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The Need for Controllability and Predictability questionnaire (NCP-q): psychometric properties and preliminary findings in a clinical sample

BACKGROUND

Given the importance of the need for controllability and predictability in the broad field of health psychology, a high-quality measurement tool for these constructs is required.

PARTICIPANTS AND PROCEDURE

The objective of our study was to validate the Need for Controllability and Predictability questionnaire (NCP-q), which is a 15-item self-report measure that assesses an individual's need for controllability and predictability. In study 1, an exploratory ($n = 464$) and confirmatory ($n = 304$) factor analysis was performed in two student convenience samples. In study 2, NCP-q data of patients with panic disorder ($n = 34$), stress-related syndromes (overstrain, $n = 33$; burnout, $n = 39$), functional somatic syndromes (fibromyalgia and/or chronic fatigue syndrome, $n = 34$), and healthy controls ($n = 30$) were compared.

RESULTS

The results from study 1 suggest that the NCP-q should be used as a one-dimensional instrument. The NCP-q has excellent internal consistency and an acceptable four-week test-retest reliability. Convergent validity was demonstrated. Study 2 revealed significantly higher NCP-q scores for all patient groups compared to healthy controls, but no differences between patient groups.

CONCLUSIONS

A higher self-reported need for controllability and predictability can be seen as a transdiagnostic underlying mechanism of different patient groups characterized by experiencing physical symptoms in daily life. The NCP-q can be used as a reliable, concise, and clinically relevant research tool and may contribute to identifying relevant underlying mechanisms in different patient samples.

KEY WORDS

need for control; need for predictability; functional somatic syndromes; burnout; panic disorder

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BACKGROUND

A long tradition of scientific research shows that uncontrollability and unpredictability have an important impact on both animal and human functioning (Bassett & Buchanan-Smith, 2007; Burger & Cooper, 1979; Foa et al., 1992; Weiss, 1970). Controllability can be conceptualized as the mastering of the environment, situational incidents, and future events, while predictability is defined as knowing, in advance, what and how an event will or will not occur (Zvolensky et al., 2000b). Although controllability and predictability are in fact two different concepts, they are often used interchangeably. It is claimed that controllability and predictability cannot be perceived as completely independent from each other (Mineka & Kihlstrom, 1978): controllable events are most often predictable, though it is possible that predictable events cannot be controlled (Zvolensky et al., 2000b).

Whereas controllability and predictability refer to abilities, the need for controllability and predictability reflects a subjective desire or wanting. The need for controllability is a personality trait (Burger, 1992) and has previously been described as: "The level of motivation to control the events in one's life" (Burger & Cooper, 1979, p. 381). Humans with a high need for control are described by some authors as assertive, decisive, active, with high levels of aspiration and trying to influence others by seeking leadership roles (Burger, 1985; Burger & Cooper, 1979). A certain need for control is innate and proven to be essential for survival (Leotti et al., 2010). Regarding the Big Five personality traits, both extraversion and conscientiousness increase the need for control, while agreeableness diminishes this trait (Myles et al., 2020). Although a certain need for controllability and predictability is present in each of us, there is inter-individual variability in these needs. Both high and low levels of need for control could lead to different outcomes depending on the specific context.

The role of the need for control has been investigated in the context of emotional dysfunction disorders, such as fear, distress, eating pathologies, and sexual problems. According to the HiTOP classification (Kotov et al., 2017; Watson et al., 2022), emotional dysfunction (modeling the commonality between internalizing and somatoform) is conceptualized as one of three superspectra, alongside psychosis (combining thought disorder and detachment) and externalizing (subsuming antagonistic and disinhibited forms of psychopathology). Although most studies suggest that a higher need for control plays a substantial part within emotional dysfunction disorders (Bagcioglu et al., 2012; Boswell et al., 2013; Brown et al., 2017; Burger & Arkin, 1980; Cano-López et al., 2022; Carleton et al., 2012, 2014; Keen et al., 2022; Laghi et al., 2018; Lawless et al., 2021; Moulding et al., 2008;

Moulding & Kyrios, 2007; Oguz et al., 2019; Sarawgi et al., 2013; Saulnier et al., 2019), some studies did not confirm this (Froreich et al., 2016) or obtained opposite results (Kleftaras & Georgiou, 2014; Myles et al., 2020, 2021; Tiggemann & Raven, 1998). The discrepancy among these findings may, in part, be due to the fact that the used questionnaires do not measure identical constructs of control.

