.g., Schmidt, Joiner, Young, & Telch, 1995).

PCA of all items indicated a two-factor solution corresponding to the intended subscales (CS-Panic, eigenvalue = 4.02, accounting for 57.4% of the variance; CS-General eigenvalue = 1.78, accounting for 25.4% of the variance). Using a subsample from the present study ($N = 48$), we found that the CS-General was stable over a 3-month period of cognitive behavioral treatment ($r = .83, p < .01$), but the CS-Panic was not stable during treatment ($r = .33, p < .05$).

Some additional data from a separate unpublished study address the construct validity of the CS. Nonclinical controls score significantly higher on the CS-General ($M = 12.7, SD = 4.3$) compared to patients with panic disorder ($M = 10.1, SD = 4.2, F(1,89) = 4.21, p < .05$). Both the CS-General and the CS-Panic were significantly associated with official recognition of courageous acts (e.g., receiving a medal, an award). In addition, the CS was associated with the amount of CO₂ inhaled during a CO₂ biological challenge (i.e., patients expect to experience high levels of physiological arousal and subjective distress when inhaling this gas mixture). Both scales were modestly but significantly (CS-General $r = .18$, CS-Panic $r = .22, ps < .05$) associated with the degree of inhalation (percentage of vital capacity inhaled).

Criterion Measures of Phobic Avoidance

Fear Questionnaire (FQ). The FQ (Marks & Mathews, 1979) was used to assess level of phobic avoidance. The FQ consists of 15 items representing three separate

phobia types (agoraphobia, blood/injury phobia, and social phobia). An additional one-item index (FQ–Restriction) assesses the level of restriction and distress created by phobic avoidance (range: 0 = No distress/restriction to 8 = Extremely distressing/restricting). The FQ–Ago has adequate psychometric properties and is widely used in outcome research (Jacobson, Wilson, & Tupper, 1988).

Mobility Inventory (MI). The MI (Chambless, Caputo, Jasin, Gracely, & Williams, 1985) was also used to assess phobic avoidance when accompanied (MI–Accompanied) as well as alone (MI–Alone). Both subscales possess adequate psychometric properties (Cox, Swinson, Kuch, & Reichman, 1993).

SCID Agoraphobia Diagnosis. The final measure of phobic avoidance was based on the presence or absence of an agoraphobia diagnosis based on the SCID clinical interview.

RESULTS

Relationship among Gender, Other Demographics, and Clinical Characteristics of Panic Disorder

The relationships among gender and demographic variables as well as clinical characteristics of panic disorder are indicated in Table I. There were no gender

Table I. Gender Comparisons on Demographics and Clinical Characteristics

Variable	Female			Male			$F(\chi^2)$
	$M(\%)$	SD	n	$M(\%)$	SD	n	
Age	37.3	12.0	61	36.6	10.4	27	0.07
Ethnicity							
Caucasian (%)	(87)		61	(92)		27	(0.95)
Martial status							(0.71)
Married	(64)		39	(64)		17	
Never married	(27)		17	(30)		8	
Divorced	(7)		4	(4)		1	
Widowed	(2)		1	(4)		1	
Employed (%)	(66)		61	(96)		27	(12.1)**
Panic attack frequency	2.9	5.8	61	2.0	2.5	27	1.10
Anxiety (SPRAS)	52.9	31.4	61	48.6	25.2	27	0.37
Depression (BDI)	15.5	10.3	61	13.0	8.0	27	1.19
Overall disability (SDS)	3.5	1.1	61	3.4	0.9	27	0.07
Psychotropic medication	(52)		61	(37)		27	(1.80)
Antidepressants	(10)		6	(11)		3	(0.03)
Benzodiazepines	(31)		19	(19)		5	(1.57)
Both	(11)		7	(7)		2	(0.36)
Phobic avoidance							
Agoraphobia diagnosis	(70)		61	(46)		27	(6.88)**
MI–Alone	2.2	1.1	61	1.6	0.9	27	6.75**
MI–Accompanied	1.6	0.7	61	1.6	0.7	27	0.22
FQ–Agoraphobia	13.9	9.0	61	9.1	9.7	27	4.32*
FQ–Restriction	3.8	2.7	61	3.6	2.4	27	0.21

* $p < .05$, ** $p < .01$.

Note: Panic attack frequency = Number of full symptom panic attacks during previous week; SPRAS = Sheehan Patient Rated Anxiety Scale; BDI = Beck Depression Inventory; SDS = Sheehan Disability Scale; MI = Mobility Inventory; FQ = Fear Questionnaire.

differences in age, ethnicity, or marital status, but a higher percentage of males were employed.

