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MEASURING SYMPTOM ACCEPTANCE: PSYCHOMETRIC EVALUATION OF 'CHRONIC PAIN ACCEPTANCE QUESTIONNAIRE – SYMPTOMS' IN A CZECH CLINICAL SAMPLE

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ABSTRACT

Objective. The Chronic Pain Acceptance Questionnaire – Symptoms (CPAQ-S, 20 items) measures patients' acceptance of their symptoms. The questionnaire was created by reframing the Chronic Pain Acceptance Questionnaire-20 (CPAQ-20). This study describes the Czech validation of the full and short CPAQ-S forms.
Sample and settings. The final sample consisted of 368 patients (71% female) recruited at seven clinical sites in the Czech Republic.
Hypotheses. A hypothesized two-dimensional factor structure (Activity Engagement and Symptom Willingness) was tested together with other theoretically relevant factor solutions.
Statistical analyses. An ordinal confirmatory and exploratory factor analysis were employed.
Results. None of the theory-driven factor structures were confirmed in the CPAQ-S-20, and exploratory factor analysis did not yield any satisfactory factor solution. However, an eight-item version (CPAQ-S-8) was derived based on the factor analysis that was characterized by good psychometric properties even when retaining important facets of the expected two-factor structure (i.e., Activity Engagement and Symptom Willingness).
Limitations. While the sample heterogeneity was conceived as a strength of the study, an underlying noninvariance across different types of complaints could have caused unsatisfactory functioning of the scale.

key words:
chronic difficulties,
symptom acceptance,
factor analysis,
Chronic Pain Acceptance Questionnaire

klíčová slova:
chronické obtíže,
přijetí symptomu,
faktorová analýza,
Chronic Pain Acceptance Questionnaire

Acceptance is believed to be the most essential component of the psychological flexibility needed to live adaptively with any life problem, such as chronic pain (Kashdan & Rottenberg, 2010). Acceptance can be defined as an aware effort to take part in activities that possess a great personal significance despite experiencing constant problems (e.g., pain) on the one hand and a reduction of ineffective attempts to control or escape from them on the other hand (Ning et al., 2008; Reneman et al., 2010). This definition delineates acceptance as an active process that depends on the activation and maintenance of the sources of a patient's strength rather than a passive process that depends on others, such as health care professionals (McCracken et al., 2004).

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Acceptance can be defined by two behavioral processes–activity engagement (AE) in the presence of symptoms (e.g., pain) and symptom willingness (SW) representing the tendency to not control the symptoms (e.g., pain) – with both standing in opposition to coping strategies such as symptom control and avoidance (Vowles et al., 2008; Fish et al., 2010). On the one hand, it has been shown that acceptance, especially the AE component, is a good predictor of related constructs such as quality of life, well-being, or adaptation to pain and pain intensity reduction (McCracken et al., 2004). Twohig and Levin (2017), in their review of 36 RCTs, supported the association between acceptance as part of psychological flexibility as a possible mechanism for reducing anxiety and depression. On the other hand, acceptance was nearly unrelated to mental well-being when cognitive functioning was controlled for (Wicksell et al., 2009).

The acceptance of chronic pain has gained much more research attention than the acceptance of other symptoms (Brooks et al., 2011). Therefore, most articles and measurement tools are focused on this particular symptom. However, as a therapeutic mechanism of change, acceptance is not limited to chronic pain but may encompass any symptom, whether mental or physical (Pourová et al., 2020). Various symptoms may share similar processes at the emotional, cognitive, and behavioral levels. Existing self-report measures used to assess acceptance typically focus on specific symptom wording, such as chronic pain or fatigue. This has been useful when the population of interest only contained patients suffering such a symptom. Nevertheless, it is rather impractical when we want to assess symptom acceptance in a general clinical population, in which symptoms are heterogeneous (Dalgleish et al., 2020).

