

ROLE OF COGNITIVE APPRAISAL IN PANIC-RELATED AVOIDANCE

MICHAEL J. TELCH^{1*}, MARY BROUILLARD², CHRISTY F. TELCH²,
W. STEWART AGRAS² and C. BARR TAYLOR²

¹Department of Psychology, University of Texas, Austin, TX 78712 and ²Laboratory for the Study of Behavioral Medicine, Stanford University School of Medicine, Stanford, CA 94305, U.S.A.

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Summary—The present study examined several dimensions of panic cognitions to test whether panic appraisals predict phobic among panic sufferers. Thirty-five patients meeting DSM-III-R criteria for panic disorder with minimal or no phobic avoidance were compared to 40 patients meeting DSM-III-R criteria for panic disorder with agoraphobia (severe). The two groups looked strikingly similar on measures of panic symptoms, panic frequency and panic severity. As expected, patients diagnosed as having panic disorder with agoraphobia reported significantly more depression and phobic avoidance than patients with PD. Striking differences emerged on each of the following panic appraisal dimensions: (a) anticipated panic, (b) perceived consequences of panic, and (c) perceived self-efficacy in coping with panic. In each case, patients with panic disorder and agoraphobia reported significantly more dysfunctional panic appraisals than patients with panic disorder and no avoidance. Of those panic appraisal dimensions studied, anticipated panic emerged as the most potent correlate of agoraphobic avoidance. These findings support the hypothesis that cognitive appraisal factors may play an important role in the genesis or maintenance of phobic avoidance among panic patients.

Panic has taken on a central role in the conceptualization and classification of agoraphobia. Research from both biological and psychological perspectives has pointed to the etiological significance of panic in the development of agoraphobia (Barlow, Vermilyea, Blanchard, Vermilyea, DiNardo and Cerny, 1985; Foa, Steketee and Young, 1984; Goldstein and Chambless, 1978; Hallam, 1985; Klein, 1980; Mathews, Gelder and Johnston, 1981; Mendel and Klein, 1969; Sheehan, 1982; Tearnan and Telch, 1984). The apparent centrality of panic in the development of agoraphobia is clearly illustrated in the revision of DSM-III in which agoraphobia has been reclassified as panic disorder with agoraphobia (APA, 1987).

Evidence in support of the etiological significance of panic in the development of phobic avoidance comes mostly from retrospective studies pointing to the temporal relationship between reported episodes of panic and the later development of agoraphobia (Garvey and Tuason, 1984; Klein, Rabkin and Gorman, 1985; Thyer and Himle, 1985; Uhde, Roy-Byrne, Boulenger, Vittone and Post, 1985). These studies suggest that most agoraphobics report panic episodes that precede the emergence of phobic avoidance. Moreover, most agoraphobics attribute their phobic avoidance to previous episodes of panic (Thyer and Himle, 1985).

Although a clear linkage between panic and agoraphobia appears evident, a sizeable percentage of individuals with panic do not develop agoraphobia (Craske, Sanderson and Barlow, 1987). For instance, panic has been reported among patients diagnosed with psychological disorders where extensive avoidance behavior is absent, e.g. major depression, generalized anxiety disorder, obsessive-compulsive disorder (Barlow *et al.*, 1985). Moreover, several studies have found relatively high rates of reported panic occurring among normal adults (Craske, Rachman and Tallman, 1986; Norton, Harrison, Hauch and Rhodes, 1985; Telch, Lucas and Nelson, 1989). Apparently, recurrent panic is common among nonagoraphobic populations (both clinical and non-clinical). In light of these findings, it would appear that only a small percentage of those who experience panic go on to develop agoraphobia.

Why does panic lead to debilitating phobic avoidance for some individuals and not others? Several groups have proposed a panic severity hypothesis to address this issue (Noyes, Clancy and

*To whom all correspondence should be addressed.

Garvey, 1987; Turner, Williams, Beidel and Mezzich, 1986). The severity hypothesis posits that agoraphobia represents a more severe variant of panic disorder and thus predicts a positive relationship between the frequency or severity of panic attacks and the degree of agoraphobic avoidance. Evidence from several different lines of research cast doubt on the utility of the severity hypothesis in predicting panic-related avoidance (Craske and Barlow, 1988). In a prospective analysis of panic diary data, Mavissakalian (1988) found no relationship between frequency of panic and phobic avoidance. Also, studies comparing avoidant and nonavoidant panic patients have shown the two groups to be similar with respect to panic frequency (Craske, Sanderson and Barlow, 1987; Ganellan *et al.*, 1989; Rapee and Murrell, 1988) or number of panic symptoms (Rapee and Murrell, 1988). Moreover, data from treatment outcome studies with agoraphobics have failed to find a strong relationship between panic severity and avoidance behavior (Chambless, Goldstein, Gallagher and Bright; 1986; Michelson, Mavissakalian and Marchione, 1985; Telch, Agras, Taylor, Roth and Gallen, 1985). Hence, it would appear that mechanisms other than panic severity are operative in panic-related avoidance.

