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Modification of the Catastrophic Cognitions Questionnaire (CCQ-M) for Normals and Patients: Exploratory and LISREL Analyses

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The recently developed Catastrophic Cognition Questionnaire (CCQ) was further investigated using both student and anxiety patient samples. LISREL confirmatory factor analyses was used. The results showed that the CCQ could be explained by a three-factor oblique solution. These are Emotional Catastrophes, Physical Catastrophes, and Mental Catastrophes. The modified version of CCQ (CCQ-M) revealed good internal consistency, test–retest reliability, and concurrent validity. It has also good discriminant validity. The CCQ-M can therefore be used with both normal and anxiety-disordered patients.

KEY WORDS: catastrophic cognition; anxiety; panic disorder; agoraphobia.

INTRODUCTION

The early works of Ellis (1962), Goldfried (1979), and Meichenbaum (1977) recognized the cognitive roots of psychological problems associated with anxiety. However, it was only in the last decade that specific cognitive formulations of the anxiety disorders began to emerge (Beck, Emery, &

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Greenberg, 1985; Clark, 1988, Rapee, 1987; Salkovskis, 1988). Beck and colleagues (1985) described the importance of cognitive scheme that focused predominately on perceived threat, while Clark (1988) and Salkovskis (1988) detailed models for panic attacks and panic disorder, indicating that individuals who panic experience some physiological signs of anxiety (e.g., palpitations, breathlessness) but misinterpret these normal reactions as catastrophic or more dangerous and disastrous than they really are. A highly similar model (Rapee, 1993) emphasizes an association of autonomic sensations with immediate physical danger. Thus, these patients engage in catastrophic cognitions, which are thoughts with a theme of danger. Cognitive theorists, therefore, agree that the catastrophic cognition is an important construct for the development and maintenance of anxiety disorders. As a result, the significance of developing cognitive scales to measure these cognitions was recognized.

As there was a lack of valid and reliable self-report instructions for measuring catastrophic cognitions, based on cognitive models, a Catastrophic Cognitions Questionnaire (CCQ) was recently developed (Khawaja & Oei, 1992). The questionnaire was based on Beck's theory, which is an extensive cognitive approach to clinical anxiety (Last & Hersen, 1989). According to Beck, danger schemes are important in the maintenance of anxiety disorders. The scale was designed to assess the element of dangerousness associated by a person with his/her unpleasant emotions, physical changes or thinking difficulties. A detailed account of the rationale and the steps involved in the development of the questionnaire is described elsewhere (Khawaja & Oei, 1992). Briefly, the CCQ comprising 50 items was developed using 507 students from introductory psychology classes. Exploratory factor analysis (Cattell, 1978; Tabachnick & Fiddell, 1989) suggested a five-factor solution which accounted for 54% of total variance. The five factors were labelled Emotional Catastrophes, Physical Catastrophes, Mental Catastrophes, Social Catastrophes and Bodily Catastrophes. The first factor, "Emotional Catastrophes," reveals the extent to which danger is associated with emotional reactions. "Physical Catastrophes" reflects physical hazards as an indication of a disaster. The third factor, "Mental Catastrophes," indicates the tendency to consider mental dysfunction as dangerous. "Social Catastrophes," the fourth factor, indicates that the social anxieties are regarded as dangerous. According to the fifth factor, "Bodily Catastrophes," specific bodily sensations are perceived as threatening. The CCQ shows a good internal consistency with Cronbach's alpha for individual scales, ranging from .86 to .94. It correlated moderately with other report questionnaires which measured anxiety symptoms and cognitions associated with anxiety problems. The questionnaire also showed good discriminant validity (Khawaja & Oei, 1992).

Although the CCQ has sound psychometric properties, it has limitations. For example, the CCQ was developed on a student sample; therefore, it may not be generalizable to clinical patients. Furthermore, it is important to refine the utility of the questionnaire items and factor structure. The CCQ is at the initial stage of development and further comprehensive investigations are required to modify it and then establish the validity of this modified version.