In particular, it is also plausible that the need for control plays a role in the development and perpetuation of stress-related conditions (e.g., overstrain, burn-out) or functional somatic syndromes (e.g., fibromyalgia, chronic fatigue syndrome [CFS]). Individuals with a high need for control are more likely to be emotionally exhausted – one of the three dimensions of burnout (Bakker et al., 2008) – and experience high cardiovascular reactivity during stress (Lawler et al., 1990). Moreover, a discrepancy between a high need for control and low perceived control elevates distress (Law et al., 1994), while a higher need for control is associated with both CFS and FM (Keen et al., 2022).

In the present manuscript, we propose the Need for Controllability and Predictability questionnaire (NCP-q) to measure a person's individual need for controllability and predictability. Even though there are currently other questionnaires available on related topics, the NCP-q distinguishes itself from them by important conceptual differences. For instance, the Intolerance of Uncertainty Scale (IUS; Freeston et al., 1994) measures "the excessive tendency of an individual to consider it unacceptable that a negative event may occur, however small the probability of its occurrence" (Dugas et al., 2001, p. 552). This instrument mainly assesses negative beliefs about internalized insecurities (e.g., 'uncertainty prevents me from having a strong opinion'). In addition, the Desirability of Control (DC; Burger & Cooper, 1979) is known as a questionnaire to assess one's general motivation to control the events in one's life. Persons scoring high on DC generally seek to influence others and manipulate events to ensure desired outcomes. Many items of the DC describe specific situations associated with achievement and competition (e.g., 'I enjoy being able to influence the actions of others'). Last, the subscale 'beliefs about the need to control thoughts' of the Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004) assesses maladaptive meta-cognitions regarding a person's need for control (e.g., 'I will be punished for not controlling certain thoughts'). In contrast to these questionnaires, the NCP-q is formulated in a situation-independent way and offers a broader and more neutral perspective on the need for control and predictions of external situations and the future (e.g., 'I like to know what awaits me').

Here we report the results of two studies. In the first study, we focused on the psychometric structure

of the questionnaire in a student convenience sample, while in the second study we investigated whether and how patients with panic disorder, stress-related conditions, or functional somatic syndromes differed on the NCP-q compared to a healthy control (HC) sample and each other. Ethical approval was provided by the Social and Societal Ethics Committee of KU Leuven (Leuven, Belgium) (S5890).

STUDY 1

In study 1, we aimed to validate the NCP-q, a new questionnaire measuring the dispositional need for controllability and predictability. We examined its factor structure, internal consistency, test-retest reliability, and convergent validity in a student convenience sample.

PARTICIPANTS AND PROCEDURE

First year bachelor students were invited to participate in collective testing sessions at the university for course credits during which a set of questionnaires was administered. Data were collected during two collective sessions (total N = 768; 84.5% women, mean$_{age}$ = 18.37 years, SD_{age} = 1.81), resulting in dataset 1 (n = 464) and dataset 2 (n = 304). All participants provided signed informed consent (in accordance with the Helsinki Declaration) beforehand and completed a series of 11 self-report questionnaires, including our primary questionnaire of interest, the NCP-q. Considering that intolerance of uncertainty is a construct conceptually related to the NCP-q, is associated with higher worry, anxiety, and depression (Boswell et al., 2013; Carleton et al., 2012, 2014; Dugas et al., 2001; Saulnier et al., 2019; Wilson et al., 2020), and given the role that a higher need for control plays in both anxiety and depression (Burger & Arkin, 1980; Cano-López et al., 2022; Keen et al., 2022; Moulding et al., 2008; Moulding & Kyrios, 2007; Oguz et al., 2019), we used the Intolerance of Uncertainty Scale (IUS), the Penn State Worry Questionnaire (PSWQ), the State-Trait Anxiety Inventory-Trait Form (STAI-T), and the Beck Depression Inventory II (BDI-II), to examine convergent validity. A subsample of 38 participants (94.74% women; mean$_{age}$ = 18.21 years; SD_{age} = 0.99) filled out the NCP-q twice, one month apart, to investigate test-retest reliability.