Evaluation of clinical measures indicated that males and females showed comparable symptom severity in terms of panic attack frequency, general anxiety symptoms (SPRAS), depression (BDI), and overall impairment (SDS). Gender differences in the use of psychotropic medication was also evaluated. For analytic purposes, antidepressants (SSRIs, MAOIs, tricyclics) were grouped together. In the present sample, 48% were taking psychotropic medication, with 10% using antidepressants, 27% using benzodiazepines, and 11% using both. Differences in medication status did not reach statistical significance ($ps > .05$). Consistent with previous studies, females showed higher levels of phobic avoidance as evidenced by greater rates of agoraphobia diagnoses and higher MI-Alone and FQ-Ago scores (see Table I). This pattern of scores suggests that females, relative to males, will avoid more only when alone but feel equally distressed and/or restricted (i.e., equivalent FQ-Restriction scores) about avoidance behaviors. Evaluation of the SCID for cooccurring secondary diagnoses (10 secondary diagnoses were compared) indicated only one gender difference with a higher rate of GAD in males (27%) relative to females (4%) ($\chi^2(1, N = 88) = 8.4, p < .01$).

Mediation Step 1: Gender and Hypothesized Mediators

Analyses indicate no gender differences in self-reported courage (Table II). One-way ANOVAs indicated minimal differences on both the CS-General as well as the CS-Panic. The courage indices were not significantly associated with agoraphobia based on any of the five phobic avoidance indices (Table III). Evaluation of males and females separately also indicated no significant associations between either measure of courage and any of the phobic avoidance indices ($ps > .05$).

As shown on Table II, significant gender differences on the ASI and PAI suggest that females show greater anxiety sensitivity, expect that panic is more likely to occur (PAI-Likelihood), and have stronger beliefs about the aversive consequences of experiencing a panic attack (PAI-Consequences). Significant dif-

Table II. Gender Comparisons on Postulated Mediating Variables

Variable	Female			Male			<i>F</i>
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	
CS-General	10.2	4.2	61	10.7	4.1	27	0.21
CS-Panic	13.2	6.6	61	15.2	7.7	27	1.10
ASI	30.2	11.9	61	24.4	8.7	27	6.79*
PAI-Likelihood	36.6	20.4	61	23.9	15.9	27	8.42**
PAI-Consequences	34.2	23.6	61	25.1	18.2	27	4.49*
Physical	38.9	30.8	61	25.4	18.5	27	4.60*
Social	34.7	30.3	61	24.4	24.7	27	2.48
Loss of Control	35.5	31.2	61	21.7	23.1	27	4.39*
PAI-Coping	36.8	21.9	61	43.2	22.7	27	1.75

* $p < .05$, ** $p < .01$.

CS = Courage Scale; ASI = Anxiety Sensitivity Index; PAI = Panic Appraisal Inventory; PAI-Consequences subscales: physical, social, and loss of control threats.

Table III. Intercorrelations, Means, and Standard Deviations among Measures of Phobic Avoidance, Cognitive Variables, and Gender

	1	2	3	4	5	6	7	8	9	10	11	12
1. AG Dx	—											
2. MI-Acc	.36**	—										
3. MI-A1	.43**	.78**	—									
4. FO-Ago	.40**	.65**	.90**	—								
5. FO-Restr	.31*	.50*	.54**	.51**	—							
6. PAI-Like	.23*	.45**	.63**	.62**	.46**	—						
7. PAI-Con	.22*	.35*	.44**	.42**	.45**	.58**	—					
8. PAI-Cope	-.42**	-.19	-.25**	-.24**	-.25**	-.19	-.46**	—				
9. ASI	.09	.42**	.48**	.47**	.32**	.64**	.70**	-.31**	—			
10. Gender	.26*	.13	.27**	.22*	.06	.30**	.22*	-.14	.27**	—		
11. CS-Gen	-.14	-.05	-.11	-.08	-.04	-.08	-.21	.27**	-.20	-.04	—	
12. CS-Pan	-.08	-.18	-.10	-.08	-.11	.08	-.13	.40**	-.13	-.09	.22	—
<i>M</i>	—	1.57	2.03	13.1	3.8	33.0	32.5	31.2	28.7	—	10.3	13.8
<i>SD</i>	—	0.71	1.06	9.4	2.7	19.3	19.9	22.3	12.3	—	4.2	6.9
Range	—	0-4	0-4	0-40	0-8	0-100	0-100	0-64	—	0-21	0-28	—

p* < .05, *p* < .01.

Note: Decimal points omitted. AG Dx = Agoraphobia diagnosis; MI-Acc = Mobility Inventory-Accompanied; MI-A1 = Mobility Inventory-Alone; FO-Ago = Agoraphobia subscale of the Fear Questionnaire; FO-Restr = Overall Restriction; PAI-Like = Panic Appraisal Inventory-Panic Likelihood; PAI-Con = Panic Appraisal Inventory-Panic Consequences; PAI-Cope = Panic Appraisal Inventory-Panic Coping (lower scores indicate poorer perceived coping); ASI = Anxiety Sensitivity Index; Gender (0 = male, 1 = female); CS-Gen = Courage Scale-General; CS-Pan = Courage Scale-Panic.

ferences on two of the three PAI–Consequences subscales indicated that females exhibited stronger beliefs about physical (e.g., I may have a heart attack) and loss of control (e.g., I may become completely hysterical) threats.

