MEASURING PSYCHOLOGICAL CAPITAL IN THE SLOVAK LANGUAGE: VALIDATION OF THE REVISED COMPOUND PSYCAP SCALE (CPC-12R_SK)

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ABSTRACT

Objective. Although Psychological capital has encountered increasing research interest in recent years, the scale for measuring PsyCap is absent in the Slovak language. In the present pre-registered study, the authors provide the initial results of the adaptation of the Revised Compound Psychological Capital Scale to the Slovak language.
Method. A cross-sectional study with N = 262 people has been conducted. CPC-12R and measures of theoretically related constructs have been used.
Results. With regards to evidence for *factor validity*, the authors found that the default higher-order model (PsyCap as a second-order factor & four first-order dimensions – hope, optimism, self-efficacy, and resilience) provided an acceptable fit to the data. With regards to evidence for *convergent and divergent validity*, the authors found that, as hypothesized, CPC-12R was related to a set of variables covering: A) a more specific work-related domain, B) more general well-being, and also C) more stable personality traits. More specifically, the scale correlated with work satisfaction, staying intentions, and three aspects of engagement (namely vigor, absorption, and dedication). Furthermore, the scale correlated with subjectively perceived stress, life satisfaction, and emotional components of habitual well-being. The scale was also related to Big-five personality domains, such as extraversion, conscientiousness, and negative emotionality, but not to the aesthetic sensitivity facet (considered as evidence for divergent validity). With regard to evidence for *concurrent validity*, the authors found that CPC-12R was strongly related to PCQ12 and both scales were related to other variables of interest to a similar degree.
Limitations. Cross-sectional design and convenience sampling are the main limitations of the present study.

key words:
Psychological capital,
CPC-12R,
well-being,
satisfaction,
engagement,
staying intentions,
Big-five

kľúčové slová:
psychologický kapitál,
CPC-12R,
subjektívna pohoda,
pracovná spokojnosť,
angažovanosť,
úmysel zotrvať v organizácii,
päťfaktorový model osobnosti

1. INTRODUCTION

"PsyCap development uniquely combines rigor, relevance, and real answers to everyday leadership dilemmas such as increasing productivity, boosting employee satisfaction, engagement, and well-being, promoting ethical behavior and social responsibility, and making work overall a more meaningful and civil place where people want to, rather than have to, spend time and energy"

(Luthans & Youssef-Morgan, 2017, p. 359)

In the present study, we aim to introduce the Slovak version of the revised Compound PsyCap scale (CPC-12R_SK) and provide empirical evidence on its validity. In doing so, we first briefly describe Psychological capital and the ways the construct is measured. Later, CPC-12R_SK is introduced and initial evidence concerning factor, convergent, divergent, and concurrent validity of the scale is provided.

1.1. Psychological Capital

Psychological capital (PsyCap) was proposed by Luthans (Luthans et al., 2004; Luthans & Youssef, 2004) in the broader context of the study of "positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (Luthans, 2002b, p. 59) – a movement known as *Positive organizational scholarship*. It has been suggested that PsyCap has the potential to provide a competitive advantage beyond widely recognized forms of capital - *traditional* (e.g., financial), *human* (e.g., selection and building of tacit knowledge), or *social capital* (e.g., cross-functional work teams) (Luthans & Youssef, 2004).

PsyCap refers to "[an] individual's positive psychological state of development" (Luthans, Youssef et al., 2006) (p. 3). It integrates four well-known constructs from positive psychology, namely *(H)ope* (Snyder et al., 1996), confidence (also known as *s(E)lf-efficacy* (Parker, 1998), *(R)esilience* (Wagnild & Young, 1993), and *(O)ptimism* (Scheier & Carver, 1985) (thus the acronym HERO). More specifically, PsyCap is characterized by: "(1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success" (Luthans et al., 2006) (p. 3).[1]

As highlighted by Luthans and Youssef-Morgan (2017), PsyCap represents "[a] higher-order core construct based on the shared commonalities of the four first-order constructs and their unique characteristics" (p. 343) - intentionality, a sense of control, and agentic goal pursuit (Luthans & Youssef-Morgan, 2017). The common theme of PsyCap can be characterized as "positive appraisal of circumstances and probability for success based on motivated effort and perseverance" (Luthans et al. (2006), p. 550). Although more specific constructs - like hope or self-efficacy - are meaningful and valid on their own, it could be beneficial to consider them as indicators of the core construct, as some resources are naturally linked to each other and facilitate each other (Hobfoll, 2002). Therefore, it is not the separate influence of four facets, but, rather, their synergetic effect that is of interest here.

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[1]Although more potential candidate variables have been proposed for inclusion, only a few fit inclusion criteria such as having a positive impact on satisfaction and performance, having a valid measurement, and being grounded in theory and open to development (Luthans, 2002a, 2002b; Luthans et al., 2007).