MEASURES

Need for Controllability and Predictability Questionnaire (NCP-q). The NCP-q is a 15-item self-report questionnaire designed to measure one's need for controllability and predictability. Participants are asked to indicate how typical each of the 15 statements (e.g., 'I find it necessary to manage my environment' and 'I like to know what lies ahead of me') are for them on a 5-point Likert scale ranging from 1 (*not typical*) to 5 (*very typical*). Higher scores on all items reflect higher need for controllability/predictability. The questionnaire was developed and validated in Dutch. Using forward-and-back translation methods, an English version of the NCP-q was created. First, the Dutch version was translated into English by an independent native English speaker. This translation was translated back into Dutch by two independent native Dutch speakers. The original and back-translated version of the NCP-q were compared by the authors, and a final English version was agreed upon (see Appendix I and II for the final Dutch and English versions of the questionnaire).

Intolerance of Uncertainty Scale (IUS; de Bruin et al., 2006; Freeston et al., 1994). The IUS is a 27-item self-report questionnaire designed to measure the degree of intolerance of uncertainty by asking participants to indicate to what extent they find various statements representative for themselves on a 5-point Likert scale ranging from 1 (*not at all representative*) to 5 (*completely representative*). This questionnaire has excellent internal consistency and good test-retest reliability over a five-week period (Buhr & Dugas, 2002).

Beck Depression Inventory II (BDI-II; Beck et al., 1996; Van der Does, 2002). The BDI-II is a self-report instrument consisting of 21 multiple-choice items assessing the level of depression. For each item, participants are asked to indicate which of four statements is most descriptive of their state during the past two weeks, including the day of testing. Higher scores imply higher levels of depression. Excellent internal consistency and acceptable to good test-retest reliability were found (Wang & Gorenstein, 2013).

Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990; van Rijsoort et al., 1999). The PSWQ is a 16-item self-report questionnaire designed to measure the intensity of uncontrollable worrying. Participants are asked to indicate how typical each statement is for them on a Likert scale ranging from 1 (*not typical at all*) to 5 (*very typical*). The PSWQ has high internal consistency and good test-retest reliability (Meyer et al., 1990).

State-Trait Anxiety Inventory-Trait Form (STAI-T; Spielberger et al., 1970; Van der Ploeg, 1980). The STAI-T is a self-report instrument on trait anxiety, measured by 20 statements. Participants are instructed to indicate to what extent they experience different emotions in general on a Likert scale ranging from 1 (*hardly ever*) to 4 (*almost always*). A higher total score indicates higher levels of trait anxiety. The STAI-T has excellent internal consistency (Grös et al., 2007) and good test-retest reliability (Barnes et al., 2002).

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DATA ANALYSIS

Factor structure. To find the best-fitting model for this questionnaire, the factor structure of the NCP-q was first explored using an exploratory factor analysis (EFA) on dataset 1 (*n* = 464). The EFA was conducted with MPlus 8 (Muthén & Muthén, 2017). The model was estimated with a robust mean- and variance-adjusted weighted least squares (WLSMV) procedure and geomin oblique factor rotation. Oblique rotation was applied because controllability and predictability have previously shown a high degree of overlap (Zvolensky et al., 2000b). Factors were retained using a visual scree plot analysis and parallel analysis (Hayton et al., 2004). Following the recommendation of Howard (2016), items were retained if they (a) loaded on a primary factor > .40, (b) loaded on alternative factors below .30, and (c) demonstrated a difference of .20 between the primary and alternative factor loadings.

After the best fitting model was selected based on the EFA, confirmatory factor analysis (CFA) was then performed on dataset 2 (*n* = 304) to validate this model. The CFA using WLSMV estimation was conducted with MPlus 8. The model fit was evaluated with the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). RMSEA values below .06 and CFI values higher than .90 were treated as the indices of a good model fit (Hu & Bentler, 1999).

Psychometric properties. We calculated the mean, standard deviation, inter-item correlation, and component loadings of the items on the EFA dataset (*n* = 464) and evaluated the test-retest reliability by computing Pearson correlations between answers on

the NCP-q within a subsample of the same population over a one-month period (*n* = 38). For the other analyses, we used a combination of both datasets. We examined the internal consistency using Cronbach's alpha and McDonald's omega. Next, convergent validity was examined by computing Pearson correlations between the NCP-q and intolerance of uncertainty (IUS), worrying (PSWQ), depression (BDI-II), and trait anxiety (STAI-T). Items from the questionnaires that were not completed were replaced by an average score. Missing data and reasons for non-participation in accordance with the STROBE statement are reported. All analyses were carried out with IBM SPSS Statistics version 28.0.