Because mediation requires a relationship between the predictor and postulated mediator variables, only the ASI and PAI variables were pursued in mediational analyses. Stepwise multiple regression analyses demonstrating an association between gender and the cognitive factors when controlling for employment status and GAD diagnosis are shown in Table IV (ASI: R^2 increase = .08, $p < .01$; PAI–Likelihood: R^2 increase = .08, $p < .01$; PAI–Consequences: R^2 increase = .07, $p < .05$; PAI–Coping: R^2 increase = .04, $p < .10$). It is notable that the relative association between gender and each cognitive measure increased when controlling for the effects of employment and GAD diagnosis.

Mediation Step 2: Gender and Phobic Avoidance

The second step for testing mediation requires a relationship between the predictor variable and the criterion variable (see Table IV). Five indices were used to assess phobic avoidance, including agoraphobia diagnosis, scores on the MI (Alone and Accompanied), and scores on the FQ (Ago and Restriction). Once again,

Table IV. Regression Analyses Testing First Two Conditions for Mediation: (1) Effect of Gender on Mediator, (2) Effect of Gender on Phobic Avoidance

Dependent variable	Independent variable(s) ^a	β (odds ratio)	$F(\chi^2)$	
ASI	1. Gender	.33	8.59 ^b	
PAI–Panic likelihood		.35	9.77 ^c	
PAI–Panic consequences		.27	5.67 ^b	
Physical consequences		.22	4.22 ^b	
Social consequences		.12	0.89	
Loss of control consequences		.24	4.65 ^b	
PAI–Panic coping		–.19	2.95	
CS–General		–.09	0.45	
CS–Panic		–.15	1.16	
Agoraphobia diagnosis		2. Gender	(5.5)	(8.07) ^c
MI–Accompanied			.06	0.14
MI–Alone			.27	6.71 ^b
FQ–Agoraphobia			.22	4.32 ^b
FQ–Restriction			.11	0.85

ASI = Anxiety Sensitivity Index; PAI = Panic Appraisal Inventory; MI = Mobility Inventory; FQ = Fear Questionnaire; CS = Courage Scale.

β = standardized beta weight provided for multiple regression and odds ratios provided for logistic regression. Note that gender was separately regressed on each dependent variable in steps (1) and (2). Only the ASI and PAI were used as dependent variables in step 1 because gender differences were not found on the CS.

^aAnalyses also controlled for the effects of employment status and GAD diagnosis. Gender (0 = male, 1 = female).

^b $p < .05$.

^c $p < .01$.

Employment status and GAD diagnosis were entered as covariates. Consistent with prior studies, logistic regression indicated that gender was significantly associated with agoraphobia diagnosis ($\chi^2(3, N = 88) = 8.07, p < .01$) with approximately 70% of females compared to 46% of males receiving a diagnosis. Evaluation of the MI indicated a significant gender difference in avoidance when alone (R^2 increase = .07, $p < .05$), but no difference in avoidance when accompanied (R^2 increase = .01, $p > .05$; male). Gender was also associated with FQ–Ago scores (R^2 increase = .05, $p < .05$), but not FQ–Restriction scores (R^2 increase = .01, $p > .05$). Thus, only agoraphobia diagnosis, MI–Alone, and FQ–Ago could serve as criterion variables in further mediational analyses.

Mediation Step 3: Effects of Gender and Mediators on Phobic Avoidance

As seen in Table III, measures of phobic avoidance were moderately to highly associated with one another (r range: .31–.90). The cognitive measures were also moderately to highly associated with one another ($|r|$ range: .19–.70). In general, the cognitive variables showed significant and moderate levels of association with measures of phobic avoidance with two exceptions (PAI–Coping–MI Accompanied, $r = .19$, ASI–Agoraphobia Diagnosis, $r = .09$).

The final step in establishing mediation is to find a strong relationship between the mediating variable and the criterion variable with a simultaneous reduction in the effect of the predictor variable when controlling for the mediator (Table V; Fig. 1). Because of gender differences in employment status and GAD diagnosis, these variables were also entered as covariates in each regression analysis. Consistent with the hypothesis, the effect of gender on phobic avoidance was substantially reduced when controlling for the cognitive mediators.