Recent advances in theory have pointed to the role of cognitive factors in the phenomenology of panic (Beck and Emery, 1985; Beck, 1988; Clark, 1986). Interestingly, evidence for the role of cognitive factors in the development and maintenance of panic-related avoidance is also emerging. The laboratory-based research of Rachman and co-workers has highlighted the significance of fear and panic expectancy in avoidance. (Rachman and Lopatka, 1986, 1988). One consequence of panic episodes is an increase in predicted or anticipated fear (Rachman and Levitt, 1985). Rachman and Lopatka (1986) demonstrated that high levels of anticipated panic were associated with more avoidance to the feared situation. A similar finding seems to hold for anticipated anxiety (not panic). Several studies have shown a positive association between predicted or anticipated anxiety and avoidance (Craske, Rapee and Barlow, 1988; Rachman and Lopatka, 1986; Telch *et al.*, 1985; Williams and Rappoport, 1982). In three of these (Craske *et al.*, 1988; Rachman and Lopatka 1986; Telch *et al.*, 1985), anticipated fear was a better predictor of avoidance than was the frequency of actual panic episodes.

In addition to the anticipation of panic (or anxiety), an exaggerated appraisal of the negative consequences of anxiety (i.e. anxiety sensitivity) has been proposed as a possible cognitive mechanism governing fear behavior (Reiss and McNally, 1985). Most panic patients hold erroneous beliefs about their first panic episode (Breier, Charney and Heninger, 1986). To the degree that patients forecast catastrophic consequences of panic, they may be more likely to take extreme measures such as markedly restrict their activities in an attempt to avert further episodes of panic. The significance of perceived negative consequences in the development of agoraphobic avoidance is highlighted in the Breier *et al.* (1986) study in which patients who attributed a life-threatening consequence to their panic displayed a significantly more rapid onset of agoraphobia compared to patients who accurately understood their first panic attack to be an anxiety reaction.

Appraisal of one's capabilities to contend with panic may also direct the extent to which agoraphobic avoidance develops. Those who believe they can execute effective coping strategies to manage panic may be less likely to develop extensive panic-related avoidance. Agoraphobics' self-efficacy appraisals have been shown to predict agoraphobia avoidance behavior in several investigations (Bandura, Adams, Hardy and Howells, 1980; Williams and Rappoport, 1983; Telch *et al.*, 1985). However, in each of these studies, the assessment of self-efficacy dealt not with appraisals of panic coping but with the agoraphobic's perceived capabilities to enter fear-provoking situations (e.g. walk into a shopping mall, drive a car on the highway, etc.). Given the etiological significance of panic in the development of agoraphobia, studies are needed which examine patients' perceived coping efficacy for managing or controlling panic and its relationship to avoidance behavior.

The aim of the present study was to examine the relationship between panic-related avoidance and several distinct dimensions of panic appraisals. We hypothesized that, compared to PD patients with minimal avoidance, patients reporting panic attacks with extensive panic-related avoidance (agoraphobia) would report higher levels of anticipated panic, more catastrophic appraisals of the consequences of panic, and lower levels of perceived panic coping efficacy.

METHOD

Subjects

Patients meeting DSM-III-R (APA, 1987) criteria for either panic disorder with agoraphobia (PDA) ($N = 40$) or panic disorder without agoraphobia (PD) ($N = 35$) took part in the study. Eighty-two percent of the PDAs and 63% of the PD patients were female. Patients' mean age was 41.5 for the PDAs and 36.3 for the PDs. Ages of panic onset for the PDAs and PD patients were 29.1 and 27.5 respectively. Most PD patients (83%) were currently employed, compared to only 20% for the PDAs ($P < 0.001$). Ninety-eight percent of the PDAs and 71% of the PDs had received prior psychological treatment ($P < 0.001$); and 78% of the PDAs and 53% of the PD patients had received prior pharmacological treatment ($P < 0.05$).