An instrument that would allow us to measure symptom acceptance in a heterogeneous population of patients is therefore needed. By inspecting several acceptance or psychological flexibility measures, we found the Chronic Pain Acceptance Questionnaire (CPAQ-20, McCracken et al., 2004) to be a suitable base for the development of a general symptom acceptance measure. The CPAQ-20 is an established acceptance measure with almost 20 years of worldwide use and a number of language adaptations, including English (Vowles et al., 2008), German (Nilges et al., 2007), and Chinese (Liu et al., 2016; Ning et al., 2008). In addition to factorial validity, several studies conducted a latent class analysis to provide additional evidence of the validity of CPAQ-20 (e.g., Rovner et al., 2015; Vowles et al., 2008). For more detailed information about its development, language mutations, and previous validations in various contexts, see Klocek's (2021) brief review.

However, the CPAQ-20 has not been used solely to measure chronic pain. Several studies used the questionnaire to measure patients' acceptance of fatigue: Brooks et al. (2011) associated lack of acceptance with impaired physical functioning and fatigue severity using an adapted version of the CPAQ-20 in which only the Fatigue Willingness subscale was employed, and all items were reworded from "pain" to "fatigue," with Cronbach's $\alpha = .83$. Ali et al. (2017) showed that a group of patients suffering from chronic fatigue achieved less acceptance than other groups. They used the Fatigue Acceptance Questionnaire, which is the Pain Willingness subscale of the CPAQ-20 with items reworded from "pain" to "fatigue" (Cronbach's $\alpha = .79$). Moreover, other versions of the CPAQ-20 exist, including the CPAQ-A for adolescents (McCracken, Gauntlett-Gilbert et al., 2010), the CPAQP for parents (Simons et al., 2011), and the CPAQ-E, which measures pain acceptance in the context of exercising (Sessford & Brawley, 2017). Examples demonstrate that modifications of the original CPAQ-20 are both feasible and plentiful. However, none of these stud-

ies conducted a proper psychometric study – they used the tool within their correlational research, sometimes selecting only certain items without further clarification of such selection.

Previous psychometric validation studies reported heterogeneous results regarding the underlying factor structure and overall psychometric evaluation of the CPAQ-20. Across various cultural contexts and samples, only three studies confirmed the expected two-factor structure of the CPAQ20 with activity engagement (AE) and pain willingness (PW) factors by means of confirmatory factor analysis (Bendayan et al., 2012; Eide et al., 2017; Vasiliou et al., 2018). Other, mostly principal component analysis-driven validations resulted in several cross-loadings and wrong-factor loadings (e.g., Ning et al., 2008). Nicholas and Asghari (2006) found a four-component structure of the CPAQ-20 consisting of the original AE subscale and three unnamed, moderately correlated components composed of items from the original PW subscale: Items 4, 7, 13, and 14 (Component 2), 11, 16 (Component 3), and 17, 18, and 20 (Component 4). They recommended omitting Item 8 from the CPAQ-20 and did not recommend the usage of the PW subscale. Some validation studies tried to keep the original CPAQ-20 two-factor structure while omitting the misfitting items: Item 16 (Wicksell et al., 2009) and Items 5 and 20 (Nilges et al., 2007).

In the present study, we aimed to create a general instrument for the assessment of symptom acceptance, the Chronic Pain Acceptance Questionnaire – Symptoms (CPAQ-S). For this purpose, we reworded all CPAQ-20 items by substituting the words "chronic pain" with "my symptoms." For the Czech wording of items, see Supplement 1. Given its similarity with the original CPAQ-20, we did not expect major differences in the psychometric properties between the CPAQ-20 and CPAQ-S-20. The purpose of our modification is to create a tool with the same practical usage as the original scale but with a broader scope than just chronic pain, measuring the general acceptance. Pragmatically, such a tool would be useful for clinical research purposes. We utilized both exploratory and confirmatory approaches to evaluate the psychometric properties of the CPAQ-S.