Logistic regression analyses indicated that gender no longer significantly predicted agoraphobia diagnosis when controlling for PAI–Likelihood ($\chi^2(4, N = 88) = 2.83, p > .05$; partial $r = .18$) or PAI–Consequences ($\chi^2(4, N = 88) = 3.59, p > .05$; partial $r = .20$). Neither of the PAI–Consequences subscales mediated agoraphobia diagnosis. Gender no longer significantly predicted MI–Alone when controlling for the ASI ($F(4,84) = 0.92, p > .05$; partial $r = .14$), PAI–Likelihood ($F(4,84) = 0.04, p > .05$; partial $r = .05$), the PAI–Consequences ($F(4,84) = 1.36, p > .05$; partial $r = .16$) total score, or the subscales (Physical, Loss of Control) derived from the PAI–Consequences scale. When controlling for PAI–Likelihood, the effect of Gender was essentially removed, suggesting substantial or so-called perfect mediation. Gender no longer significantly predicted FQ–Ago when controlling for the ASI ($F(4,84) = 1.01, p > .05$; partial $r = .07$), the PAI–Consequences ($F(4,84) = 1.75, p > .05$; partial $r = .10$), or either of the PAI–Consequences subscales. Of the Consequences subscales, the Loss of Control scale exerted the most consistent and powerful mediational effect. Once again, when controlling for PAI–Likelihood, the effect of Gender was essentially removed, suggesting perfect mediation ($F(4,84) = 0.16, p > .05$; partial $r = .05$). Findings using the PAI–Likelihood variable, which proved to be the most consistent and powerful mediator, are also summarized in Fig. 1.

Table V. Regression Analyses Testing Final Condition for Mediation: Effect of Gender on Phobic Avoidance Reduced after Controlling for Mediator

Dependent variable	Independent variable(s) ^a	β (odds ratio)	$F(\chi^2)$
Agoraphobic diagnosis	3a. Gender	(3.1)	(4.82) ^b
	ASI	.03	(0.32)
Agoraphobia diagnosis	3b. Gender	(2.4)	(2.83)
	PAI–Panic likelihood	.24	(4.11) ^b
Agoraphobic diagnosis	3c. Gender	(2.1)	(3.59)
	PAI–Panic consequences	.22	(4.16) ^b
Agoraphobic diagnosis	3d. Gender	(3.1)	(4.75) ^b
	PAI–Consequences–Physical	.00	(0.01)
Agoraphobia diagnosis	3e. Gender	(3.0)	(3.59)
	PAI–Consequences–Loss	.12	(2.68)
MI–Alone	3f. Gender	.12	0.92
	ASI	.30	7.06 ^c
MI–Alone	3g. Gender	.02	0.04
	PAI–Panic likelihood	.56	28.15 ^c
MI–Alone	3h. Gender	.14	1.36
	PAI–Panic consequences	.29	6.78 ^b
MI–Alone	3i. Gender	.18	2.80
	PAI–Consequences–Physical	.17	2.30
MI–Alone	3j. Gender	.17	2.57
	PAI–Consequences–Loss	.26	6.00 ^b
FQ–Agoraphobia	3k. Gender	.10	1.01
	ASI	.44	19.71 ^c
FQ–Agoraphobia	3l. Gender	.03	0.16
	PAI–Panic likelihood	.61	47.62 ^c
FQ–Agoraphobia	3m. Gender	.13	1.75
	PAI–Panic consequences	.39	15.07 ^d
FQ–Agoraphobia	3n. Gender	.09	0.70
	PAI–Consequences–Physical	.16	1.92
FQ–Agoraphobia	3o. Gender	.08	0.55
	PAI–Consequences–Loss	.25	5.41 ^b

ASI = Anxiety Sensitivity Index; PAI = Panic Appraisal Inventory; MI = Mobility Inventory; FQ = Fear Questionnaire.

β = standardized beta weight provided for multiple regression and odds ratios provided for logistic regression. Note that gender and mediator were simultaneously regressed for each dependent variable.

^aAnalyses also controlled for the effects of employment status and GAD diagnosis. Gender (0 = male, 1 = female).

Only agoraphobic diagnosis, MI–Alone, and FQ–Age were used as criterion variables because gender differences were not found on the other two phobic avoidance indices.

^b $p < .05$.

^c $p < .01$.

^d $p < .001$.

^e $p < .0001$.

DISCUSSION

Male and female patients with panic disorder displayed substantial differences in panic- and arousal-related cognitions. Could these gender differences simply represent a male underreporting bias? One explanation for gender difference findings is that males are uncomfortable fully disclosing their level of pathology for fear of being viewed as weak, vulnerable, and so on (Barlow, 1988). Although underendorsement because of “bravado” may occur with some males, the general

