Polish adaptation and validation of the Agoraphobic Cognitions Questionnaire and the Body Sensations Questionnaire

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Summary

Aim: The present study aimed at the adaptation and validation of two questionnaires assessing fear of bodily sensations (BSQ; suggested Polish name: Kwestionariusz Doznań Cielesnych [KDC]) and concerns specific to agoraphobics (ACQ; suggested Polish name: Kwestionariusz Myśli Towarzyszących Agorafobii [KMTA]).

Method: The study included a total of 82 patients diagnosed with agoraphobia or panic disorder with agoraphobia according to the diagnostic criteria of the DSM-IV as well as 100 control subjects who did not show the presence of mental disorders.

Results: The results showed that both adapted questionnaires meet basic psychometric criteria. The Polish-language versions of the ACQ and BSQ are characterized by a high content validity, internal consistency and showed to be stable over a period of 28 days. Moreover, the factor structure of the Polish version of the ACQ showed to be highly similar to the original version.

Conclusions: Polish-language versions of the ACQ and BSQ have been found to be reliable and valid research and diagnostic instruments for the assessment of fear for bodily sensations and agoraphobic cognitions. Due to their high efficiency and adequate psychometric characteristics these measures might be very useful in research as well as in the diagnosis and evaluation of therapeutic effects.

Key words: agoraphobia, panic disorder, fear of fear

Introduction

According to the cognitive model of panic disorder, presented by Clark [1] and Beck [2], panic attacks are the result of catastrophic misinterpretations of the somatic symptoms – i.e., when the appearance of somatic symptoms [e.g. heart palpitations] is interpreted as immediate threat, the level of fear and the intensity of fear-related symptoms increase, which then, in accordance with the vicious circle principle,

results in the development of panic. Cognitive models do not, however, explain the origin of panic attacks in situations where catastrophic misinterpretations of somatic symptoms cannot be identified, e.g., at night [3]. Among the concepts attempting to explain such phenomena is a symptom progression model of panic based on a learning theory perspective proposing that somatic symptoms associated with the initial panic attack turn into threat cues and become conditioned elicitors of anxious apprehension. [4,5]. As a result of that mechanism, even slight symptoms of fear or arousal become the conditioned stimulus associated with an intense fear or strong arousal (so-called interoceptive threat signal), and begin to evoke a conditioned fear response. The authors of this approach state that the interoceptive conditioning process may occur even without the participation of consciousness [6,7,8]. On the basis of the interoceptive conditioning concept, Goldstein and Chambless [9] presented a coherent model explaining the occurrence and persistence of agoraphobia and panic disorder, and suggested that the reaction acquired as a result of interoceptive conditioning be called the fear of fear. On the basis of a three-level fear model presented by Lang in 1985 [10], the authors separated three components of the fear of fear: emotional, cognitive and behavioral. On the emotional level, an increased fear of fear is associated with the appearance of an exaggerated fear response to interoceptive signals (e.g., heart palpitations). Those signals may appear as a result of heavy or long-term stress as well as various emotional states (such as joy or anger), environmental conditions (e.g., high temperature) or substances altering the physiological activity of the organism (e.g., coffee). On the cognitive level, people with high fear of fear develop automatic thoughts of negative medical and social consequences of physiological arousal (e.g., „I'm going to have a heart attack"). Associating interoceptive signals with threat may lead to the development of avoidance behaviors typical for agoraphobia (behavioral level), whose aim is to avoid situations of higher risk of experiencing the symptoms and/or decreased availability of help. Chambless and coworkers [11,12] developed three questionnaires for assessing the above-mentioned components of the fear of fear: Body Sensations Questionnaire (BSQ; suggested Polish version name: Kwestionariusz Doznań Cielesnych, [KDC]), measuring the intensity of fear response to interoceptive signals, Agoraphobic Cognitions Questionnaire (ACQ; suggested Polish version name: Kwestionariusz Myśli Towarzyszących Agorafobii, [KMTA]), testing for the presence of automatic thoughts about negative medical and social consequences of fear and of those signals [11], and Mobility Inventory (MI; Polish version name: Skala Zachowań Unikowych Towarzyszących Agorafobii, [SZUTA]), measuring the intensity of avoidance [12,13]. In this article we will present the results of tests conducted on the basis of the Polish ACQ and BSQ translations in a group of agoraphobic patients and in a control group.

Factor analysis of the original ACQ version on the basis of the answers given by 88 agoraphobic patients showed an existence of two slightly correlated factors ($r = 0.26$) explaining 46.6% of the total variance [11]. As a result, two subscales were separated: one measuring concerns regarding medical consequences of fear (Physical concerns subscale), and one measuring concerns regarding social and behavioral consequences of control loss (Social/behavioral concerns subscale). Cronbach's alpha coefficients for

the items included in the first subscale amounted to 0.65, and for the other subscale to 0.76. The two-factor ACQ structure was confirmed in further research [14, 15, 16]. Up to the present, the research has shown a satisfactory reliability of the ACQ measured with the test-retest method ($\leq$ 31 days; $rs = 0.75 - 0.86$).