RESULTS

FACTOR STRUCTURE

First, the EFA with an oblique rotation was performed on dataset 1 (*n* = 464). The visual scree plot analysis and the parallel analysis suggested either a one- or two-factor solution (Figure 1). However, due to the high cross loadings of multiple items, we opted for a one-factor solution. Table 1 shows factor loadings of the one-factor solution. All items loaded to this one factor, with loadings ranging between .55 and .86. To confirm the factor structure suggested by the EFA, dataset 2 (*n* = 304) was used to perform the CFA testing a one-factor model. The fit of this model was satisfactory (χ^2(90) = 680.71, *p* < .001; CFI = .93; TLI = .91, RMSEA = .15 (.14-.16); SRMR = .07)[1].

PSYCHOMETRIC PROPERTIES

Psychometric properties were calculated on the EFA dataset (*n* = 464). The mean, standard deviation, inter-item correlation, and component loadings of each item are presented in Table 1. No negative inter-item correlations were found, indicating that none of the items impair the coherence of the NCP-q total score. The average total score was 43.18 (*SD* = 11.39) with scores ranging from 15 to 75, the lowest and highest possible scores. The overall mean score on all items was 2.89. Item 10 ('I feel anxious if I can't predict what is going to happen') was scored the lowest (*M* = 2.13, *SD* = 1.04) and item 1 ('I do not like to lose control over my life') had the highest average rating (*M* = 3.69, *SD* = 1.03). Further, Pearson correlations showed acceptable test-retest reliability over a four-week period, with *r*(37) = .71 (*p* < .001). The following analyses were calculated on the combined dataset (*n* = 768). Excellent internal consistency was found (α = .93; ω = .93) and convergent validity was confirmed by finding moderate positive Pearson correlations (Akoglu, 2018) be-

Figure 1

Scree plot with observed eigenvalues and mean eigenvalues from parallel analysis
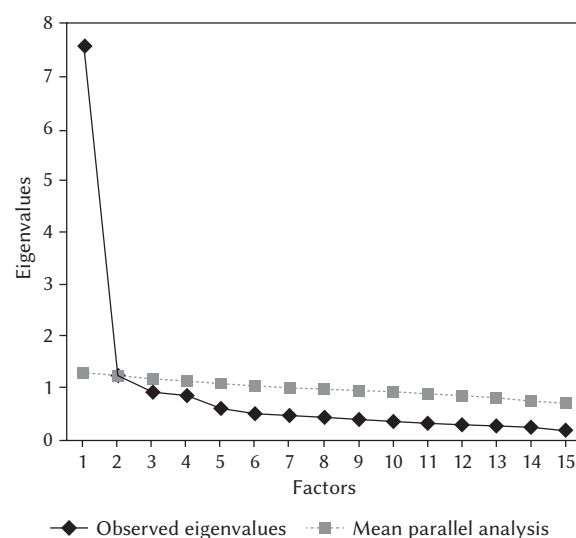
Table 1

Item-level analysis and factor loadings of the NCP-q items

	M	SD	I-T	CL
1. I do not like to lose control over my life	3.69	1.03	.61	.68
2. I like to know what awaits me	3.23	1.05	.72	.79
3. I like to plan everything in advance, so that I don't get any unexpected surprises	2.87	1.15	.67	.75
4. I find it necessary to control my surroundings	2.62	1.05	.64	.71
5. I feel uncomfortable if things don't go as planned	2.81	1.06	.68	.73
6. I want to have a hold on what is happening around me	3.04	1.03	.70	.85
7. I like to have control over the things happening around me	2.95	1.05	.73	.86
8. I become restless if I lose control	2.68	1.11	.73	.79
9. I want to have a grip on the situation I find myself in	3.16	1.01	.66	.73
10. I feel anxious if I can't predict what is going to happen	2.13	1.04	.65	.76
11. I have to know what I can expect, otherwise I feel uncomfortable	2.38	1.06	.72	.80
12. Uncertainty about the future gives me a bad feeling	2.57	1.15	.50	.55
13. I like to have control over my life	3.44	0.95	.59	.65
14. I like to know what is going to happen	3.02	1.02	.69	.75
15. I have a need for control	2.68	1.15	.71	.75