Procedure

Ss were selected from a larger pool of over 900 patients who had undergone evaluation for panic and phobia-related complaints as part of two large-scale pharmacological treatment studies. Diagnoses were determined through detailed screening questionnaires and the SCID-UP, the Structured Clinical Interview for DSM-III—Upjohn Version (Spitzer and Williams, 1986). Diagnostic categories were independently assigned to patients by two of the authors. Of those patients screened, a consensus diagnosis of panic disorder or panic disorder with agoraphobia was obtained for 128 patients. These patients were mailed a packet of assessment instruments, a consent form and an accompanying cover letter describing the purpose of the study and requesting their participation. Of these 128, 75 patients (35 PD patients and 40 PDA patients) returned completed questionnaires. These were completed prior to their participation in the treatment studies. Patients who returned questionnaires did not differ from nonresponders on any demographic or clinical measure with the exception that avoidant patients were more likely to return questionnaires ($P < 0.05$).

Assessments

Panic Symptom Questionnaire. Ss were asked to rate each of the DSM-III-R panic symptoms on a 4-point scale (i.e. 0—absent, 1—Mild, 2—Moderate, 3—Severe). Two additional symptoms (i.e. itchiness on the bottom of feet, sweet taste in mouth) were added to assess response bias. Ss were also asked to rate (0–10 or more) the frequency of their panic attacks during the past 30 days and the frequency of unexpected panic attacks during the past 30 days.

Beck Depression Inventory (BDI). The 21-item Beck Depression Inventory (Beck, Ward, Mendelson, Mock and Erbaugh, 1967) was administered to assess Ss' level of depressed mood.

Fear Questionnaire (FQ). The Fear Questionnaire (Marks and Mathews, 1979) was used to assess Ss' level of phobic avoidance. The FQ consists of 15 items representing three separate phobia types (agoraphobia, blood and injury phobia, and social phobia). For each item the S rates on a 0–8 scale their degree of avoidance to the specific object or situation. For the purpose of this study, the five-item agoraphobia subscale (FQ-agoraphobia) was used as the major index of agoraphobic avoidance.

Agoraphobic Cognitions Questionnaire (ACQ). The ACQ is a 14-item scale that addresses thoughts concerning the negative consequences of anxiety (Chambless, Caputo and Gallagher, 1984). Each item is rated on a 5-point scale ranging from 'thought never occurs' to 'thought always occurs'. The ACQ is stable over time, internally consistent, able to discriminate agoraphobics from normals, and sensitive to change with treatment (Chambless *et al.*, 1984).

Body Sensations Questionnaire (BSQ). The BSQ (Chambless *et al.*, 1984) is a 17-item scale that assesses fears associated with common sensations of autonomic arousal (e.g. heart palpitations, lump in throat). Each item is rated on a 5-point scale ranging from 'not frightened or worried by the sensation' to 'extremely frightened or worried by the sensation'. The scale has high internal consistency and adequate test-retest reliability (Chambless *et al.*, 1984).

Panic Appraisal Inventory (PAI). The PAI (Telch, 1987) consists of three separate scales for assessing the cognitive appraisal patterns of panic sufferers. The three dimensions assessed by the PAI include: (a) PAI-Anticipated Panic, (b) PAI-Panic Consequences, and (c) PAI-Panic Coping.

For Scale 1 (PAI-Anticipated Panic), *Ss* are presented with 10 situations (e.g. shopping alone in a large department store, waiting in long lines, riding alone on a bus or train, etc.) and asked to rate the likelihood of having a panic attack if unaccompanied and without medication. Ratings are made on a 0 (no chance of panic occurrence)–100 (definite panic occurrence) scale. *Ss*' ratings for the 10 situations are averaged to produce an overall index of anticipated panic. The anticipated panic scale has demonstrated high test–retest reliability ($r = 0.89$) over a 3-week interval; adequate internal consistency (Coefficient $\alpha = 0.94$); and principal component factor analysis on this scale has shown it to possess a unitary factor structure.

PAI-Panic Consequences consists of 15 statements involving possible consequences of panic occurrence. The scale is divided into three factor analytically derived subscales with five items each. The subscales include: (a) physical concerns (e.g. I may have a stroke, I may die, I may have a heart attack); (b) social concerns (e.g. people may stare at me, people may think I'm weird) and (c) loss of control concerns (e.g. I may scream, I may go insane). Each item is rated on a 0 (not at all troubling)–10 (extremely troubling) scale. *Ss* ratings are summed to yield scores for each of the three subscales and a total perceived consequences index. The overall scale and each of the three subscales have high test–retest reliability ($r = 0.86$) and high internal consistency ($\alpha = 0.91$). Alpha coefficients for the physical, social, and loss of control subscales were 0.85, 0.92 and 0.86 respectively.