As to the BSQ, the previous study investigating agoraphobics and controls showed its high internal consistency (Cronbach's alpha = 0.87) and moderately satisfactory reliability ($r = 0.66$) tested by the test-retest method ($\leq$ 31 days [11]). These BSQ characteristics have been confirmed on German population [15]. Moreover, several previous studies confirmed a high construct validity of both questionnaires, showing that the scores of the BSQ and the ACQ as well as of both ACQ subscales satisfactorily differentiate patients suffering from agoraphobia/panic disorder from control subjects [15, 16], and effective psychotherapy results in significant scores reduction in both questionnaires [11, 15]. Previous research also showed [11, 15] that both questionnaires are highly correlated with the scores of the other scales measuring the features of patients with agoraphobia and/or panic attacks (e.g. Mobility Inventory [12, 13], Fear Questionnaire [17]) and moderately correlated with the scales measuring trait anxiety (State-Trait Anxiety Inventory X2 [18,19]), depression (Beck Depression Inventory [20]) and neuroticism (Eysenck Personality Questionnaire [21,22]).

Material

A total of 182 people were tested: 82 out- and inpatients diagnosed as agoraphobic, and 100 controls without diagnosed mental disorders.

Patients were diagnosed by experienced clinicians according to the DSM-IV criteria [23]. The questionnaires were filled before the beginning of psychotherapy. The control and clinical groups were not differentiated in terms of age and sex. (t's (180) < 2, p's > 0.05).

Methods

The aim of the present research was to determine the factor structure as well as validity and reliability of the Polish versions of the ACQ and the BSQ. The questionnaires had been translated and the translations had been consulted with the author, D.L. Chambless [24], according to the procedure of back-translation. Besides the ACQ and the BSQ the research included the following set of questionnaires:

- *Mobility Inventory* (MI) [12] is designed for measuring the tendency to avoid 26/27 different situations on a 5-point scale (I never avoid (1), I always avoid (5)). For each situation the avoiding tendencies intensity is tested twice – in the case where the confrontation with it takes place in solitude (subscale „Avoidance When Alone") and in the case where the confrontation takes place in company of other people (subscale „Avoidance When Accompanied"). The Polish version of the questionnaire prepared by Michalowski and coworkers [13] was used.
- *Eysenck Personality Questionnaire* – Revised (EPQ-R) [21] is a self-report personality questionnaire consisting of a 100 questions that have been assigned to four

subscales: Neurotisicm, Extroversion, Psychoticism and Lie. The Polish version of the questionnaire prepared by Brzozowski and Drwal [22] was used.

- *The Anxiety Sensitivity Index - III* (ASI-3) [25] is a self-assessment questionnaire designed for measuring the intensity of 18 different symptoms of the fear of fear and of arousal. It consists of 3 subscales: fear related to organism and health, fear related to mental processes and fear related to being among people. In the present study, the Polish version of the questionnaire prepared by Michalowski and co-workers [26] was used.
- *State-Trait Anxiety Inventory* (STAI-X2) [18,19] is designed for the self-assessment of general anxiety level.
- *Beck Depression Inventory* (BDI) [20] is designed for the self-assessment of depression symptoms intensity.

Results

Factor structure

The factor structure of the ACQ was analyzed on the basis of the data received from agoraphobics (n = 82). Exploratory Factor Analysis showed the existence of 5 factors with eigenvalues higher than 1. Thorough analysis confirmed that the two-factor model proposed by the authors of the original [11] best reflects the data structure: two main factors with eigenvalues 4.07 and 2.43 explained 46.4% of the variance, while the remaining factors had eigenvalues < 1.2 and explained up to 8% of the variance. Items loadings analyzed after a Promax rotation are presented in Table 1. Two test items (nos. 1 and 5) showed low correlations with both proposed factors (≤ 0.40). In order to check the accuracy of the proposed two-factor model, confirmatory factor analysis applying the AMOS 18 program was conducted with the use of the maximum likelihood estimation [27]. The analysis showed acceptable fit of the two-factor solution, where one factor contains items reflecting concerns of social and behavioral consequences of control loss, i.e., 6, 8, 9, 11, 12, 13, 14, and the other items reflecting concerns of medical consequences of fear, i.e., 2, 3, 4, 7, 10 ($\chi2 = 71.9$, df = 53 (p = 0.43), GFI = 0.875, AGFI = 0.816, RMSEA = 0.066 (p = 0.242), CFI = 0.937). For all the above-mentioned items the standardized regression coefficients were higher than 0.30.