Note. Items range from 1 (*not typical*) to 5 (*very typical*). I-T – item-total correlation; CL – component loadings

Need for Controllability and Predictability (NCP-q)

tween the NCP-q total score and the IUS ($r(303) = .57$, $p < .001$), the PSWQ ($r(633) = .51$, $p < .001$), the STAI-T ($r(767) = .48$, $p < .001$), and the BDI-II ($r(767) = .38$, $p < .001$). The IUS was only administered for dataset 1 ($n = 304$), and 133 participants did not complete the PSWQ. No other total scores were missing.

In sum, we examined the factor structure of the NCP-q. Both EFA and CFA indicated a one-factor solution, suggesting that the NCP-q can be used as a one-dimensional instrument. The NCP-q total score is the sum of all items and can be used as an indicator of one's general need for controllability and predictability. The NCP-q has excellent internal consistency and an acceptable four-week test-retest reliability. Last, convergent validity was demonstrated by finding moderate positive correlations between the NCP-q and the IUS, PSWQ, STAI-T, and BDI-II.

STUDY 2

In study 2 we focused on whether and how patients with panic disorder, stress-related conditions (overstrain, burnout) or functional somatic syndromes (fibromyalgia/CFS) differed on the NCP-q total score compared to a healthy control (HC) sample. Since previous studies linked a higher need for control to these different patient samples (Bakker et al., 2008;

Keen et al., 2022; Law et al., 1994; Lawler et al., 1990; Oguz et al., 2019), we expected all patients to show higher NCP-q scores compared to HCs. We also explored possible differences between the different patient groups.

PARTICIPANTS AND PROCEDURE

Participants were drawn from another study, in which patients with panic disorder, overstrain, burnout, and fibromyalgia/CFS completed a set of questionnaires as part of a recruitment phase between January 2017 and July 2019 (Ramakers et al., 2021, 2023). Data were collected at Tumi Therapeutics, a multidisciplinary diagnostic and treatment center that specializes in stress-related symptoms and syndromes (Heusden-Zolder, Belgium). In total, questionnaire scores were obtained from 34 patients with panic disorder (52.9% women, $mean_{age} = 36$, $SD_{age} = 13$), 33 patients with overstrain (66.7% women, $mean_{age} = 39.7$, $SD_{age} = 10.0$), 39 patients with burnout (61.4% women, $mean_{age} = 43.67$, $SD_{age} = 9.2$), 34 patients with fibromyalgia/CFS (94.1% women, $mean_{age} = 42.1$, $SD_{age} = 9.9$), and 30 HCs (70% women, $mean_{age} = 40.2$, $SD_{age} = 9.6$). As we used a convenience sample, sensitivity analysis was carried out to detect what power was achieved with the current sample size. The sensitivity analysis

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indicated that we have 80% power with this sample size to detect the effect size of Cohen's $f = .269$ for the omnibus test in a one-way ANOVA. Patients with panic disorder were diagnosed according to DSM-IV criteria via the semi-structured psychiatric interview (Mini International Neuropsychiatric Interview Simplified; MINI-s; Overbeek et al., 1999). Burn-out and overstrain patients were diagnosed according to the multidisciplinary guidelines for overstrain and burn-out for first-line professionals of the Netherlands Society of Occupational Medicine (NVAB, 2011; Terluin et al., 2005; van der Klink & van Dijk, 2003). The same criteria were used in previous studies from our group (Bogaerts et al., 2022; Ramakers et al., 2023). Fibromyalgia was diagnosed using the 2010 ACR criteria (Amerian College of Rheumatology; Wolfe et al., 2010), while CFS was diagnosed using the 1994 CDC criteria (Centers for Disease Control and Prevention; Fukuda et al., 1994). For all patient groups, psychiatric disorders – other than panic disorder (for the panic disorder patient group) and somatization disorder (for the fibromyalgia/CFS group) – were excluded based on the DSM-IV criteria. Organic diseases were excluded based on doctor's reports, physical examination, and medical tests. HCs were recruited through the distribution of flyers and on social media, and matched on age, gender, educational level, and body mass index using a frequency sampling method, so that the distributions were similar in the overall patient and the HC sample. HCs were selected based on their scores on the Dutch trait version of the Positive and Negative Affect Schedule (PANAS-trait; Watson et al., 1988) and the Checklist for Symptoms in Daily life (CSD; Walentynowicz et al., 2018). Only participants with a score equal to or lower than 21 on trait NA and equal to or lower than 75 on the CSD were included in the study. These cut-off scores represent the upper quartiles in a large healthy sample (Bogaerts et al., 2008, 2010a, b). Other exclusion criteria were any self-reported medical conditions, such as cardiovascular, gastrointestinal, neuromuscular, pulmonary, acute illnesses or psychiatric conditions, and pregnancy. All respondents provided written informed consent (in accordance with the Helsinki Declaration).