PAI-Panic Coping consists of 10 items asking *Ss* to rate their confidence in executing panic-coping behaviors (e.g. use distraction, control breathing, etc.). Each item is rated on a 0 (not confident at all)–100 (completely confident) scale. This scale has adequate test–retest reliability ($r = 0.81$) and internal consistency ($\alpha = 0.88$).

RESULTS

Means and standard deviations for the major clinical variables are presented in Table 1. Independent *t*-tests were used to assess intergroup differences. Because of the large number of comparisons, α levels were set at 0.01 to reduce the risk of Type I errors. PDAs displayed a nonsignificant trend toward slightly higher scores on overall panic frequency and panic symptom severity. The PDA group scored significantly higher on the BDI than the PD group [$t(69) = 4.89$, $P < 0.01$]. As expected, marked differences between the two diagnostic groups were observed for FQ-Agoraphobia scores [$t(70) = 18.80$, $P < 0.01$] with PDAs outscoring PDs by a factor of 7-fold. The PDAs' mean score of 28.45 is indicative of severe agoraphobia (Marks and Mathews, 1979) and is similar to how severely disabled agoraphobics have scored in several studies (Arnou, Taylor, Agras and Telch, 1985; Telch *et al.*, 1985). The relatively low score of 4.06 for the PD group is similar to that found among normal controls (Roth, Telch, Taylor, Sachitano *et al.*, 1986), and PD patients with no avoidance (Noyes *et al.*, 1987).

Table 1. Means, standard deviations and intergroup differences for the major clinical variables

Measure	PDA (<i>N</i> = 39)		PD (<i>N</i> = 35)	
	Mean	(SD)	Mean	(SD)
Overall panic frequency 30 days	5.41	(3.63)	4.69	(3.37)
Spontaneous panic frequency 30 days	2.90	(2.25)	2.53	(2.73)
Panic symptom severity	1.95	(0.55)	1.61	(0.56)
Beck Depression Inventory	22.35	(11.23)	11.60***	(8.19)
FQ-agoraphobia	28.45	(6.21)	4.06***	(4.50)
ACQ	2.39	(0.71)	2.02	(0.58)
BSQ	2.71	(0.86)	2.33	(0.69)
Panic Appraisal Inventory				
PAI-anticipated panic	66.99	(18.82)	14.46***	(12.56)
PAI-coping	24.50	(18.99)	37.46*	(19.37)
PAI-consequences tot.	82.67	(32.65)	52.17*	(31.92)
Physical	26.18	(15.34)	20.49	(15.93)
Social	31.18	(14.35)	17.94**	(15.31)
Loss of control	25.31	(15.10)	13.74**	(11.59)

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

PDA—panic disorder with agoraphobia; PD—panic disorder without agoraphobia.

ACQ—Agoraphobia Cognitions Questionnaire.

BSQ—Body Sensations Questionnaire.

Table 2. DSM-III-R panic symptoms by diagnostic group

DSM-III-R Symptoms	PDA (<i>N</i> = 39)		PD (<i>N</i> = 35)	
	Severity (0-3)	% Endorsed	Severity (0-3)	% Endorsed
Dyspnea	1.95	94.9	1.69	85.7
Choking	1.53	71.1	1.17	68.6
Palpitations	2.46	97.4	2.29	97.1
Chest pain	1.95	82.1	1.60	74.3
Sweating	1.89	92.1	1.47	88.2
Feeling faint	2.39	97.4*	1.47***	76.5
Dizziness	2.29	92.1	1.63*	85.7
Nausea/abdominal distress	1.26	61.5	1.14	50.0
Derealization	2.18	87.2	1.80	82.9
Parasthesias	1.49	69.2	1.41	77.1
Hot or cold flushes	1.79	87.2	1.29	68.6
Shaking/trembling	2.26	94.9	1.89	85.7
Fear of dying	2.03	78.9	1.83	74.3
Fear of losing control	1.85	79.5	1.74	77.1
<i>Sweet taste in mouth</i>	0.23	15.4	0.17	11.4
<i>Itchiness on feet</i>	0.37	18.4	0.03	2.9

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

PDA—panic disorder with agoraphobia; PD—panic disorder without agoraphobia. *Note.* Symptoms in italics were added as a check on patients' response bias.

Panic symptoms

Table 2 presents mean severity ratings and percent endorsements on each of the DSM-III-R panic symptoms for the two diagnostic groups. Results of the univariate tests revealed no significant differences between groups on most of the DSM-III-R symptoms with the exception of the PDA group reporting higher scores on the symptoms 'feeling faint' and 'dizziness'. However, as seen in Table 2, PDA's showed a consistent trend towards greater endorsement and severity on almost all of the DSM-III-R symptoms. Between-group comparisons on panic symptom severity were statistically significant when all 14 symptoms were subjected to a multivariate analysis [Wilks' $\lambda = 0.566$, $F(14, 54) = 2.96$, $P < 0.001$] and approached significance when the symptoms 'feeling faint' and 'dizziness' were removed from the analysis [Wilks' $\lambda = 0.609$, $F(12, 56) = 2.08$, $P = 0.06$].