Table 1. **Factor structure of the ACQ for Agoraphobic Sample (n=82): individual item factor loadings, eigenvalues and explained variance for the two selected factors**

Item content	social/behavioral subscale	physical subscale
Throw up	0.17	0.23
Pass out	- 0.01	0.63
Have a brain tumor	0.02	0.78
Have a heart attack	0.30	0.78
Choke to death	0.40	0.39
Act foolishly	0.74	0.25

table continued on next page

Go blind	0.19	0.54
Lose control	0.84	0.04
Hurt someone	0.41	0.15
Have a stroke	0.20	0.85
Go crazy	0.71	0.16
Scream.	0.66	0.08
Babble or talk `funny`	0.78	0.06
Paralyzed by fear	0.68	0.24
Eigenvalue	4.07	2.42
Explained variance %	29.1	17.3

Reliability

Statistical analyses confirmed a high internal consistency of the ACQ (Cronbach alpha = 0.78 in the control group (n = 100), and 0.80 in agoraphobics (n = 82, see Table 2)), and the test-retest reliability (28 days; r = 0.88 in the control group (n = 46)). Item-total correlations calculated for the Polish version of the ACQ ranged from 0.33 to 0.66.

Table 2. **Mean, standard deviation, item-total correlations and test-retest reliability coefficients for each individual item of the Agoraphobic Cognitions Questionnaire in normal controls and agoraphobics**

Item content	Normal Controls Item-total correlations Test-retest				Agoraphobics Item-total correlations		
	M	D	r	r	M	SD	r
Throw up.	1.29	0.54	0.36**	0.56**	2.01	1.28	0.33**
Pass out.	1.19	0.53	0.48**	0.88**	3.24	1.29	0.36**
Have a brain tumor.	1.18	0.54	0.55**	0.89**	1.68	1.01	0.42**
Have a heart attack.	1.26	0.57	0.43**	0.60**	2.71	1.53	0.64**
Choke to death.	1.14	0.40	0.38**	0.54**	1.84	1.20	0.50**
Act foolishly.	1.57	0.86	0.54**	0.69**	3.05	1.45	0.66**
Go blind.	1.11	0.43	0.57**	0.77**	1.73	1.01	0.42**
Lose control.	1.68	0.95	0.67**	0.48**	3.33	1.42	0.63**
Hurt someone.	1.66	0.93	0.49**	0.37*	1.60	1.05	0.40**
Have a stroke.	1.14	0.45	0.33**	0.84**	2.00	1.32	0.58**
Go crazy.	1.18	0.62	0.60**	0.85**	2.73	1.36	0.62**
Scream.	1.68	0.98	0.54**	0.64**	2.16	1.30	0.55**
Babble or talk `funny`.	1.36	0.73	0.62**	0.53**	2.46	1.39	0.61**
Paralyzed by fear.	1.58	0.90	0.54**	0.47**	3.71	1.24	0.63**

** p<0.001

As to the BSQ, our analyses confirmed its high internal consistency (Cronbach alpha = 0.94 in the control group (n = 100) and 0.88 in agoraphobics (n = 70), see Tab. 3), as well as moderately satisfactory test-retest reliability that was tested in the control group (r = 0.69; test-retest 28 days; n = 46). Moreover, the present study indicates high item-total correlations of all single BSQ items (0.48–0.80).

Table 3. **Mean, standard deviation, item-total correlations and test-retest reliability coefficients for each individual item of the Body Sensations Questionnaire in normal controls and agoraphobics**

Item content	Normal Controls Item-total correlations Test-retest				Agoraphobics Item-total correlations		
	M	SD	r	r	M	SD	r
Heart palpitations	2.00	0.95	0.66**	0.48**	3.64	1.18	0.56**
Pressure/Heavy feeling in chest	2.09	1.01	0.70**	0.53**	3.53	1.28	0.56**
Numbness in arms or legs	1.86	1.03	0.73**	0.51**	3.21	1.40	0.64**
Tingling in the fingertips	1.48	0.86	0.70**	0.34**	2.30	1.38	0.62**
Numbness in another part of body	1.77	0.96	0.72**	0.46**	2.97	1.38	0.54**
Feeling short of breath	2.46	1.26	0.69**	0.43**	3.94	1.25	0.72**
Dizziness	2.22	1.20	0.79**	0.56**	3.67	1.22	0.61**
Blurred/distorted vision	2.17	1.29	0.76**	0.62**	3.13	1.36	0.71**
Nausea	1.74	1.04	0.75**	0.26*	2.53	1.33	0.56**
"Butterflies" in stomach	1.52	0.85	0.63**	0.44**	2.30	1.31	0.48**
Knot in stomach	1.79	0.98	0.62**	0.45**	2.46	1.46	0.59**
Lump in throat	1.76	1.00	0.70**	0.67**	2.86	1.33	0.69**
Wobbly/rubber legs	1.91	1.12	0.80**	0.47**	3.44	1.18	0.63**
Sweating	1.80	0.95	0.60**	0.56**	2.63	1.37	0.50**
Dry throat	1.56	0.86	0.61**	0.47**	2.54	1.33	0.58**
Disoriented/confused	2.20	1.23	0.73**	0.61**	3.71	1.28	0.55**
Disconnected from the body	2.00	1.32	0.74**	0.62**	3.27	1.50	0.58**