DATA ANALYSIS

We examined the internal consistency using Cronbach's alpha and McDonald's omega. We then performed a one-way analysis of variance (ANOVA) to examine differences between the groups, with group (five levels: panic disorder, overstrain, burnout, fibromyalgia/CFS, and HC) as the independent variable and NCP-q total score as the dependent variable. Post-hoc pairwise testing of means was conducted using Tukey corrections in the case of a significant main effect to determine which groups were significantly different from each other. There were no missing data. All analyses were carried out with SAS 9.4 (SAS Institute, Cary, NC, USA) and IBM SPSS Statistics version 28.0.

RESULTS

The internal consistency of the NCP-q total scores was good in panic disorder patients ($\alpha = .89$, $\omega = .89$; $N = 34$) and excellent in patients with overstrain ($\alpha = .93$, $\omega = .93$; $N = 33$), burnout ($\alpha = .94$, $\omega = .94$; $N = 39$), and fibromyalgia/CFS ($\alpha = .93$, $\omega = .93$; $N = 34$). A one-way ANOVA between patients with panic disorder, overstrain, burnout, fibromyalgia/CFS, and HCs ($N = 30$) revealed a significant difference in NCP-q total scores between groups ($F(4, 166) = 8.24$, $p < .001$, $\eta^2 = .17$). Post-hoc comparisons indicated that patients with panic disorder ($M = 55.8$, $SD = 10.23$), overstrain ($M = 56.24$, $SD = 12.49$), burnout ($M = 54.36$, $SD = 12.57$), and fibromyalgia/CFS ($M = 51.06$, $SD = 12.92$) had higher NCP-q total scores than HCs ($M = 41.47$, $SD = 10.96$). The effect size for the differences between HC and panic disorder, overstrain, burnout, and fibromyalgia/CFS groups, as measured by Cohen's d, was respectively $d = 1.63$, $d = 1.25$, $d = 1.11$, and $d = 0.80$, all indicating large effects. There were no significant differences between the different patient groups.

DISCUSSION

In two studies, we documented the development, validity and reliability of a new self-report instrument of the need for controllability and predictability. We propose a reliable and compact research and clinical tool and have demonstrated that it distinguishes between patient groups characterized by physical symptoms in daily life and HCs. Even though there are currently other questionnaires available on conceptually related topics, the NCP-q stands out from other questionnaires due to its more emotionally neutral and situation-independent approach to assess the need for control and predictability.

Both EFA and CFA indicated a one-factor solution, suggesting that the NCP-q can be used as a one-dimensional instrument. Further, we found that the NCP-q has excellent internal consistency and acceptable four-week test-retest reliability in a student convenience sample and good to excellent internal consistency in a patient sample. Convergent validity of the instrument was demonstrated by means of a significant correlation between the NCP-q and intolerance of uncertainty, a conceptually related construct, measured using the IUS. The observed moderate positive correlation between NCP-q and

IUS suggests that a higher self-reported need for control and predictability is associated with a higher intolerance for uncertainty. Since the link between intolerance for uncertainty and worrying has been well established (Boswell et al., 2013; Dugas et al., 2001; Wilson et al., 2020), we further looked at connections between NCP-q and worrying using the PSWQ for additional data on convergent validity. We found a moderate positive correlation with the PSWQ, suggesting that a higher need for control and predictability is associated with increased worrying. Last, convergent validity was assessed by computing correlations between the NCP-q and the STAI-T (trait anxiety) and BDI-II (depression). Correlations between the NCP-q and the STAI-T and BDI-II were both moderately positive, in line with previous research relating controllability and predictability to anxiety and depression (Amoura et al., 2014; Burger, 1984; Burger & Arkin, 1980; Cano-López et al., 2022; Crombez et al., 2008; Fassett-Carman et al., 2020; Fonteyne et al., 2009; Grillon et al., 2004; Havranek et al., 2016; Keen et al., 2022; Moulding & Kyrios, 2007; Myles et al., 2020; Oguz et al., 2019; Zvolensky et al., 2000a).