The present study has two main aims. First, the purpose is to modify the scale. The utility of the items is assessed, as the high number of items can be an indication of redundancy among the items (Boyle, 1991; Cattell, 1973). The finalized best items and their parsimonious factor structure are considered as the modified version of the CCQ (CCQ-M).

Second, the study aims to validate the modified questionnaire. It is essential to validate the CCQ-M on the basis of clinical and nonclinical samples as the significance of catastrophic cognitions in the development and maintenance of anxiety disorders is well documented (Clark, 1993; Ehlers, 1993; Rapee, 1993). LISREL procedures are used to explain the stability (Long, 1982) of the modified version on the basis of clinical and nonclinical samples. If the factor structure is upheld by the different samples the use of this version can be successfully extended to clinical as well as nonclinical cases. Finally, the psychometric properties of the CCQ-M are estimated on the basis of clinical and nonclinical samples.

METHOD

Samples

The original sample used to develop the CCQ (Khawaja & Oei, 1992) was divided by randomly assigning subjects to one of the two subsamples, student sample 1 or 2. The student samples consisted of undergraduate psychology students.

Student Sample 1 consisted of 254 subjects (27% males, 73% females). The mean age of the subjects was 21 years (SD = 7 years; range = 17–59 years).

Student Sample 2 consisted of 253 subjects (30% males, 70% females). The mean age of the subjects was 22 years (SD = 8 years; range = 16–55 years).

Samples 3 and 4 were comprised of new subjects recruited for this study.

Student Sample 3 consisted of 252 subjects (20% males, 80% females). Their mean age was 20 years (SD = 6 years; range = 17–49 years).

Student Sample 4 consisted of 252 subjects (22% males, 78% females). The mean age of the subjects was 21 years (*SD* years; range = 17–53 years).

The *clinical sample* consisted of 278 outpatients with a primary diagnosis of anxiety disorder. Diagnosis was determined according to DSM-III-R criteria (American Psychiatric Association, 1987). Axis I diagnoses were as follows: 92 (33%) panic disorder with agoraphobia, 47 (17%) panic disorder without agoraphobia, 91 (33%) social phobia, 15 (5%) generalized anxiety, 25 (9%) simple phobia, and 8 (3%) obsessive compulsive disorder. A number (40%) of the patients had another anxiety disorder as a secondary diagnosis. The mean age of the patients was 38 years (*SD* = 12 years; range = 17–75 years). The average duration of anxiety symptoms was 7.31 years (*SD* = 8.34 years; range = 6 months–36 years). Twenty-three percent of patients had a primary, 70% had a secondary, and 6% had a tertiary level of education.

The community sample consisted of 96 community members (40% males, 60% females). Their mean age was 34 years (*SD* = 13 years; range = 17–71 years).

Measures

Scales administered to student sample 1 and 2 are described elsewhere (Khawaja & Oei, 1992). A battery of questionnaires administered to the other student samples (3 and 4) and the clinical sample consisted of the following: The State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970) measures state and trait anxiety. It has a sound internal consistency and test–retest reliability. This scale has been shown to be a valid measure for normal and anxiety patients (Oei, Crook, & Evans, 1991). The Fear Questionnaire (FQ) (Marks & Mathews, 1979) monitors change in phobic patients and has a high test–retest reliability. The validity for normal and clinical population is good (Oei, Moylan, & Evans, 1991). The Agoraphobic Cognitions Questionnaire (ACQ) and the Body Sensation Questionnaire (BSQ; Chambless, Caputo, Bright, & Gallager, 1984) focus attention on the cognitions and sensations of agoraphobic clients. These scales are internally consistent and their test–retest reliability is sound. The construct validity of the scales is also sound. The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) assesses the severity of anxiety in psychiatric patients. It has high internal consistency and an acceptable test–retest reliability (Fydrich, Dowdall, & Chambless, 1992). According to the authors, the BAI discriminates anxious diagnostic groups (panic disorder and generalized anxiety disorder) from nonanxious diagnostic groups (major depression and dysthymic disorder).

The psychometric properties of the CCQ (Khawaja & Oei, 1992) have been described earlier. The questionnaire measures catastrophic cognitions by asking the respondents to indicate, on a 5-point scale, the extent to which they rate each item as dangerous to themselves.