The practical importance of PsyCap lies in its plasticity. On a continuum from traits to pure states, PsyCap is considered to be state-like (Luthans & Youssef-Morgan, 2017). This means that it is possible to cultivate HERO within as indicated by emerging research dedicated to interventions aimed at the development of PsyCap (see e.g., Dello Russo & Stoykova, 2015; Luthans et al., 2006; Salanova & Ortega-Maldonado, 2019). Relatedly, PsyCap is considered to be domain-specific. Although PsyCap does not conceptually differ across various domains such as work or health, the level of PsyCap might vary across these domains (Harms et al., 2017), and should be measured accordingly.

An emerging line of research indicates that PsyCap is related to various important work-related outcomes such as work satisfaction, engagement, turnover intentions, well-being, positive and negative affect, and stress among many others (see meta-analyses conducted by Avey et al., 2011 and Loghman et al., 2022), and that PsyCap correlates with various outcomes to a higher degree than its components (see Luthans et al., 2007).

1.2. Psychological Capital Measures

Among measures created for assessing psychological capital, *The Psychological Capital Questionnaire* (PCQ), has a prominent role as it was the first measure developed for the purpose of measuring the construct. It was introduced by Luthans et al. (2007) based on previously well-established measures of self-efficacy, optimism, hope, and resilience (Parker, 1998; Scheier & Carver, 1985; Snyder et al., 1996; Wagnild & Young, 1993).

Sparking interest into the topic, PCQ has been used profoundly in subsequent research. The interested reader is referred to reviews of literature provided by Luthans and Youssef-Morgan (2017), Nolzen (2018), Newman et al. (2014), and Dudášová et al. (2021); meta-analyses provided by Avey et al. (2011) and Loghman et al. (2022); but also to the psychometric review provided by Dawkins et al. (2013).

PCQ has some limitations, though. For example, the wording of some items is too specific – it should be modified in specific organizational contexts, such as research in small organizations. Relatedly, the wording of items needs to be adapted when researchers would like to use PCQ beyond organizational contexts – e.g., in the realm of health or education - where PsyCap could be also of theoretical and practical importance (see Dudášová et al., 2021). Moreover, although translated into more than 40 languages, the Slovak language is absent and psychometric evaluation for many languages is not corroborated or it is problematic to some degree (see e.g., Dawkins et al., 2013 for a more thorough discussion; and Cheung et al., 2011; Rego et al., 2010 and Sahoo & Sia, 2015 as some examples of problems with factor structure). Furthermore, the questionnaire is licensed. Although it can be used freely for research purposes, it is necessary to obtain permission for research. Practitioners should buy the product. These aspects could demotivate potential users from using the scale, and thus, hinder unleashing the full potential of PsyCap for research and practical application.

To overcome these limitations, Lorenz et al. (2016) developed Compound *PsyCap Scale* (CPC-12). CPC-12 is a non-domain-specific measure, and thus, could be adapted to other domains by adjusting instructions. Lorenz et al. (2016) provided evidence for convergent and discriminant validity of the scale. Evidence for factorial structure has been also provided by the authors, however, Dudášová et al. (2021) identified some psychometric limitations during their attempt to adapt the scale to the Czech language. The assumed four-factor structure has not been corroborated. Further analysis indicated that the resilience factor was greatly related to the self-efficacy factor. The same problem was also identified in original data from two samples of German employees. Consequently, Dudášová et al. (2021) suggested a revised version of the

Compound PsyCap Scale (CPC-12R) with new items for resilience and provided the evidence for factorial validity and reliability in a sample of Czech employees.

As CPC-12R provided good psychometric properties and represents a promising opportunity for future research dedicated to PsyCap, we consider it as the most suitable candidate for adaptation to the Slovak language.

1.3. The Present Study

In the present research, we present the results of the initial phase of adaptation of the CPC-12R to the Slovak language.

First, a Confirmatory Factor Analysis (CFA) was conducted to examine the factor validity of the scale. We examined the expected default second-order model. Additionally, we also examined alternative models as they can point out to the problem with a scale. For example, models, where resilience and self-efficacy merged, were examined as this was considered as the main issue of CPC-12 (Dudášová et al., 2021). We also examined an alternative first-order model where all four components are related.