** p<0.001

Validity analyses

Construct validity of the adapted instruments was tested by comparing the scores of agoraphobic patients with those of the control group. The analysis performed for the ACQ showed that the patients' scores (M = 2.45; SD = 0.68) differ significantly from the control group's scores (M = 1.36; SD = 0.35; t(180) = 13.95, p < 0.001), which confirms an adequate construct validity of this instrument. The analyses of the BSQ scores also showed a difference between the patients (M = 3.05; SD = 0.80) and the control group (M = 1.90; SD = 0.75) on a statistically significant level (t(160,229) = 9.85; p < 0.001). As was expected, a fairly strong correlation between the ACQ and

the BSQ (r = 0.62, p < 0.001 for the patients and r = 0.49, p < 0.001 for the control group), as well as statistically significant correlations between those scales and the scores of related research tools (r = 0.26 – 0.51 for the patients and r = 0.36 – 0.67 for the control group, see Tab. 4) were also obtained.

Table 4. **Correlations (Pearson's r) of agoraphobics responses to the ACQ
and BSQ with other psychometric instruments**

	ACQ n	ASI-3 n	MI n	STAI X2 n	BDI n	EPQ-N n
ACQ		0.67** 81	0.36** 79	0.51** 70	0.49** 67	0.53** 61
BSQ	0.62** 78	0.53** 77	0.41** 77	0.49** 66	0.44** 64	0.43** 61

** p<0.001; * p<0.05

ACQ – Agoraphobic Cognitions Questionnaire; BSQ – Body Sensations Questionnai-re; ASI-3 – The Anxiety Sensitivity Index – III; MI – Mobility Inventory; STAI-X2 – Sta-te-Trait Anxiety Inventory-X2; BDI – Beck Depression Inventory; EPQ-R-N –Eysenck Personality Inventory Revised, Neuroticism Scale; n – analyzed sample size

Discussion

The purpose of the present research was the adaptation and validation of two questionnaires designed for monitoring the fear of bodily sensations (Body Sensations Questionnaire, BSQ) and concerns specific to agoraphobics (Agoraphobic Cognitions Questionnaire, ACQ). Both adapted tools proved to have appropriate psychometric criteria.

Factor analyses of the Polish version of the ACQ confirmed its similarity to the original, i.e., the two-factor model provided the best fit of the data structure, and the distribution of item loadings (with the exception of item 5) is comparable with the original version. One factor consists of the test items related to the fear of control loss (6, 8, 9, 11-14). The other factor contains the items reflecting fears of negative medical consequences of fear (2, 3, 4, 7, 10). Such factor structure enables the division into two subscales which may give valuable information on the intensity of the above-mentioned agoraphobia-related concerns.

The factorial and external validity analyses indicate a high theoretical convergence of the Polish-language version of the ACQ with its English version. Moreover, according to our analyses the ACQ shows a high internal consistency and a good temporal stability over an interval of 28 days. The results concerning internal consistency and stability are comparable with the original [11] as well as the French and German versions [15, 16].

According to the reliability analyses, the Polish version of the BSQ is characterized by a satisfactory temporal stability over an interval of 28 days and a high internal consistency. As was expected, the questionnaire reveals a high construct and external validity, indicated by significant statistical differences between the scores of the agoraphobic patients and the control group as well as by the analysis of the correlation between the BSQ and other tools measuring the intensity of fear/neuroticism (STAI-X2, EPQ-R-N) and of the fear of fear (ASI-3, ACQ, SZUTA).

Conclusions

The findings indicate that Polish-language versions of the Agoraphobic Cognitions Questionnaire (ACQ) and the Body Sensations Questionnaire (BSQ) meet the basic psychometric criteria. Their high economy, content validity and temporal stability make them useful in original and replication studies. Moreover, both measures might provide a strong support to the diagnostic process and the assessment of therapeutic effects, especially as both questionnaires can effectively differentiate between agoraphobic patients, people without agoraphobia and patients with other anxiety disorders [15,16].

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