Procedure

The procedure used to select the student samples 1 and 2 is described elsewhere (Khawaja & Oei, 1992). Briefly, a battery of tests was administered to the first-year psychology students who participated in the study to receive credit points toward course grades. This procedure was also used to select the student samples 3 and 4.

The data for the clinical sample were collected from two clinics associated with The University of Queensland: (a) the Anxiety Disorder Clinic, Brisbane; and (b) the Psychology Clinic, Department of Psychology. The subjects drawn from the Anxiety Clinic were patients referred to the clinic for treatment by general practitioners in the Brisbane metropolitan area. Patients were requested to complete the randomly arranged test battery. They completed the questionnaires before receiving any form of treatment from the clinic. The patients were interviewed by an experienced psychiatrist or psychologist on the basis of a semistructured interview (of approximately 60 min) according to DSM-III-R criteria. These procedures have been fully described previously (Kenardy, Evans, & Oei, 1989, Oei, 1989, Oei, Moylan, & Evans, 1991). Finally, subjects were treated on the basis of group cognitive behaviour therapy (Evans, Holt, & Oei, 1991).

The Psychology Clinic at The University of Queensland was the other source of clinical data. The same information about the study was published in the local print media. The advertisement for the study specified some symptoms of anxiety disorders. It was pointed out that, although the nature of the study was assessment, therapy would be available for participants. Those who responded to the advertisements were screened through an initial telephone interview. The suitable cases were mailed a packet consisting of information about the study, a consent form, a map of the Psychology Clinic and the battery of randomly arranged questionnaires. The subjects were instructed to complete the questionnaires. They returned the completed questionnaires to the Psychology Clinic on arriving for an interview. The structured diagnostic interview (SCID N-P) was used to investigate the diagnoses of the subjects. The assessment was done by the first author. After the assessment for this study, the participants either were given cognitive behaviour therapy or were referred to an appropriate place. Although no formal reliability data on the clinical diagnostic interviews at the two

clinics were available, in-house clinical diagnostic checks, using a small sample of patients, showed that agreement on diagnostic interviews was good. Details of these procedures have been explained earlier (Khawaja & Oei, 1992; Oei, Moylan, & Evans, 1991). Written consent was obtained from the patients before their admission to the study. Subjects were informed about the nature of the study. It was pointed out that they were free to withdraw from the study at any time. The average length of time required to complete the whole battery was approximately 30 min.

The community sample was recruited from The University of Queensland. The university telephone director was consulted to select individuals working in different areas, excluding academics. The selected individuals were mailed the CCQ with brief information about the study and a self-addressed envelope. They were asked to participate if they fulfilled the following criteria: They did not have any recent history of hospitalization or consultation for any emotional disorder, and their daily functioning was not disturbed due to any emotional stress. Seventy percent of these subjects returned the completed questionnaire. The data for the different samples were collected over a period of 1.5 years.

Data Analyses

A cross-validation procedure (Bynner & Romney, 1985; Cliff, 1983; Cudeck & Browne, 1983; Thorndike, 1978) was used to refine the scale. According to this procedure, the original sample used to develop CCQ was split into two halves. One half was used for the exploratory analyses, while the other half, in conjunction with other samples, was used for the confirmatory analyses. Analyses were conducted in the following three steps.

1. Exploratory analyses were conducted on student sample 1 using LISREL 7 (Jöreskog & Sörbom, 1989). Diagnostic information such as standard error and significance tests of individual factor loadings, modification indices, and examination of residuals were used first to identify and then to delete ineffective items which either cross-loaded on a number of factors or were redundant. Different factor solutions were imposed on the best items to identify the most parsimonious and meaningful factor structure.

2. Confirmatory factor analysis was employed on the basis of LISREL 7 to validate the best model. The fit indices (Bentler & Bonett, 1980; Mulaik *et al.,* 1989) of the best model were examined by comparing them with those of a null hypothesis model. All of the student samples (1–4) and the clinical samples were used for this purpose. Finally, the best factor structure

was imposed on the student samples (2–4) and the clinical sample to examine factor stability.