Only a small percentage of the patients in either diagnostic group endorsed the two bogus symptoms (i.e. sweet taste, itchiness on feet) that were used to control for response bias. No differences between groups emerged, although the PDA group showed a nonsignificant trend for reporting more of these symptoms.

Panic appraisal measures

Table 1 presents the mean scores for the two diagnostic groups on the five scales used to assess patients' panic-related cognitions. In each case, PDAs exhibited more dysfunctional panic appraisals than PDs. However, in two of the five scales (i.e. Agoraphobic Cognitions Questionnaire and Body Sensations Questionnaire), the mean difference approached, but did not reach statistical significance.

Anticipated Panic. A more complete breakdown of the Anticipated Panic scale of the Panic Appraisal Inventory is presented in Table 3. In each of the 10 situations assessed, PDAs rated the likelihood of panic occurrence to be higher than PDs by a factor of about 4-fold on the average. Differences in mean anticipated panic scores across situations was highly significant for the two groups ($t = 14.29$, $P < 0.001$). The three situations rated by PDAs as most likely to produce panic were riding trains or buses, driving alone on a busy freeway, and movie theatres. None of the 10 situations was perceived by the PD patients as likely settings for panic occurrence.

Perceived consequences of panic. Data on perceived consequences of panic are presented in Table 4. Significant differences between groups emerged on the total score of the PAI-Consequences [$t(72) = 4.05$, $P < 0.001$]. Subscale analyses revealed that compared to PDs, PDAs displayed significantly greater concern for the social consequences [$t(72) = 3.84$, $P < 0.001$] and loss of control consequences [$t(72) = 3.66$, $P < 0.01$]. On the other hand, the two groups did not differ in their beliefs regarding the physical consequences of panic ($P > 0.20$).

Results from the Agoraphobic Cognitions Questionnaire, which also addresses the perceived

Table 3. Means, standard deviations and intergroup differences for PAI-anticipated panic

Situation	PDA (N = 39)		PD (N = 35)	
	Mean	(SD)	Mean	(SD)
Large department stores	70.51	(28.46)	12.86***	(15.82)
Driving alone 10 miles on a busy freeway	77.11	(29.77)	18.29***	(28.23)
Large crowded grocery stores	62.05	(30.88)	12.29***	(16.99)
Train or buses	78.21	(24.90)	16.86***	(19.82)
Movie theatres	74.10	(26.50)	16.00***	(22.12)
Fancy restaurants	63.21	(30.62)	15.43***	(17.38)
Elevators	71.03	(34.85)	26.00***	(31.36)
Walking away from house 1 mile	64.62	(33.15)	5.71***	(12.20)
Staying alone at home for 2 days	55.39	(36.69)	10.86***	(16.34)
Waiting in long lines	53.46	(29.18)	10.29***	(17.23)
Mean anticipated panic across situations	66.99	(18.82)	14.46***	(12.56)

P < 0.05; ***P* < 0.01; ****P* < 0.001.

PDA—panic disorder with agoraphobia; PD—panic disorder without agoraphobia.

consequences of anxiety, revealed a nonsignificant trend toward more dysfunctional cognitions on the part of the PDA group. It should be noted that 8 of the 15 items on this scale dealt with physical consequences, hence the results are consistent with those of the physical subscale on the PAI.

Panic coping efficacy. Data on patients' self-efficacy for coping with panic occurrence from the PAI are presented in Table 5. PD patients outscored PDA patients on the total PAI-panic coping index [$t(72) = 2.90$, $P < 0.05$]. Individual item analyses revealed that PD patients rated themselves to be more competent in the areas of using adaptive self-talk during panic, controlling breathing during panic, relaxing muscles during panic, and overall confidence in coping with panic (see Table 5). Nevertheless, despite the differences, patients in both diagnostic groups reported relatively low self-efficacy for executing behaviors that are presumed to be adaptive for managing panic.