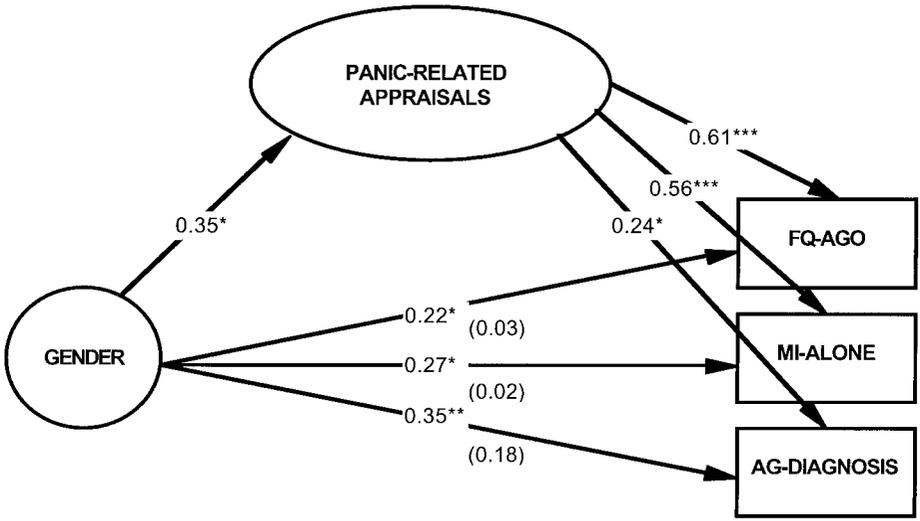


Fig. 1. Mediation of phobic avoidance by appraisals of panic likelihood. Standardized beta weights for each path are unadjusted or (adjusted) for PAI-Likelihood. Employment status and GAD diagnosis are also controlled. * $p < .05$, ** $p < .01$, *** $p < .001$.

pattern of findings suggests otherwise. Overall, there were no significant gender differences across symptom measures other than phobic avoidance. There also were no differences on the courage indices or in panic-related coping self-efficacy suggesting that there is not a systematic male bias toward underendorsement.

Assuming that reporting biases do not account for gender differences in the cognitive measures, it remains to be determined what these differences mean. The magnitude of these gender differences is consistent with a medium effect size (ASI: Cohen's $d = .56$; PAI-Likelihood: $d = .62$; PAI-Consequences: $d = .45$; PAI-Consequences-Physical: $d = .46$; PAI-Consequences-Loss of Control: $d = .45$), suggesting that these are fairly robust and meaningful effects. One possibility is that these differences may represent a premorbid tendency toward particular thinking errors (e.g., catastrophizing, overestimation of threat likelihood). For example, Stewart, Taylor, and Baker (1997) evaluated gender differences in anxiety sensitivity in a nonclinical sample of college students. Consistent with the present report, females scored higher than males on the ASI. In addition, factor analyses of the ASI indicated that females were particularly elevated on a lower-order factor assessing fear of physical concerns, but there were no differences in fear of social evaluation, which is consistent with the PAI findings in the present report. In line with anxiety sensitivity conceptualizations (McNally, 1994), these authors suggest that these differences may partly explain the increased risk for panic disorder among females.

Cognitive differences also may arise from differential reactivity to the experience of panic. Studies specifically evaluating gender changes in cognition following the onset of panic attacks have not been conducted. There are, however, data to

suggest gender differences in physiological response to stressors. For example, women show greater cardiovascular reactivity to stress (Stoney, Davis, & Matthews, 1987). Men and women also appear to use internal sensory information and external environmental cues differently in perceiving emotions such as fear. Men appear to more accurately perceive physiological changes, whereas women are more expert at assessing situational cues (Pennebaker & Roberts, 1992). These differences in reactivity and appraisal strategy could contribute to the cognitive differences observed in panic disorder. For example, high levels of physiological reactivity have been suggested as potential etiological factors in the development of anxiety sensitivity (Reiss & McNally, 1985). Females' greater reactivity may provide a greater opportunity for developing fear of arousal symptoms. If men more accurately perceive physiological changes than women, they may be less likely to catastrophize about the meaning of these symptoms. Finally, if women are more expert in assessing situational cues, they may be more prone to focus on external cues in the context of fear, thereby creating increased estimations of panic likelihood across various situations.

Consistent with previous work (Craske et al., 1988; Telch et al., 1989b), appraisals regarding the threatening consequences of arousal (i.e., anxiety sensitivity) as well as specific appraisals regarding the likelihood and consequences of panic were significantly associated with phobic avoidance. It is important to note that these beliefs appear to account for the well-documented gender differences in phobic avoidance. Although partial mediation was found for each of the cognitive measures, appraisals of panic likelihood completely mediated the relationship between gender and phobic avoidance (except when indexed by agoraphobia diagnosis). For females and males alike, one of the most important determinants of phobic avoidance appears to be the perceived likelihood of experiencing a panic attack. Of course, the present data addressing mediation are cross-sectional. A more convincing test of cognitive mediation would involve prospective evaluation of individuals immediately after the development of initial panic attacks.