3. The psychometric properties of the final CCQ-M and its factors were explored using student, community, and clinical samples. Student samples 3 and 4, which consisted of new subjects recruited for this study, were collapsed into one sample for the reliability and validity analyses.

RESULTS

Exploratory Analysis

Diagnostics on the Items of CCQ. Data derived from student sample 1 was used in this analysis. The use of item diagnostics procedures on LISREL is recommended to identify flaws in the items of a questionnaire (Bynner & Romney, 1985). The modification index on the matrix of factor loadings highlighted nonunidimensional items. Furthermore, redundant items were also identified using *t* tests, residual analyses, and the meaning of items. These procedures were repeated until 21 items were retained in the measure. The retained items consisted of seven items each from the original "Emotional, Physical and Mental Catastrophes" factors. Two factors, "Social Catastrophes" and "Bodily Catastrophes," from the initial 50-item CCQ were dropped as a result of the item analysis.

Assessing the Best-Fitting Model. A factor structure, which explained the 21 items best, was explored on LISREL (MacCallum, 1986). A null hypothesis was selected which postulated that there were no relationships among the observed variables. The null model can serve as a baseline against which other factor models can be compared (McGraw & Jöreskog, 1971; Sobel & Bohrnstedt, 1985). A number of alternative specifications were therefore tested and compared with the null hypothesis. One, two, and three-factor solutions were imposed on the intercorrelation matrix of the "best" 21 items, using student sample 1. In the one-factor model, all of the items were specified to load on a single factor. In the two-factor model, the seven "Emotional" items were allowed to load on the first factor, while the remaining were specified to load on the second (Physical and Mental). In the three-factor model, the emotional, physical, and mental items were specified to load on factor 1, 2, and 3, respectively. Furthermore, there were two types of three-factor models, orthogonal and oblique.

The assessment of model fit was based on multiple criteria, including the chi-square ratio, rho, root mean squared residuals (RMSR), normed fit index 2 (NFI2), and parsimonious normed fit index 2 (PNFI2). Various fit statistics are provided by LISREL, with chi-square being a main one

which tests whether a hypothesized model fits the data (Jöreskog & Sörbom, 1989). In the present study, the chi-square likelihood function is provided for description only, as it is inappropriate for assessing large-sample models (Carmines & McIver, 1981). Though critical values of the other indices are difficult to justify (Bentler & Bonett, 1980; Marsh, Balla, & McDonald, 1988; Wheaton, 1987), values of .90 or greater on NF12, rho, in the .50's on PNFI2 (Mulaik *et al.,* 1989), and low on RMSR (Marsh *et al.,* 1988) are interpreted as reflecting an adequate fit for the data.

Comparisons of the estimated model and the null model are summarized in Table I. The one- and two-factor models and the three-factor orthogonal solutions fit the observed data poorly, as indicated by their low rho, NFI2 and PNFI2. Furthermore, the RMSR of these models were higher than that of the three-factor oblique model. The three-factor oblique models fit the exploratory sample well, as reflected by its fit indices. The difference between the chi-square of the orthogonal and oblique three-factor models shows a significant improvement in fit when a three-factor oblique solution is selected. This solution appears to be the most parsimonious fit of the data and, therefore, was labeled as the CCQ-M. Table II shows the maximum-likelihood estimates and the phi matrix for the three-factor oblique solution of the modified version. Items have significant loadings ($p < .001$) on their respective factors. Elevated correlations among the factors indicate that they reflect a uniform construct.