Predictors of phobic avoidance

Multiple regression analyses was conducted to evaluate the relative contribution of the clinical and demographic variables to predicting diagnostic status (i.e. PD vs PDA) and level of phobic avoidance as measured by the FQ-Agoraphobia scale. Using diagnostic group status as the dependent variable and the various clinical and demographic variables as predictors, regression

Table 4. Means, standard deviations and intergroup differences for PAI-panic consequences

Perceived consequences items	PDA (N = 39)		PD (N = 35)	
	Mean	(SD)	Mean	(SD)
Physical				
I may have a heart attack	5.26	(4.02)	5.06	(4.30)
I may faint	6.51	(3.39)	3.66**	(3.23)
I may have a stroke	3.92	(3.97)	3.11	(4.01)
I may suffocate	4.51	(4.19)	3.26	(3.57)
I may die	5.97	(4.16)	5.40	(4.37)
<i>Physical total</i>	26.18	(15.34)	20.49	(15.93)
Social				
People may stare at me	6.38	(3.48)	3.77*	(3.69)
People may laugh at me	4.77	(3.84)	1.86**	(2.62)
I may embarrass my family or friends	6.00	(3.52)	3.37*	(3.59)
I may make a scene in front of others	7.38	(2.77)	4.37**	(3.93)
People may think I'm weird	6.64	(3.44)	4.57	(3.73)
<i>Social total</i>	31.18	(14.35)	17.94**	(15.31)
Loss of control				
I may go insane	4.13	(3.96)	3.00	(3.46)
I may become completely hysterical	6.00	(3.79)	3.69*	(3.56)
I may scream	4.28	(3.71)	1.63**	(2.51)
I may lose control of my senses	6.44	(3.53)	3.94*	(3.59)
I may do something uncontrollable	4.46	(3.74)	1.49**	(2.48)
<i>Loss of control total</i>	25.31	(15.10)	13.74**	(11.59)
Total score	82.67	(32.65)	52.17***	(31.92)

P* < 0.05; *P* < 0.01; ****P* < 0.001.

PDA—panic disorder with agoraphobia; PD—panic disorder without agoraphobia.

Table 5. Means, standard deviations and intergroup differences for PAI-panic coping

Coping items	PDA (<i>N</i> = 39)		PD (<i>N</i> = 35)	
	Mean	(SD)	Mean	(SD)
Experience panic without avoiding	30.51	(32.52)	44.85	(34.35)
Prevent a panic attack from coming	21.92	(25.69)	33.43	(28.69)
Stop a panic attack in midstream	15.13	(21.26)	24.00	(25.80)
Experience panic without frightening thoughts	22.31	(28.05)	37.71	(31.82)
Use adaptive self-talk during a panic attack	31.28	(29.03)	54.57**	(29.54)
Distract one's thoughts during a panic attack	25.13	(26.14)	33.71	(27.45)
Control one's breathing during a panic attack	24.36	(23.15)	47.14**	(31.49)
Confront a situation that will bring on an attack	33.68	(40.36)	36.00	(35.16)
Relax one's muscles during a panic attack	18.97	(21.13)	34.86*	(23.31)
Overall confidence in coping with panic attacks	21.71	(23.14)	38.00*	(24.11)
Mean coping efficacy across items	24.50	(18.99)	37.46*	(19.37)

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

PDA—panic disorder with agoraphobia; PD—panic disorder without agoraphobia.

analysis yielded an overall, adjusted multiple R^2 of 0.78 $F(19,29) = 10.16$, $P < 0.001$. Of the 19 variables entered, the only significant predictors of diagnostic status were PAI-anticipated panic, PAI-mean coping efficacy, and the loss of control subscale of the PAI-Consequences. To assess the relative contribution of these three predictors, a step-wise multiple regression was then performed using group status as the criterion and the same 19 predictor variables. PAI-anticipated panic entered in Step 1 and accounted for 73% of the variance in diagnostic status $F(1,66) = 212.91$, $P < 0.001$. PAI-mean coping efficacy and the loss of control subscale of the PAI-Consequences accounted for an additional 4% of the variance. To test further the potency of PAI-anticipated panic in predicting diagnostic group status, a multiple regression analysis was performed with PAI-Anticipated panic removed. The adjusted multiple R^2 dropped from 0.78 to 0.35.

Similar results were obtained when multiple regression analyses were performed using FQ-Agoraphobia scores as the dependent variable [multiple adjusted $R^2 = 0.76$, $F(19, 29) = 8.80$, $P < 0.001$]. Of the 19 predictor variables entered, PAI-Anticipated Panic entered in Step 1 of the step-wise regression analysis with an adjusted R^2 of 0.79, $F(1, 47) = 182.41$, $P < 0.001$. No other clinical variable emerged as a significant predictor of avoidance. When PAI-Anticipated panic was removed from the regression equation, the overall adjusted multiple R^2 dropped to 0.39.