Furthermore, inspired by the brief version of the CPAQ (CPAQ-8; Fish et al., 2010), we also aimed to develop a brief version of the CPAQ-S-20 (CPAQ-S-8) that could be easily adapted into a busy clinical environment or ecological momentary assessment studies (for elaborated ideas see Stone et al., 2021). The CPAQ-8 is a short-form questionnaire that retains both subscales of the full CPAQ-20. AE is represented by Items 1, 6, 9, and 15, whereas the SW subscale is represented by Items 13, 14, 17, and 18 in short form (Fish et al., 2010). We assumed that the CPAQ-S-8 would have the same two-factor structure as the CPAQ-8.

METHOD

Participants, procedure, and treatment

$N = 444$ participants were recruited from seven clinical sites in the Czech Republic. The sample contained inpatients (four sites) and outpatients (three sites) who participated in a multidisciplinary treatment based primarily on group psychotherapy (see Pourová et al., 2021, for the treatment description). The data collection took place from January 2018 to December 2019. The study was approved by the Research Ethics Committee of Masaryk University (ref. no. EKV-2017-029-R1), and patients provided informed consent. In this study, we utilized the baseline data, i.e., data collected prior to the beginning of the treatment.

Instruments

Chronic Pain Acceptance Questionnaire – Symptoms (CPAQ-S): The CPAQ-S is a measurement tool derived from the CPAQ-20 (McCracken, 1999; McCracken, Vowles, et al., 2010) that was created to assess two behavioral domains of the acceptance of chronic pain: activity engagement (AE, 11 items) and pain willingness (PW, 9 items). Patients rated the items on a seven-point Likert-type scale from 0 ("Never true") to 6 ("Always true"). All nine items of the PW subscale are negatively keyed and must be reversed to compute the total acceptance score.

The CPAQ-20 scale was translated into Czech from the English version. Five native Czech speakers (a psychology student, two psychologists, and two laypeople) created five independent Czech translations. A group of three people (the two psychologists and the psychology student) then discussed the translations and consolidated them into a single version. Third, this version was back-translated into English by a bilingual, native English speaker and compared to the original English version. Fourth, the final Czech version was field-tested with five respondents to check the comprehensibility of the items. Finally, the words "chronic pain" were replaced by "my difficulties," and the PW subscale was renamed SW.

Patient Health Questionnaire 9 (PHQ-9): The PHQ-9 is composed of nine items, which screen the intensity of major depressive disorder symptoms on a four-point Likert scale from 0 ("Not at all") to 3 ("Nearly every day"). Cronbach's α was reported to be .89 (Kroenke et al., 2001). In this study, internal consistency was also satisfactory (Cronbach's α = .82 and McDonald's ω = .85).

General Anxiety Disorder-7 (GAD-7): The GAD-7 is a brief measure of the intensity of anxiety disorder symptoms composed of seven items rated on a four-point Likert scale from 0 ("Not at all") to 3 ("Nearly every day"). Cronbach's α was reported to be .92 (Spitzer et al., 2006). In this study, internal consistency was also satisfactory (Cronbach's α = .86 and McDonald's ω = .91).

World Health Organization-5 Well-Being Index (WHO-5): The WHO-5 (WHO, 1998) is a brief measure of mental well-being and is composed of five items rated on a six-point Likert scale from 0 (at no time) to 5 (all of the time). The reliability and validity of the scale has been supported by a systematic literature review (Topp et al., 2015). In this study, internal consistency was also satisfactory (Cronbach's α = .86 and McDonald's ω = .88).

Data analysis

Software and general information

After data cleaning and preparation, statistical analyses were conducted using R version 4.0.2 (R core Team, 2020). The R packages psych (Revelle, 2018), lavaan (Rosseel, 2012), and semTools (Jorgensen et al., 2021) were employed. Negatively keyed CPAQ-S items (i.e., Items 4, 7, 11, 13, 14, 16, 17, 18, and 20) were reversed before the analysis.