Confirmatory Factor Analyses

LISREL's confirmatory factor analysis procedures were used to confirm the three-factor structure of the CCQ-M. The three-factor oblique model of the CCQ-M was compared with a baseline null model (Bentler & Bonett, 1980) on the different samples (clinical sample, student samples

Table I. Summary of Models Estimated in the Fitting Procedure

Model	χ^2	df	Changed χ^2(df)	Rho	NFI2	PNFI2	RMSR
Null	2973.48	231					.391
1 factor	978.70	189	1994.78(42)	.648	.716	.586	.101
2 factor	629.15	188	2344.33(43)	.802	.842	.685	.075
3 factor							
Orthogonal	635.03	189	2338.45(42)	.801	.84	.687	.278
Oblique	388.68	186	2584.80(45)	.908	.927	.747	.052
3-factor orthogonal–3-factor Oblique			246.35 (3)				

Table II. Three-Factor Solution of the CCQ-M: LISREL Maximum-Likelihood Estimates and Phi Matrix*

CCQ-M item	F1—Emotional Catastrophes	F2—Physical Catastrophes	F3—Mental Catastrophes
Feeling edgy	.74	–	–
Being miserable	.71	–	–
Feeling shaky	.71	–	–
Being agitated	.81	–	–
Unable to relax	.71	–	–
Being alarmed	.62	–	–
Being angry	.76	–	–
Having an accident	–	.84	–
Being injured	–	.75	–
Having a stroke	–	.70	–
Being ill	–	.68	–
Being suffocated	–	.69	–
Being attacked	–	.65	–
Losing sight	–	.67	–
Mind not functioning normally	–	–	.83
Unable to think rationally	–	–	.76
Being unable to control thinking	–	–	.75
Losing memory	–	–	.71
Being mentally blocked	–	–	.62
Being out of senses	–	–	.73
Being mentally blurred	–	–	.71
F1			
F2	.47		
F3	.69	.70	

*All loadings were significant at $p < .001$.

1 to 4). The purpose of this analysis was to examine whether this factor structure is consistently upheld as a better solution by the different samples. Indices (chi-square, rho, RMSR, NFI2, and PNFI2) used earlier were also calculated (Bentler & Bonett, 1980; Jöreskog & Sörbom, 1989) for these analyses. The fit statistics for the null and the three-factor oblique model are presented in Table III. Chi-squares were interpreted only as descriptors. As can be seen from Table III, chi-square for the three-factor oblique model were lower than those for the null model, indicating a better fit of the data. According to the criteria (Mulaik *et al.,* 1989) given for interpreting other fit indices, it appeared that the factor structure of the CCQ-M provided an adequate fit on the basis of all the samples. Furthermore, differences between the chi-squares and the RMSR of the two models indicate that the factor structure of the CCQ-M explains the data adequately. It is important to note that the values for various fit indices were higher (or

lower on RMSR) in the case of student sample 1, as it was used for the explanatory work. The parsimonious feature of the modified CCQ's three-factor solution, incorporating the 21 items, was confirmed by different samples.

Finally, the factor structure was imposed over the correlation matrices of three student (student samples 2, 3, and 4) and one clinical samples' responses to the CCQ to investigate whether the 21-item CCQ-M is replicated by samples from different populations. The sample on which exploratory analyses were conducted was excluded from this analysis. The intercorrelations among the items of the CCQ-M for the different samples were investigated. The t values (Jöreskog & Sörbom, 1989) of the coefficient obtained from the different samples were significant ($p < .0001$). This finding suggested that the modified version of the scale was static across the different samples.

Reliability Analyses

Cronbach's (1951) alpha was calculated to investigate the internal consistency of the CCQ-M. Separate analyses were conducted on the student and clinical samples. Student samples 3 and 4 were combined for this purpose. Cronbach's alphas for the scales, Emotional Catastrophes (F1), Physical Catastrophes (F2), and Mental Catastrophes (F3), on the basis of the student samples, were .83, .85, and .89, respectively. The analysis of the clinical sample indicated that the Cronbach's alphas for the Emotional Catastrophes (F1), Physical Catastrophes (F2), and Mental Catastrophes (F3) were .88, .85, and .91, respectively. The results from the two different samples indicated that each factor is homogeneous, and given that alpha is a lower boundary of reliability, the measure appears to have a high internal consistency.