Table 6 presents Pearson correlations between each of the major clinical variables and avoidance behavior as measured by FQ-Agoraphobia scores. With the exception of the panic frequency indices (i.e. overall panic attacks or spontaneous panic attacks), ACQ and PAI-Physical, the clinical variables were significantly correlated with phobic avoidance. However, the partial correlations between each clinical variable and FQ-Agoraphobia provide an estimate of the degree of association between each clinical variable and avoidance, while controlling for the effects of all others. Results indicated that PAI-Anticipated Panic was strongly associated with avoidance ratings even after controlling for the effects of all other clinical variables.

Table 6. Zero-order and partial correlations of clinical variables with agoraphobic avoidance

Measure	Zero order correlation	Partial correlation
(1) Overall panic frequency	0.24	-0.19
(2) Spontaneous panic frequency	0.24	0.05
(3) Panic symptom severity	0.37*	0.06
(4) Beck Depression Inventory	0.49**	0.17
(5) ACQ	0.29	0.01
(6) BSQ	0.30	0.07
(7) PAI-anticipated panic	0.89***	0.84***
(8) PAI-coping	-0.33*	0.03
(9) PAI-consequences (physical)	0.22	0.04
(10) PAI-consequences (social)	0.45**	0.12
(11) PAI-consequences (loss of control)	0.43**	0.32*

* $P < 0.05$; ** $P < 0.001$; *** $P < 0.001$.

Note. Partial r s represent the correlation between each variable and FQ-Agoraphobia while controlling for the effects of the other 10 variables.

DISCUSSION

The present findings demonstrate that panic-related cognitive appraisals clearly distinguish patients with uncomplicated panic disorder from PD patients with extensive panic-related avoidance. As a group, PDA patients consistently displayed more dysfunctional panic appraisals than PD patients. These differences were evident across several distinct dimensions and instruments. Based on these data it appears that compared to PDs, PDAs (a) exaggerate the likelihood of panic occurrence, (b) engage in more catastrophic thinking about the consequences of panic occurrence, and (c) report less confidence in their personal resources to manage panic.

These results raise doubts about recent conceptualizations of agoraphobia as either a more severe variant of panic disorder (Noyes, Clancy and Garvey, 1987; Turner, Williams, Beidel and Mezzich, 1986) or the second stage of a 2-stage disorder (Garvey and Tuason, 1984; Thyer *et al.*, 1985). The 2-stage conceptualization of agoraphobia—namely, panic disorder (Stage 1) ultimately leading to agoraphobia (Stage 2) fails to account for why a sizable number of panic patients never develop significant phobic avoidance (i.e. enter Stage 2), nor does it illuminate the conditions necessary for panic to lead to agoraphobia.

The severity hypothesis assumes that patients with uncomplicated panic disorder have less severe panic compared to patients meeting the diagnosis of panic disorder with agoraphobia. Our results provide little support for the severity hypothesis. Inspection of the panic data revealed no significant differences between the two diagnostic groups with respect to age of onset of panic symptoms, overall panic frequency, or spontaneous panic frequency. These findings are consistent with those of Craske *et al.*, (1987) who studied 57 patients with DSM-III-R diagnoses of panic disorder with agoraphobia, and found no significant differences between mild and severe avoiders in their history of panic or panic frequency. Similarly, Ganellan *et al.*, (1989) found no significant differences between agoraphobic and nonagoraphobic panic disorder patients on measures of minor, situational, or total panic frequency.

Agoraphobics higher BDI scores raise questions as to the possible role of depressed mood in the genesis of panic-related avoidance. Our clinical impression is that for many severe agoraphobics, the depression is due largely to the impairment in functioning resulting from their severe phobic avoidance. Despite higher depression scores among the agoraphobics, results suggested no relationship between depression and avoidance after the effects of the panic appraisal measures were partialled out.

Results from the cognitive appraisal dimension of anticipated panic are particularly noteworthy. Patients' judgments concerning the likelihood of panic occurrence emerged as the most influential correlate of agoraphobic avoidance, accounting for almost 80% of the variance in avoidance ratings. Taken together, our findings are consistent with previous work in both fear (Rachman and Bichard, 1988) and pain (Rachman and Lopatka, 1988) suggesting that overpredictions of aversive events may play a pivotal role in the development or maintenance of avoidance. Such a view is consistent with several expectancy-based theories which posit a linkage between response expectancies and nonvolitional responses in general (Kirsch, 1985) or more specifically, anxiety expectancy and one's actual level of subjective anxiety and avoidance behavior (Reiss and McNally, 1985).