Confirmatory analyses

An ordinal confirmatory factor analysis (CFA) with the weighted least squares means and variance adjusted estimator (WLSMV) was used in this study for both the CPAQ-S-20 and CPAQ-S-8. Ordinal CFA is less vulnerable to assumption violations (Raykov & Marcoulides, 2011). Within multidimensional models, latent factors were allowed to correlate. Identification was reached by fixing the latent variable variances to 1. See Table 1 for all tested model specifications and Klocek's (2021) overview for further

information regarding CPAQ-20 validation studies (together with the justification for the selected models). The unidimensional model was also tested as a reference model for the more complicated models, even though the model fit was typically poor in previous literature (e.g., Bendayan et al., 2012; Eide et al., 2017; Fish et al., 2010; Vasiliou et al., 2018). The models' fit was assessed using root mean square error of approximation (RMSEA, optimally up to .05; should not exceed .10), standardized root mean square residual (SRMR, optimally below .08), χ^2, Tucker–Lewis Index (TLI, optimally above .95; should not fall below .90), and comparative fit index (CFI, the same cutoff values as those for TLI) (Hooper et al., 2008; Hu & Bentler, 1999). Internal consistency was assessed using McDonald's ω (McDonald, 1999) and Cronbach's α using semTools reliability function with a lavaan object as input.

Exploratory analyses

Since the CFA failed to confirm the theorized two-dimensional model, we conducted an exploratory factor analysis (EFA) on the CPAQ-S-20 data. We determined the number of latent dimensions through Horn's parallel analysis (psych R package, Revelle, 2018) using principal axis Monte Carlo simulation with the number of iterations set to 10.000, and the weighted least squares estimator. Next, we conducted an exploratory factor analysis with Oblimin rotation and the weighted least squares factoring method based on a polychoric correlation matrix. Fit was assessed using the same indices as those in CFA, except for SRMR, which was replaced by root mean square residual (RMSR) because SRMR was not an available fit measure using the fa function in psych R package.

Validation of the brief version (CPAQ-S-8)

Afterward, we tested the factor structure of the brief CPAQ-S-8 version in the whole sample. Since the original model (Fish et al., 2010) fit poorly, we selected different items based on the highest factor loadings from the two-dimensional model taken from the previous step (i.e., evaluation of the CPAQ-S-20 factor structure) to represent the AE and SW dimensions. This step follows exactly the procedure used by Fish et al. (2010) to create their brief CPAQ-8 version.

Finally, the concurrent validity of the CPAQ-S-8 was assessed by computing latent correlations (via an ordered structural equation model with the WLSMV estimator and standardized latent variables) between the CPAQ-S-8 and the WHO-5 (well-being), PHQ-9 (depression), and GAD-7 (anxiety). All latent variables were allowed to correlate freely with each other. We expected medium-sized associations of symptom acceptance, positive associations with well-being and negative associations with depression and anxiety.

RESULTS

Descriptive characteristics

After removing cases with missing data (17%), the sample included 368 patients (73.1% female). The patients' ages ranged from 18 to 68 years (M_{age} = 38.82, *SD* = 10.81). Psychiatric diagnoses according to the International Classification of Diseases-10 (WHO, 2004) included F4x (*n* = 251), F3x (*n* = 72), F6x (*n* = 62), F5x (*n* = 8), and F1x (*n* = 6). Several participants received multiple diagnoses (*n* = 34), most often a combination of F4x and F6x (*n* = 16), F3x and F4x (*n* = 9), and F3x and F6x (*n* = 8). Other demographics are reported in Table 2. See Supplement 2 for the descriptive characteristics of the items used in CPAQ-S-20.