Table III. Comparison of Null and Three-Factor Oblique Model

	Null[a]		3-factor oblique[b]					
Sample	χ^2	RMSR	χ^2	Changed χ^2	Rho	NFI2	PNFI2	RMSR
Student 1	2973.48	.391	388.68	2584.80	.908	.927	.747	.052
Student 2	2856.43	.343	444.11	2412.32	.878	.903	.727	.073
Student 3	3193.25	.401	533.08	2660.17	.854	.885	.712	.075
Student 4	2592.19	.327	662.40	1929.79	.749	.802	.646	.090
Clinical	3667.31	.378	649.96	3017.35	.832	.867	.698	.089

[a]df = 231.
[b]df = 186; changed df = 45.

The test–retest reliability, over an interval of 2 weeks, was estimated on the basis of anxiety disorder patients ($N = 34$). The questionnaire (.63) and factors 1 (.71), 2 (.58), and 3 (.67) had a moderately good reliability. All coefficients were significant at $p > .0001$.

Validity Analyses

Student samples 3 and 4 were combined for use in the validity analyses. Concurrent validity was examined by analyzing the relationships between, first, the total scores, and second, the three factor scores of the CCQ-M with the criterion scales. Separate analyses were conducted on the student and clinical samples. Table IV presents the calculated Pearson correlations for the student sample. The correlations of the modified scale with other scales ranged from low (.19) to moderate (.57). Factors 1 and 3 had moderate correlation with some scales, while the second factor had a generally low correlation with the criterion scales. Correlations of the clinical samples' responses with the modified scale and criterion scales are presented in Table V. The CCQ-M's correlation with other scales ranged from moderate (.38) to moderately high (.66). Factors 1 and 3, compared to the second factor, have a stronger relationship with the criterion scales. Correlations among the different self-report scales varied from moderate to high for the student (.27–.68) and clinical (.34–.73) samples.

Table IV. Correlations of Student Samples' Responses to CCQ-M and its Three Factors with the Criterion Scales*

	CCQ-M	F1—CCQ-M	F2—CCQ-M	F3—CCQ-M	ACQ	BSQ	BAI	State	Trait	FQ
CCQ-M										
F1—CCQ-M	.69									
F2—CCQ-M	.84	.33								
F3—CCQ-M	.91	.56	.65							
ACQ	.40	.46	.23	.35						
BSQ	.57	.53	.39	.51	.54					
BAI	.33	.41	.21	.26	.57	.46				
State	.19	.25	.10	.15	.34	.27	.49			
Trait	.27	.35	.14	.23	.45	.34	.53	.68		
FQ	.41	.47	.27	.33	.57	.46	.55	.44	.54	

*All r's are significant at $p < .01$.

Table V. Correlations of Clinical Samples' Responses to CCQ-M and its Three Factors with the Criterion Scales*

	CCQ-M	F1—CCQ-M	F2—CCQ-M	F3—CCQ-M	ACQ	BSQ	BAI	State	Trait	FQ
CCQ-M										
F1—CCQ-M	.77									
F2—CCQ-M	.71	.23								
F3—CCQ-M	.88	.62	.48							
ACQ	.60	.53	.37	.53						
BSQ	.66	.60	.42	.56	.73					
BAI	.54	.54	.31	.46	.63	.64				
State	.38	.38	.21	.34	.34	.37	.47			
Trait	.50	.48	.27	.44	.48	.46	.48	.71		
FQ	.52	.45	.34	.47	.59	.53	.54	.50	.64	

*All r's are significant at $p < .01$.

The ability of the scale to differentiate among community members, students, and anxiety patients was examined by ANOVAs. Table VI shows the mean values of the CCQ-M and its three factors for the three groups. The questionnaire indicated differences among the groups [$F(2,863) = 10.88$, $p < .001$]. Post hoc analysis on the basis of the Student–Newman–Keuls procedure revealed the patients to be significantly ($p < .05$) different from the nonclinical groups. Furthermore, the role of the three factors in the process of discrimination was investigated. Factors 1 [$F(2,873) = 265.62$, $p < .001$] and 3 [$F(2,869) = 8.73$, $p < .001$] differentiated the three samples successfully. The second factor failed to discriminate [$F(2,871) = .46$, n.s.]. The Student–Newman–Keuls indicated that the factors Emotional Catastrophes (F1) and Mental Catastrophes (F3) differentiated the patients from the community members and students. The ANOVAs were further extended to the clinical sample to explore the ability of the CCQ-M to differentiate among various anxiety disorders. The results were nonsignificant, indicating that the questionnaire is not sensitive enough to differentiate among the different anxiety disorders.