As hypothesized, the data show that patients with panic disorder, stress-related conditions or functional somatic syndromes have a significantly higher self-reported need for controllability and predictability compared to HCs. Interestingly, no significant differences were found between the different patient groups. The self-reported need for controllability and predictability may be seen as an individual, transdiagnostic trait variable underlying different syndromes, which is in line with the Research Domain Criteria (RDoC) system (Mittal & Wakschlag, 2017). The NCP-q could be placed under self-report measures within the potential threat construct in the negative valence systems domain. By distancing itself from the usual view of distinguishing disorders into categories, the RDoC initiative primarily aims to identify underlying, transdiagnostic explanatory mechanisms of syndromes (Van der Heijden et al., 2020).

These results can be interpreted within the light of the paradoxical effects of the need for control: the more a person tries to control internal matters, the less control one will actually have (Grisham & Williams, 2009; Gross, 1998; Gross & Levenson, 1993; Purdon & Clark, 1994, 2002). It could be hypothesized that by trying to gain more control over their physical symptoms, the more physical symptoms one might experience.

Even though the need for control is associated with multiple internalization disorders, it is especially the relationship and possible mismatch between the need for control and perceived control – defined as "the perceived ability to significantly alter events" (Burger, 1989, p. 246) – which is worth exploring further. Discrepancies between both constructs play a role in distress, depression, anxiety, obsessive-compulsive disorder, pain, and difficulties in adherence to long-term treatment protocols (Amoura et al., 2014; Baron & Logan, 1993; Burger, 1984; Cvengros et al., 2004; Law et al., 1994; Moulding & Kyrios, 2006; Myles et al., 2020; Wilkinson & Chamove, 1992). Future research should expand on current knowledge by exploring perceived control and administering the NCP-q within various patient samples. Furthermore, extensive further research on representative samples of both healthy and clinical populations is necessary in order to establish cutoff points that will allow practitioners to effectively use the tool.

A limitation of our study is that the NCP-q was developed and validated in a student convenience sample. However, since this self-report measure has the ability to differentiate between patients with panic disorder, stress-related or functional somatic syndromes on the one hand and HCs on the other, this would be an argument for the clinical relevance of the instrument. Future research is necessary to establish whether the higher need for control – as measured by the NCP-q – is unique to the specific patient groups investigated in the current study or whether the results can be generalized across patient groups with other psychopathologies.

The field of behavioral and cognitive sciences is continuously changing and constantly trying to improve interventions targeting underlying mechanisms of psychopathology and related clinical problems, rather than basing treatment on categorical classification solely (Cuthbert, 2014). The NCP-q may provide health practitioners with valuable insights of patients' trait characteristics and their potential role in the treatment process and success. For instance, it is worth investigating whether individual differences in this trait may have implications for prognosis, choice of therapeutic strategies, therapeutic alliance or other aspects of the process such as patient compliance. Moreover, future research using the NCP-q should further uncover whether changes in the need for controllability and predictability following treatment can mediate reductions in depression and anxiety. Being able to predict which patients will benefit most from specific treatment components can help in tailoring therapy to individual needs.

CONCLUSIONS

In sum, the present study provides evidence that the NCP-q is a valid, concise and clinically relevant context-independent self-report instrument with good psychometric properties. The results indicate a potentially important role of the need for control as a transdiagnostically relevant underlying mechanism of different patient groups characterized by experiencing physical symptoms in their daily life.

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RESEARCH TRANSPARENCY STATEMENT

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The data that support the findings of this study are available from the corresponding author upon reasonable request.