Table 1 CPAQ-S factor models specification

Model	Problems in previous literature	Latent factors	Items																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Model 1: unidimensional (e.g., Bendayan et al., 2012)	Only reference model; not good fit	General acceptance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Model 2: two-factors (McCracken et al., 2004)	Cross-loadings of items, loadings on the wrong factor, mostly PCA	1. Activity engagement	x	x	x		x	x		x	x	x		x			x				x	
		2. Symptom willingness				x			x				x		x	x		x	x	x		x
Model 2a: two-factor (Wicksell et al., 2009)	Cross-loadings	Model 2 without Item 16																				
Model 2b: two-factors (Nilges et al., 2007)	The model was the best fitting model of 2/4 studies, while this fit was unfortunately still not satisfactory	Model 2 without Items 5 and 20																				
Model 3: four-factors (Nicholas & Asghari, 2006)	One factor only 2-item factor; cross-loadings; three factors were difficult to interpret and were left unnamed in the study	1. Activity engagement	x	x	x		x	x		x	x	x		x			x				x	
		2. Second factor				x			x						x	x						
		3. Third factor											x					x				
		4. Fourth factor																	x	x		x

Table 2 Demographic characteristics of the total sample

Variable	N (%)	Variable	N (%)
Education		*Gender*	
Primary school	16 (4.3%)	Male	98 (26.6%)
Secondary school	59 (16.0%)	Female	269 (73.10%)
Secondary school with graduation	132 (35.9%)	Missing	1 (0.3%)
High technical school	18 (4.9%)	*Nationality*	
University	141 (38.3%)	Czech	351 (95.4%)
Missing	2 (0.6%)	Slovak	7 (1.9%)
Household status		Others	8 (2.1%)
In partnership	179 (48.7%)	Missing	2 (0.6%)
Single	74 (20.1%)	*Occupation*	
With parents	48 (13.0%)	Employee	158 (42.9%)
Other	66 (17.9%)	Businessman	26 (7.1%)
Missing	1 (0.3%)	Unemployed	60 (16.3%)
Marital status		Maternity leave	7 (1.9%)
Single	189 (51.4%)	Student	26 (7.1%)
Married or civil partnership	113 (30.6%)	Retirement	2 (0.6%)
Divorced	64 (17.4%)	Invalidity pension	31 (8.4%)
Widowed	1 (0.3%)	Other	21 (5.7%)
Missing	1 (0.3%)	Missing	37 (10%)

Confirmatory factor analysis (CPAQ-S-20)

Basic assumptions for conducting a confirmatory factor analysis were fulfilled (see Supplement 3). Five hypothesized factor models based on previous literature regarding the CPAQ-20 (see Table 1) were tested. Neither of the models demonstrated acceptable fit (see Table 3). Removing items that were found problematic in previous studies (i.e., Items 5, 16, and 20; see Models 2a and 2b in Table 1) did not improve the model fit enough to be in the satisfactory range. Although the alternative factor structure suggested by Nicholas and Asghari (2006) fitted the data slightly better than the two-dimensional model, the fit of this model was still not satisfactory. Moreover, we were unable to meaningfully interpret the factors of this model. The two-dimensional model (Model 2, see Supplement 2 for factor loadings) was most interpretable from the theoretical perspective. Correlation between the AE (Cronbach's $\alpha = .831$; McDonald's $\omega = .736$) and SW (Cronbach's $\alpha = .725$; McDonald's $\omega = .618$) factors was $r = .484$.