With regard to perceived panic/anxiety consequences, our findings reinforce those of Beck (1988) and Hibbert (1984) suggesting that PD patients display catastrophic ideation concerning the consequences of anxiety or panic. As expected, the PD patients with marked avoidance displayed more pathological concerns overall than the PD patients without avoidance. However, a closer examination of our panic consequence 'subtypes' suggest a consistent pattern of results. PD patients with and without avoidance showed relatively similar levels of concerns surrounding physical consequences (e.g. heart attack, stroke, etc.). But the avoidant group scored significantly more pathological on scales tapping concerns related to social ridicule and loss of control. We might speculate that avoidance of social situations (e.g. busy shops, etc.) may be more likely if the panicker believes that anxiety or panic will lead to intense social ridicule. Similarly, avoidance of driving, heights, and related cues may be more likely to develop if the panicker strongly believes that anxiety or panic might result in a loss of behavioral control resulting in the crashing of one's car, or the jumping off from a high place. However, it should be noted that the appraisal of panic

consequences were far less predictive of avoidance than was anticipated panic. This finding is consistent with that of Craske *et al.* (1988) who showed that PD Ss predicted probability of panic was a better predictor of avoidance than the predicted negative consequences of panicking.

The role of panic coping efficacy in predicting panic-related avoidance deserves comment. Panic patients with extensive avoidance displayed less confidence in their ability to execute adaptive panic management strategies than did panic patients without avoidance. Nevertheless, the association between panic coping efficacy and avoidance was no longer significant when the effects of anticipated panic were partialled out. These findings suggest that in the case of agoraphobia, avoidance is more closely linked to panic expectancy than to judgments of personal efficacy to cope with panic. It should be pointed out that we did not examine patients' efficacy appraisals for approach behavior, which have repeatedly been shown to predict level of phobic avoidance (see Bandura, 1988). It is likely that perceived self-efficacy may play a more influential role in agoraphobic avoidance earlier in the causal chain. Bandura (1988) reminds us that the anticipation of threat is relational in nature being influenced by one's environment, both internal and external, and one's sense that one can exert control over those environments.

We can only speculate as to the factors that contribute to dysfunctional panic appraisals such as the overprediction of panic. Contextual factors surrounding the first panic episode (e.g. setting, presence of significant others, etc.) may influence patients' panic appraisals. For instance, compared to PD patients, agoraphobics are more likely to have their first panic attack away from home and more likely to be alone during the panic episode (Barlow and Craske, 1988). From a safety-signal perspective (Rachman, 1984), it could be argued that the absence of safety cues during the first panic episode may lead to dysfunctional panic appraisals thus increasing the likelihood that panic-related avoidance will develop.

Although our findings revealed few differences in actual panic symptoms between the two groups, agoraphobics did report more severe ratings for 'dizziness' and 'faintness'. Perhaps the presence or severity of these symptoms during a panic attack contributes to more dysfunctional panic appraisals. Other factors need also to be considered such as one's early history of mastery over important events, the context of the first panic episode, personality variables (e.g. high body self-consciousness), and social influences (e.g. spouse that reinforces avoidance).

Several limitations of the study should be acknowledged. First, our findings should be interpreted in light of the limitations inherent in the use of a cross-sectional design. We cannot rule out the possibility that the cognitive appraisal differences between the two diagnostic groups were a consequence of phobic avoidance. A prospective design is clearly needed to demonstrate that the development of dysfunctional panic appraisals is causally linked to subsequent avoidance behavior. Second, we assume that patients' ratings of anticipated panic represent a significant overestimation of the actual likelihood of panic occurrence. However, it should be noted that we did not examine the accuracy of patients' panic expectancy ratings. However, our clinical observation as well as research by Rachman and colleagues have shown that both claustrophobics (Rachman and Levitt, 1985; Rachman and Lopatka, 1986) and panic disorder patients (Rachman, Lopatka and Levitt, 1988) markedly overestimate their predicted fear. Future research is needed to examine the concordance between predicted vs actual panic among patients with panic disorder.

The present findings have implications for both clinical practice and clinical research on panic and agoraphobia. With respect to treatment, careful assessment of panic appraisal domains may provide a useful heuristic for tailoring psychological treatments to patients' idiosyncratic panic appraisal profiles. Programs aimed at educating newly afflicted panic sufferers about the nature of panic may help to prevent the development of dysfunctional panic appraisals thereby reducing the risk of developing debilitating avoidance. Assessment of panic appraisal dimensions may also be used in treatment outcome research to assess the effects of psychological and pharmacological interventions on panic cognitions. Moreover, continued research on panic appraisals may contribute to a more complete understanding of the psychopathology of panic and panic-related disorders.

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