An alternative hypothesis to mediation is that panic-related beliefs may have a differential impact on avoidance behaviors between males and females. Moderator analyses assessing the interaction between gender and panic-related beliefs would argue against the straightforward mediational model that was supported. Consistent with methodology outlined by Baron and Kenny (1986), the moderator hypothesis is supported when the interaction term between the predictor (gender) and moderator (panic-related beliefs) is significant. They also note that this interaction term will not be clearly interpretable when the moderator is correlated with either the predictor or the criterion. Because panic appraisals are significantly correlated with both predictor and criterion variables, it was determined that tests of moderation would not be appropriate.

Findings suggest that an agoraphobia diagnosis is distinguished from other measures of phobic avoidance. Agoraphobia diagnosis was the only index of avoidance that was not perfectly mediated by appraisals of panic likelihood. In addition, agoraphobia diagnosis was only moderately correlated with other measures of phobic avoidance (r range: .31–.43), whereas the Fear Questionnaire and Mobility Inventory subscales were more highly intercorrelated (r range: .50–.90). This pattern of associa-

tions may result from discrepancies that arise from comparisons across multimethod assessments (i.e., interview vs. self-report). However, it may also be useful to consider that phobic avoidance no longer represents the *sine qua non* of agoraphobia. According to the DSM-IV, a diagnosis of agoraphobia can be made from any one of three sufficient criteria: (1) avoidance behaviors, (2) experiencing and enduring anxiety or distress in the phobic situation, or (3) requiring a companion for exposure to the phobic situation. Therefore, this diagnosis can accurately characterize an individual with no or few avoidance behaviors. Moreover, differences in sufficient criteria from an agoraphobia diagnosis are likely to contribute to relatively lower interrater reliability for this diagnosis on the SCID. To the extent that measurement of phobic avoidance per se is important, the DSM's broad diagnostic criteria for agoraphobia may lead to poor specificity relative to other indices, such as the Fear Questionnaire and Mobility Inventory, that assess actual avoidance behaviors.

The present report represents one of the first attempts to operationalize courage in hopes of investigating its relation to phobic avoidance. *Courage* was defined, in light of Rachman's (1978) early work on the subject, as the ability to persevere in the presence of fear. The assessments indicated that males and females reported similar self-perceptions of general and panic-specific courageousness. Surprisingly, both indices of courage were only weakly associated with phobic avoidance in males and females. It may be, similar to the findings regarding coping self-efficacy (Craske et al., 1988; Telch et al., 1989b), that expectancies of reactions to panic attacks (i.e., expected courageousness, coping ability) do not appear to motivate phobic avoidance. All of these findings cast doubt as to whether males exhibit greater courage, as well as call into question the linkage between courage and phobic avoidance.

Rachman's work related to courage (McMillan & Rachman, 1988; O'Connor et al., 1985) was largely an attempt to differentiate the subjective, behavioral, and physiological aspects of Lang's (1970) tripartite model of fear. In these studies, courage was operationalized as a discordance between behavior (e.g., jumping out of an airplane) and subjective response (e.g., reporting fear). The present study developed a self-report instrument that requires the individual to provide their perception of the level of this disparity. Although the Courage Scale possesses the advantage of being a brief and readily administered measure of courage, a more comprehensive multidomain assessment may yield different findings. We believe it is unfortunate that courage has been understudied by anxiety researchers and hope this study encourages new interest in this construct.

Cognitive behavioral interventions are the psychosocial treatment of choice for panic disorder (Wolfe & Maser, 1994), and the present study has several important implications for this type of treatment. Substantial gender differences on the cognitive measures highlight the importance of a detailed cognitive assessment. Cognitive restructuring that focuses on overprediction errors in regard to overestimation of panic likelihood may have greater impact on phobic avoidance relative to other cognitive (e.g., catastrophizing errors) or behavioral (e.g., breathing retraining) strategies. In addition, females may require more extensive interoceptive exposure (i.e., repeated exposure to internal bodily sensations), which has been found to contribute to reductions in anxiety sensitivity (Griez & van den Hout, 1986).

Panic disorder is a prevalent and potentially debilitating condition (Telch et al., 1995). Epidemiologic reports have consistently found that females are at greater risk for the development of panic disorder, in particular, when it is accompanied by agoraphobia. These data alone highlight the importance of understanding mechanisms underlying gender differences in panic disorder. The present study suggests that two psychological constructs, anxiety sensitivity and panic-related appraisals, mediate gender differences in phobic avoidance. We hope that this study inspires and guides future work in this important area.