Table 3 Fit of the confirmatory factor analysis models of the CPAQ-S

Tested factor structure	χ^2	df	SRMR	RMSEA	TLI	CFI
Model 1 (*unidimensional: 20 items*)	1694.87	170	.121	.161 (.15-.17)	.810	.830
Model 2 (*Activity engagement, Symptom willingness*)	1233.26	169	.107	.137 (.13-.14)	.863	.878
Model 3 (*four-factor model from Nicholas & Asghari, 2006*)	1068.37	165	.101	.129 (.12-.14)	.878	.911
Model 2a (*AE+PW: 19 items without Item 16*)	1091.52	151	.101	.132 (.13-.14)	.882	.896
Model 2b (*AE+PW: 18 items without Items 5 and 20)*	784.827	134	.096	.120 (.11-.13)	.900	.912

Baseline model's RMSEA = .25

Based on information from modification indices of Model 2 we sequentially tried to assign several items (Items 20, 16, and 13) to the AE instead of the SW subscale. Nevertheless, the fit did not improve. To optimize on the model fit based on further modification indices information, we would have to allow residual correlations between three pairs of items (5 and 10; 1 and 8; and 11 and 14) to reach an acceptable fit. However, such resulting model would be overspecified. Although such adjustments could increase the model's fit in our sample, they would likely reduce the generalizability of our findings in other potential cross-validation samples.

Exploratory factor analysis (CPAQ-S)

Horn's parallel analysis suggested that five factors should be extracted (with eigenvalues of two factors higher than 1; see Supplement 4). An exploratory five-factor model (see Supplement 5 for factor loadings) demonstrated also rather unsatisfactory fit to the data ($\chi^2(100) = 328.71$, $p < .01$; RMSR = .04 (df-corrected RMSR = .05), RMSEA = .079 [.07-.09], TLI = .817, and BIC = -262.09).

We labeled the factors Life Engagement (15% explained variance) and Activity Engagement (11%), and three factors did not have clear interpretation. The third factor (9%) represented a combination of 1) a tendency to not control the symptoms, 2) a tendency to avoid symptoms from the original SW subscale, and 3) items from the original AE subscale. The fourth factor represented negatively keyed items representing a tendency to not control the symptoms (7%). Finally, the fifth factor was represented by a single item (Item 4), which was possibly caused by the use of a strong word ("sacrifice") in the item-wording that differed from the wording of other items (5%). The last three factors did not represent any interpretable content and explained only little variance. However, refining and testing alternative exploratory models (see Supplements 6a and 6b for other EFA models) did not increase the interpretability of the CPAQ-S-20 factor structure. The effort to remove nonfunctioning items would lead to deleting too many items and obtaining a model similar to the brief version of the CPAQ-S-8. Therefore, we proceeded to test the brief version.

Validation of the CPAQ-S-8

The fit of the CPAQ-S-8 factor structure modeled after Fish et al.'s (2010) CPAQ-8 was unsatisfactory ($\chi^2(19) = 222.30$, $p < .001$; RMSEA = .152 [.13-.17], SRMR = .091, TLI = .901, and CFI = .933). The model with allowed residual correlation between Items 1 and 15 ($r = .52$), as suggested by modification indices, also

did not result in an acceptable fit. Therefore, we proceeded with a combination of theoretical and empirical approaches to select a different set of the most suitable eight items from CPAQ-S-20 to create the short form of the measure. The theoretical approach was based on the facet model created by evaluating the content validity of each individual item.

The original AE domain from CPAQ-S-20 included several content-distinguishable, though not exclusive facets: 1) doing everyday activities or duties despite the presence of symptoms [Items 1, 6, 9, 15], 2) living a fulfilled life despite symptoms [Items 2 and 9], 3) normalization of symptoms as being part of life [Items 3 and 19], 4) non-importance of control over symptoms in life [Items 5 and 10]. Fish et al.'s (2010) short form of AE domain included items 1, 6, 9, and 15, while omitting the facets 3) and 4) and under-representing the facet 2). After comparing the theoretical model with the empirical reasons regarding highest factor loadings as reported in the CFA of the CPAQ-S-20 (see Supplement 2), we decided to keep only the core facet of activity engagement domain but balance items between facets 1) and 2), and replace Item 1 with Item 2.