The results of statistical analyses showed that the modified CCQ scale is better compared to the previous one. First, the psychometric properties of the revised version have improved. Second, the administration and scoring of this questionnaire are easy due to its concise nature. Third, the three factors of the CCQ-M (see Fig. 1) are easy to interpret and are theoretically important. The present findings indicate that, of the original 50 items of the CCQ, 21 items were retained as the CCQ-M. These items were explained by a correlated three-factor solution. This factor solution, when investigated on the basis of different samples, repeatedly appeared to be the best fit for the data. Furthermore, the final factor solution was upheld by the student and clinical samples confirming its stability. It indicated that the modified questionnaire is not only is useful with normal subjects, but also can be used with clinical cases.

Table VI. Mean Values of CCQ-M and its Three Factors

	CCQ-M	F1—CCQ-M	F2—CCQ-M	F3—CCQ-M
Patients ($N = 278$)	64 (17)[a]	16 (6)	22 (7)	21 (7)
Community ($N = 96$)	58 (20)	13 (5)	22 (7)	18 (8)
Students ($N = 504$)	58 (15)	13 (4)	23 (6)	18 (6)

[a]Standard deviation in parentheses.

The results revealed that the generalized construct of "catastrophic cognitions" has three dimensions in the form of "Emotional, Physical, and Mental Catastrophes." A second-order factor is reflected, with catastrophic cognitions being the central construct and the three dimensions its subtypes. These factors were present in the previous 50-item CCQ. However, the two factors "Social and Bodily Catastrophes" in the initial version were eliminated from the scale as a result of the item analysis procedure. A close examination of the items loading on Social and Bodily Catastrophe scales revealed that their content was specific in nature and could be linked to global constructs such as emotional, mental, or physical catastrophes. Thus, the three factors of the modified version of the CCQ incorporate the themes of the Social and Bodily Catastrophes factors.

The three factors of the CCQ-M appear consistent with the current literature. Various anxiety disorders are associated with an exaggeration of the normal survival mechanism. Anxious patients incorrectly perceive threat or danger to their survival and judge themselves to be incapable of effectively coping with this threat. Unpleasant experiences of anxiety such as feeling jittery, shaky, angry, or uncomfortable are the central element in panic attacks and high anxiety. The misperception of these affective responses as dangerous is reflected by the first factor (Beck *et al.*, 1985; Ingram & Kendall, 1987). Anxious and panic-prone individuals are sensitive to somatic sensations. Signals from within the body are exaggerated and interpreted as indications of serious danger or injuries (Beck, 1988; Salkovskis, 1988). These catastrophic beliefs are reflected by the second factor, Physical Catastrophes. An anxious person's tendency to focus upon and monitor his/her internal emotional or somatic reactions can result in the inhibition of many normal functions (Beck *et al.*, 1985). One's cognitive

Name———————————— Date————

AGE ————————SEX M—— F———

Instructions: The questionnaire aims at measuring your beliefs and thoughts regarding the following items. Sometimes these items are believed to be DANGEROUS. Please read the items carefully, and choose a number from the scale given below to rate the extent you believe them to be dangerous to you. Write the number you chose in the box opposite each item. For example by writing 1, you believe that the item is NOT AT ALL dangerous. By writing 5, you believe that item is EXTREMELY DANGEROUS. Do not spend too much time, and try to answer all of them.