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REFERENCES

- Ballenger, J. C., Burrows, G. D., DuPont, R. L., Jr., Lesser, I. M., Noyes, R., Jr., Pecknold, J. C., Rifkin, A., & Swinson, R. P. (1988). Alprazolam in panic disorder and agoraphobia: Results from a multicenter trial: I. Efficacy in short-term treatment. *Archives of General Psychiatry*, *45*, 413–422.
- Barlow, D. H. (1988). *Anxiety and its disorders*. New York: Guilford Press.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, *8*, 77–100.
- Cameron, O., & Hill, M. (1989). Women and anxiety. *Psychiatric Clinics of North America*, *12*, 175–186.
- Chambless, D. L., Caputo, G. C., Jasin, S. E., Gracely, E. J., & Williams, C. (1985). The mobility inventory for agoraphobia. *Behaviour Research and Therapy*, *23*, 35–44.
- Chambless, D. L., & Mason, J. (1986). Sex, sex role stereotyping, and agoraphobia. *Behaviour Research and Therapy*, *24*, 231–235.
- Cox, B. J., Endler, N. S., & Swinson, R. P. (1995). An examination of levels of agoraphobic severity in panic disorder. *Behaviour Research and Therapy*, *33*, 57–62.
- Cox, B. J., Swinson, R. P., Kuch, K., & Reichman, J. T. (1993). Dimensions of agoraphobia assessed by the Mobility Inventory. *Behaviour Research and Therapy*, *31*, 427–431.
- Craske, M. G., Rapee, R. M., & Barlow, D. H. (1988). The significance of panic expectancy for individual patterns of avoidance. *Behavior Therapy*, *19*, 577–592.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. (1994). *Structured clinical interview for DSM-IV–Patient Edition*. (SCID-I/P, Version 2.0). New York: Biometrics Research Department.
- Gelfond, M. (1991). Reconceptualizing agoraphobia: A case study of epistemological bias in clinical research. *Feminism and Psychology*, *1*, 247–262.
- Gorsuch, R. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Griez, E., & van den Hout, M. A. (1986). CO₂ inhalation in the treatment of panic attacks. *Behaviour Research and Therapy*, *24*, 145–150.
- Jacobson, N. S., Wilson, L., & Tupper, C. (1988). The clinical significance of treatment gains resulting from exposure-based interventions for agoraphobia: A reanalysis of outcome data. *Behavior Therapy*, *19*(4), 539–554.
- Kaiser, H. F. (1961). A note on Guttman's lower bound for the number of common factors. *Multivariate Behavioral Research*, *1*, 249–276.
- Katerndahl, D. A., & Realini, J. P. (1993). Lifetime prevalence of panic states. *American Journal of Psychiatry*, *150*, 246–249.