Endnote

1 We initially explored both one-factor and two-factor solutions but encountered significant cross-loadings in the two-factor solution, complicating the interpretation of the factors. To address these cross-loadings, we used bifactor exploratory structural equation modeling (ESEM) with target rotation. This approach allowed us to account for the cross-loadings and examine the loading patterns more accurately. Our analysis revealed that the bifactor ESEM model provided a reasonable fit to the data with an RMSEA of .08 (90% CI: 0.07-0.10) and a CFI of .98. All items loaded significantly onto the general factor, with all loadings greater than .51. However, the loadings on the specific factors were less consistent. Specifically, only four items had loadings greater than .4 on the first factor, and only two items had loadings greater than .4 on the second factor. This inconsistency suggested that the specific factors did not provide a clear and interpretable structure. Consequently, we proposed a one-factor solution. The strong and consistent loadings on the general factor indicate that a single factor adequately represents the data, making it a more parsimonious and interpretable solution. This one-factor model is more suitable for research and clinical practice as it provides a clear and straightforward conceptualization of the underlying construct.

Disclosures

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Need for Controllability and Predictability (NCP-q)

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Need for controllability and predictability questionnaire – Dutch version

Instructie: Geef voor elk van de volgende vragen aan hoe kenmerkend de betreffende uitspraak voor u is, door het juiste nummer te omcirkelen. Er zijn geen goede of foute antwoorden.

1	2	3	4	5
Niet kenmerkend		Enigzins kenmerkend		Erg kenmerkend

Need for Controllability and Predictability (NCP-q)

1. Ik hou er niet van om controle over mijn leven te verliezen	1	2	3	4	5
2. Ik weet graag wat me te wachten staat	1	2	3	4	5
3. Ik plan graag alles op voorhand, zodat ik niet voor onverwachte verassingen kom te staan	1	2	3	4	5
4. Ik vind het nodig mijn omgeving te beheersen	1	2	3	4	5
5. Als de dingen niet lopen zoals gepland, voel ik me ongemakkelijk	1	2	3	4	5
6. Ik wil vat hebben op wat rond mij gebeurt	1	2	3	4	5
7. Ik heb graag controle over de dingen die om me heen gebeuren	1	2	3	4	5
8. Ik word onrustig als ik controle verlies	1	2	3	4	5
9. Ik wil greep hebben op de situatie waarin ik me bevind	1	2	3	4	5
10. Als ik niet kan voorspellen wat er gaat gebeuren, voel ik me angstig	1	2	3	4	5
11. Ik moet weten wat er me te wachten staat, anders voel ik me ongemakkelijk	1	2	3	4	5
12. Onzekerheid over de toekomst geeft me een slecht gevoel	1	2	3	4	5
13. Ik heb graag controle over mijn leven	1	2	3	4	5
14. Ik weet graag wat er gaat gebeuren	1	2	3	4	5
15. Ik heb nood aan controle	1	2	3	4	5

Need for controllability and predictability questionnaire – English version

Instructions: Indicate how characteristic or typical each of the following statements is of you. You can give your answer by circling the corresponding number. There are no right or wrong answers.

1	2	3	4	5
Not typical		Somewhat typical		Very typical

Indra Ramakers,
Riet Fonteyne,
Marta
Walentynowicz,
Lukas
Van Oudenhove,
Maaike
Van Den Houte,
Katleen Bogaerts

	1	2	3	4	5
1. I do not like to lose control over my life	1	2	3	4	5
2. I like to know what awaits me	1	2	3	4	5
3. I like to plan everything in advance, so that I don't get any unexpected surprises	1	2	3	4	5
4. I find it necessary to control my surroundings	1	2	3	4	5
5. I feel uncomfortable if things don't go as planned	1	2	3	4	5
6. I want to have a hold on what is happening around me	1	2	3	4	5
7. I like to have control over the things happening around me	1	2	3	4	5
8. I become restless if I lose control	1	2	3	4	5
9. I want to have a grip on the situation I find myself in	1	2	3	4	5
10. I feel anxious if I can't predict what is going to happen	1	2	3	4	5
11. I have to know what I can expect, otherwise I feel uncomfortable	1	2	3	4	5
12. Uncertainty about the future gives me a bad feeling	1	2	3	4	5
13. I like to have control over my life	1	2	3	4	5
14. I like to know what is going to happen	1	2	3	4	5
15. I have a need for control	1	2	3	4	5