The original SW domain from CPAQ-S-20 also included several content-distinguishable but not exclusive facets: 1) need for control or even gaining control over symptoms [Items 4, 7, 13, 14, 16], 2) avoidance or worries of activities worsening symptoms [Items 17 and 18, potentially also Item 7], 3) a facet addressing the barriers in living a normal life such as need for change of thoughts and emotions before doing important future steps in life, or need to give a lot of effort to do just anything [Items 11 and 20, potentially also Items 14 and 16]. The Fish et al.'s (2010) short form of SW domain included items 13, 14, 17, and 18, while omitting the facet 3). After comparing the theoretical model with the empirical reasons regarding highest factor loadings as reported in the CFA of the CPAQ-S-20 (see Supplement 2), we decided to replace Item 13 with Item 7 (adding content of focusing to get rid of symptoms) and Item 17 with Item 11. By this replacement we added the representant of the third facet while retaining Item 18 from the second facet).

We then conducted ordinal EFA in the same dataset using only selected 8 items to see the model fit: ($\chi^2(28) = 26.97$, $p < .05$, RMSEA = .054 [.02-.08], RMSR = .02, TLI = .97). Both the AE and SW CPAQ-S-8 subscales had satisfactory internal consistency ($\omega = .83$ and .71, respectively), with all loadings being significant, and the subscales were moderately correlated ($r = .40$).

In terms of concurrent validity, the CPAQ-S-8 subscales were associated with all three relevant constructs in an expected manner. The fit of the model was excellent ($\chi^2(367) = 1021.71$, $p < .001$, RMSEA = .062 [.057-.068], SRMR = .063, TLI = .984, and CFI = .986). The AE subscale had stronger associations with subjective well-being ($r = .69$), depression ($r = -.68$), and anxiety ($r = -.56$) than the SW subscale with subjective well-being ($r = .28$), depression ($r = -.37$), and anxiety ($r = -.32$). All coefficients were statistically significant at $p < .01$. See Supplement 7 for the complete latent factor correlation matrix.

DISCUSSION

This study aimed to evaluate the psychometric properties of the Czech version of the Chronic Pain Acceptance Questionnaire – Symptoms (CPAQ-S-20) and its brief form (CPAQ-S-8). This included factor structures, internal consistency, and convergent validity.

Full version

The Czech CPAQ-S-20 was derived from the Chronic Pain Acceptance Questionnaire (CPAQ-20). In the literature review of previous psychometric studies regarding the CPAQ-20 (see Klocek, 2021), a number of rival factor structures were gathered. In this study, none of the hypothesized factor structure models possessed satisfactory fit in terms of both confirmatory and exploratory factor analysis. In particular, the unidimensional and two-dimensional interpretations were not valid in the Czech clinical sample. Internal consistency was relatively acceptable for the AE subscale but too low for the SW subscale.

Similar to the Dutch version of the CPAQ-20 (Trompetter et al., 2011), the two-factor structure (i.e., using the AE and SW factors) was not confirmed in the Czech CPAQ-S-20, and we do not recommend the current version of the CPAQ-S-20 to be used in the Czech context. Given that the problems we encountered were similar to those reported for the original CPAQ version in McCracken et al.'s (2004) study and those in subsequent psychometric studies (Bernini et al., 2010; Liu et al., 2016; McCracken et al., 2004; Nilges et al., 2007; Wicksell et al., 2009), these psychometric problems could be attributed to the CPAQ-20 scale itself and not necessarily to our modification of the items or to the translation process. Problems with the two-dimensional structure were also reported in other language adaptations, as summarized in Table 1. The two-dimensional model was supported by only half of the previous validation studies.

Alternatively, these problems can be attributed to the fact that all items targeted unspecified symptoms and the sample consisted of patients' heterogenous complaints, whereas in the previous validation studies, the symptoms and populations were most frequently limited to chronic pain, even though several attempts to change the wording emerged in the previous literature (e.g., fatigue).