- Lang, P. (1970). Stimulus control, response control and desensitization of fear. In D. Lewis (Ed.), *Learning approaches to therapeutic behavior change*. Aldine Press, Chicago.
- Macaulay, J. L., & Kleinknecht, R. A. (1986). Panic and panic attacks in adolescents. *Journal of Anxiety Disorders*, 3, 221–241.
- Maccoby, E. E. (1988). Gender as a social category. *Developmental Psychology*, 24, 755–765.
- Maller, R. G., & Reiss, S. (1992). Anxiety sensitivity in 1984 and panic attacks in 1987. *Journal of Anxiety Disorders*, 6, 241–247.
- Margraf, J., Taylor, C. B., Ehlers, A., Roth, W. T., & Agras, S. (1987). Panic attacks in the natural environment. Special Issue: Mental disorders in their natural settings: The application of time allocation and experience-sampling techniques in psychiatry. *Journal of Nervous and Mental Disease*, 175, 558–565.
- Marks, I. M., & Mathews, A. M. (1979). Brief standard self-rating for phobic patients. *Behaviour Research and Therapy*, 17, 263–267.
- Mavissakalian, M. (1985). Male and female agoraphobia: Are they different? *Behaviour Research and Therapy*, 23, 469–471.
- McMillan, T. M., & Rachman, S. J. (1988). Fearlessness and courage in paratroopers undergoing training. *Personality and Individual Differences*, 9, 373–378.
- McNally, R. J. (1994). *Panic disorder: A critical analysis*. New York: Guilford Press.
- Myers, J. K., Weissman, M. M., Tischler, C. E., Holzer, C. E., III., Orvaschel, H., Antony, J. C., Boyd, J. H., Burke, J. D., Jr., Kramer, M., & Stoltzman, R. (1984). Six-month prevalence of psychiatric disorders in three communities. *Archives of General Psychiatry*, 41, 959–967.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- O'Connor, K., Hallam, R., & Rachman, S. (1985). Fearlessness and courage: A replication experiment. *British Journal of Psychology*, 76, 187–197.
- Oei, T. P. S., Wanstall, K., & Evans, L. (1990). Sex differences in panic disorder and agoraphobia. *Journal of Anxiety Disorders*, 4, 317–324.
- Pennebaker, J. W., & Roberts, T. (1992). Toward a his and hers theory of emotion: Gender differences in visceral perception. *Journal of Social and Clinical Psychology*, 11, 199–212.
- Peterson, R. A., & Reiss, S. (1987). *Test manual for the Anxiety Sensitivity Index*. Orland Park, Illinois: International Diagnostic Systems.
- Pickersgill, J. J., & Arrindell, W. A. (1994). Men are innocent until proven guilty: A comment on the examination of sex differences by Pierce and Kirkpatrick (1992). *Behaviour Research and Therapy*, 32, 21–28.
- Pierce, K. A., & Kirkpatrick, D. P. (1992). Do men lie on fear surveys? *Behaviour Research and Therapy*, 30, 415–418.
- Rachman, S. J. (1978). *Fear and courage*. New York: W. H. Freeman and Company.
- Reich, J., Noyes, R., Jr., & Troughton, E. (1987). Dependent personality disorder associated with phobic avoidance in patients with panic disorder. *American Journal of Psychiatry*, 144, 323–326.
- Reiss, S. (1997). Trait anxiety: It's not what you think it is. *Journal of Anxiety Disorders*, 11, 201–214.
- Reiss, S., Peterson, R. A., Gursky, D. M., & McNally, R. J. (1986). Anxiety sensitivity, anxiety frequency and the prediction of fearfulness. *Behaviour Research and Therapy*, 24, 1–8.
- Reiss, S., & McNally, R. J. (1985). Expectancy model of fear. In S. Reiss & R. R. Bootzin (Eds.), *Theoretical issues in behavior therapy* (pp. 107–121). San Diego: Academic.
- Richardson, J. T. E. (1991). Gender differences in imagery, cognition, and memory. In R. H. Logie & M. Denis (Eds.), *Mental images in human cognition* (pp. 271–303). London: Elsevier Science Publishers.
- Robins, L. N., Hetzler, J. E., Weissman, M. M., Orvaschel, H., Gruenber, E., Burke, J. D., Jr., & Reiger, D. A. (1984). Lifetime prevalence of specific psychiatric disorders in three sites. *Archives of General Psychiatry*, 41, 949–958.
- Sanderson, W. C., Rapee, R. M., & Barlow, D. H. (1987, November). *The DSM-III-Revised anxiety disorder categories: Description and patterns of comorbidity*. Paper presented at the annual meeting of the Association for Advancement of Behavior Therapy, Boston.
- Saviotti, F. M., Grandi, S., Savron, G., Ermentini, R., Bartolucci, G., Conti, S., Fava, G. (1991). Characterological traits of recovered patients with panic disorder and agoraphobia. *Journal of Affective Disorders*, 23, 113–117.
- Schmidt, N. B., Jacquin, K., & Telch, M. J. (1994). The overprediction of fear and panic in panic disorder. *Behaviour Research and Therapy*, 32, 701–708.
- Schmidt, N. B., Joiner, T. E., Jr., Young, J., & Telch, M. J. (1995). The Schema Questionnaire: Investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. *Cognitive Therapy and Research*, 19, 295–321.
- Schmidt, N. B., Staab, J. P., Trakowski, J. H., & Sammons, M. (1997). Efficacy of a Brief Psychosocial

- Treatment for Panic Disorder in an Active Duty Sample: Implications for Military Readiness. *Military Medicine*, 162, 123–129.
- Schmidt, N. B., Telch, M. J., & Joiner, T. E., Jr. (1996). Factors influencing health perceptions in patients with panic disorder. *Comprehensive Psychiatry*, 37, 253–260.
- Sheehan, D. V. (1983). *The anxiety disease*. New York: Scribners.
- Stewart, S. H., Taylor, S., & Baker, J. M. (1997). Gender differences in dimensions of anxiety sensitivity. *Journal of Anxiety Disorders*, 11, 179–200.
- Stoney, C. M., Davis, M. C., & Matthews, K. A. (1987). Sex differences in physiological response to stress and in coronary heart disease: A causal link? *Psychophysiology*, 24, 127–131.
- Telch, M. J., Brouillard, M., Telch, C. F., Agras, W. S., & Taylor, C. B. (1989a). Role of cognitive appraisal in panic-related avoidance. *Behaviour Research and Therapy*, 27, 373–383.
- Telch, M. J., Schmidt, N. B., Jaimez, T. L., Jacquin, K., & Harrington, P. (1995). The impact of cognitive-behavioral therapy on quality of life in panic disorder patients. *Journal of Consulting and Clinical Psychology*, 63, 823–830.
- Telch, M. J., Shermis, M. D., Lucas, J. A. (1989b). Anxiety sensitivity: Unitary personality trait or domain-specific appraisals? *Journal of Anxiety Disorders*, 3, 25–32.
- Weissman, M. M., & Merikangas, (1986). The epidemiology of anxiety and panic disorders: An update. *Journal of Clinical Psychiatry*, 47, 11–17.
- Wolfe, B. E., & Maser, J. D. (1994). *Treatment of panic disorder: A consensus development conference*. Washington, DC: American Psychiatric Press, Inc.