1	2	3	4	5
Not at all Dangerous	A little Dangerous	Quite Dangerous	Very Dangerous	Extremely Dangerous

1.	Feeling edgy	
2.	Having an accident	
3.	Mind not functioning normally	
4.	Being miserable	
5.	Being injured	
6.	Unable to think rationally	
7.	Feeling shaky	
8.	Having a stroke	
9.	Unable to control thinking	
10.	Being agitated	
11.	Being ill	
12.	Losing memory	
13.	Unable to relax	
14.	Being suffocated	
15.	Being mentally blocked	
16.	Being alarmed	
17.	Being attacked	
18.	Being out of senses	
19.	Being angry	
20.	Losing sight	
21.	Being mentally blurred	

Fig. 1. Catastrophic Cognitions Questionnaire—Modified.

capacity may be so taxed by coping with the "danger" that little capacity remains to satisfy other demands of cognitive processing (Beck, 1988).

Thinking difficulties in the form of mental blocking, interference in recall, and faulty reasoning occur. According to the factor "Mental Catastrophes," strained and cognitive capacity is regarded as dangerous, indicating a possibility of mental derangement (Chambless *et al.*, 1984; Clark, 1988; Mueller & Thompson, 1984). The three factor scores reflect different aspects of catastrophic misinterpretations.

A comprehensive analysis was conducted to explore the psychometric properties of the CCQ-M. A high internal consistency of the scale was obtained in the student and clinical samples. A moderately good 2 week-interval test–retest reliability was reflected by the clinical sample, supporting the clinical utility of the scale.

The correlations between the CCQ-M and the criterion scales were moderately good for the clinical sample, while they ranged from low to moderate for the student sample. The overall pattern of correlations was similar for the clinical and nonclinical samples. A close examination on the basis of the two samples revealed that the modified scale had a better relationship with various cognitive scales such as the ACQ and BSQ. This finding affirmed its cognitive orientation. However, very high correlations between the CCQ-M and the other cognitive scales were absent, indicating that the questionnaire, although a cognitive scale, was different on the basis of its specific catastrophic nature. The two samples showed that the CCQ-M had a moderate correlation with the FQ and the BAI which measure specific anxiety symptoms. On the whole, these correlations are consistent with previous findings, according to which catastrophic cognitions are linked to symptoms of panic disorder (Street, Craske, & Barlow, 1989) and other anxiety disorders (Marks, Basoglu, Alkubaisy, & Sengun, 1991). Trait anxiety was related moderately to the modified version only in the case of patients. Results on the basis of the student sample indicated that the CCQ-M had a poor relationship with the state and trait forms of the STAI. This suggests that state and trait anxiety are not associated with catastrophic cognitions in normal individuals. The present questionnaire's low correlation with the state form of the STAI, in the case of the students and clinical samples, indicates that the CCQ-M measures a construct different from state anxiety.

The questionnaire discriminated the patients from the normals (students and the community members). A detailed analysis revealed two factors, "Emotional and Mental Catastrophes," as better discriminators than the factor "Physical Catastrophes." According to this finding, patients differed from normal controls in misappraising emotional and mental reactions as dangerous. On the other hand, normals and patients were equally threatened by cues which indicated danger to their lives. The explanation for the nonseparation of result for the physical catastrophes factor was that

the clinical sample did not contain sufficient numbers of individuals with misinterpretation of bodily symptoms. This explanation is likely considering that the means of the patient, student, and community samples were close, though statistically different.

The CCQ-M was not sufficiently sensitive to differentiate amongst the different anxiety disordered patients. This limitation could be due to the phenomenon of comorbidity (Sanderson, DeNardo, Rapee, & Barlow, 1990), as a number of the patients had a primary and a secondary diagnosis of anxiety disorders. Moreover, a small number of cases in some of the diagnostic categories might have affected the statistical analysis. Another possibility is that the cognitions measured by the modified scale are shared by all of the anxiety disorders.

It can be concluded that a modified version of the CCQ has theoretical and clinical significance (Beck *et al.*, 1985; Clark, 1986). According to Beck (1976), the main problem for the anxiety disorders is not in the generation of anxiety, but in the overactive cognitive patterns (schemes) relevant to danger that are continually structuring the external and/or internal experiences as signs of danger. The present questionnaire measures cognitions with a theme of danger. The results provide replicated evidence in favor of its items, factor structure, and factor stability. The CCQ-M can be used with normal and anxiety-disordered cases in clinical and research settings as a general measure of catastrophic cognitions.

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