Brief version

The CPAQ-S-8 had good psychometric properties, including a clean factor structure connected to the facet model, acceptable internal consistency of both AE and SW dimensions, and evidence for concurrent validity. AE outperformed SW in all evaluated psychometric characteristics. Our results support McCracken et al.'s (2004) finding that AE is strongly positively associated with and possibly contributes to patients' well-being and Twohig and Levin's (2017) finding that acceptance (AE in our case) is strongly negatively associated with depression and anxiety. However, we did not assess predictive validity and cannot make any relevant causal claims based on our study. Only a small association was found between SW on the one hand and well-being and distress scales on the other.

Limitations and future research

First, the sample size was too small to be divided into exploratory and confirmatory subsamples. Furthermore, the sample was heterogeneous in terms of symptoms, and it is possible that the factorial structure is not identical across various patients' conditions. Second, exploratory factor analysis of the CPAQ-S was conducted using the same dataset as that in previously conducted confirmatory factor analysis. Future validation studies are needed to test the generalizability of the model. Third, even though the CPAQ-S-8 is a promising tool for rapid assessment of both theoretical dimensions of symptom acceptance, the Czech version is composed of different items than the original CPAQ-8 (Fish et al., 2010). Even though, the reduction of items could have led to an underrepresentation of important aspects of the acceptance construct, we

tried to be inclusive of all important facets originally represented in the long format of the scale. Fourth, the cognitive functioning variable was not included in the concurrent validity analyses. Therefore, the association between acceptance dimensions and well-being or distress might be misleading because conditioning on cognitive functioning could diminish the effects, as in Wicksell et al. (2009).

CONCLUSION

While the CPAQ-S-20 did not perform well in our study, we found some support for the CPAQ-S-8 in the newly developed brief version. However, the measure should be cross-validated on other samples before the scale is routinely used (the current EFA model fit was computed on the same dataset). Despite our effort to combine the theoretical facet model with the empirical argument of highest factor loadings, the currently presented short form of the measure does not contain the direct avoidance of symptoms and the non-importance of control over symptoms in life. Given the insufficient support, we recommend using CPAQ-S-8 with caution and only in a clinical research setting for rapid assessment of general acceptance of symptoms. We further recommend always computing factor scores instead of any version of composite scores (e.g., sum scores or mean scores) when using the instrument.

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SOUHRN

Zhodnocení psychometrických vlastností, Chronic Pain Acceptance Questionnaire – Symptoms': měření přijetí obtíží v českém klinickém vzorku

Cíl. Škála Chronic Pain Acceptance Questionnaire (20položková verze) měřící přijetí chronické bolesti byla adaptována k měření přijetí obecných chronických obtíží pacientů klinických zařízení: Chronic Pain Acceptance Questionnaire – Symptoms. Tato studie popisuje českou adaptaci plné a zkrácené (CPAQ-S) verze škály.
Vzorek. Finální vzorek sestával z 368 pacientů (71 % žen) ze sedmi klinických zařízení v České republice.
Hypotézy. Předpokládaná dvoufaktorová struktura (Zapojení do aktivit navzdory bolesti a Ochota snášet symptomy) byla testována společně s dalšími teoreticky relevantními modely.
Statistické analýzy. Byla použita ordinální konfirmační a následná explorační faktorová analýza.
Výsledky. Žádný z testovaných faktorových modelů CPAQ-S-20 nebyl podpořen daty. Využití explorační faktorové analýzy nepřineslo žádnou přidanou informační hodnotu. Empiricky odvozená osmi-položková verze škály (CPAQ--S-8) byla charakterizována poměrně dobrými psychometrickými vlastnostmi i po zachování očekávané dvoufaktorové struktury tj., Zapojení do aktivit navzdory bolesti a Ochota snášet symptomy.
Limity. Zatímco heterogenitu vzorku je možné vnímat jako silnou stránku studie, heterogenita různých typů obtíží, jimiž pacienti ve vzorku trpěli, mohla způsobit neuspokojivé fungování škály.