Second, for the examination of convergent and divergent validity, we provide a nomological network, examining the pattern of relations of the scale with several thoroughly selected variables. In particular, 7 constructs (and 15 variables in total) were selected across three main areas - work-related domain, mental-health-related domain, and personality domain (for a summary, see Table 1). With regards to constructs related to the work-related domain, based on the main theoretical framework (Luthans, 2002a, 2002b; Luthans et al., 2007; Luthans et al., 2006; Luthans & Youssef-Morgan, 2017) and a body of empirical evidence, we selected widely researched aspects such as *work satisfaction*, *engagement*, and *staying intentions* (see e.g., Avey et al., 2008, 2009, 2011; Loghman et al., 2022; Lorenz et al., 2016). Furthermore, based on emerging evidence and conceptual framework suggesting a crucial role of PsyCap in well-being (Youssef-Morgan & Luthans, 2015), we selected the *cognitive aspect of well-being*, *affective aspects of well-being*, and *subjectively perceived stress* (see e.g., Avey et al., 2008, 2009, 2010, 2011; Baron et al., 2016; Lorenz et al., 2016; Newman et al., 2014). Moreover, based on established links of PsyCap to more stable trait-like constructs (Luthans & Youssef-Morgan, 2017), we selected *Big-five domains* that should be related to PsyCap (convergent validity), and also *two facets* that should not be related to PsyCap to a great degree (divergent validity) (Lorenz et al., 2016; Luthans et al., 2007). We pre-registered our hypotheses[2].

We also corroborated the concurrent validity with the original PCQ-12 scale (Luthans et al., 2014). The correlation matrices with both, CPC-12R_SK and PCQ-12 are provided, and Multi-trait Multi-method via Structural equation modelling (SEM) is reported to gain further insight into commonalities and differences between the two measures.

We hope that present study has the potential to bring PsyCap construct - and it's recent operationalization in a form of CPC-12R - for Slovak researchers, but also potential to systematically extend the previous research[3].

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[2] Pre-registration can be found at: https://osf.io/b4j57.

[3] For example, Dudášová, Procházka et al. (2021) suggested that "future studies are recommended to provide support for psychometric qualities of the revised scale" CPC-12R (p. 14) and Dawkins et al. (2013) argued that further research should be focused on "enhancing the construct validity profile of PsyCap, with a particular emphasis on discriminant and convergent validity of overall PsyCap, and alternate factor structures of PsyCap to reflect the conceptualization of each PsyCap component" (p. 361).

Table 1 Summary of hypothesized relationships

Domain	Construct	Based on	Operationalization	Hypothesized direction of the relationship with CPC-12R	Hypothesized size of the effect
More general well-being related issues	Affective well-being	(Avey et al., 2008, 2010; Lorenz et al., 2016)	Emotional habitual subjective well-being scale	+ Positive emotions - Negative emotions (but to a lesser degree)	Medium to large
	Cognitive well-being	(Lorenz et al., 2016; Newman et al., 2014)	Habitual subjective well-being scale	+	Medium
	Stress	(Avey et al., 2009, 2011; Baron et al., 2016)	Perceived Stress Scale – PSS 10	- (overall score/all subscales)	Medium
More specific work-related issues	Work satisfaction	(Avey et al., 2011; Lorenz et al., 2016)	Job Satisfaction questionnaire	+	Medium
	Engagement	(Avey et al., 2008; Lorenz et al., 2016)	The Utrecht Work Engagement Scale	+ (overall score/all subscales)	Medium
	Staying intentions	(Avey et al., 2009, 2011)	Staying intention scale	+	Small to medium
Personality-related dimensions	Personality	(Dawkins et al., 2013; Lorenz et al., 2016; Luthans et al., 2007)	BFI-II	+ Conscientiousness, - Negative emotionality + Extraversion	Medium
Divergent validity	Personality facets	(Lorenz et al., 2016; Luthans et al., 2007)	BFI-II	In general, we expected that CPC-12R will be related to Agreeableness and Openness to a lesser degree in comparison to other dimensions such as Consciousness; but we focused mainly on two selected facets here - Compassion and Aesthetic sensitivity with regards to divergent validity	None to small (for Compassion and Aesthetic sensitivity)
Concurrent validity	Alternative operationalization	(Lorenz et al., 2016)	PCQ-12	+	Large

2. METHODS

2.1. Sample

The sample consisted of 262 participants (55.9% were women) with a mean age of 34.15 years (SD=10.71) (min 20, max 65 years). 85.5% had a full-time job and 15.5% had a part-time job.[4] Among others, IT sector (30%), education (7.3%), health-care (6.5%), finances (6.2%), industry (5.4%), business (5.0%), helping professionals (3.5%), law (3.1%), or various forms of service (9.6%) were incorporated.

2.1.1. Sample Size Justification

Before data collection, we conducted power analysis for both aspects – a planned examination of factorial and convergent validity. Power analysis for SEM was based on RMSEA (Zhang, 2018). Results indicated that, with 50 degrees of freedom, RMSEA for an alternative hypothesis 0.05 (very good fit); significance level of 0.05, and power 0.8, N=243 participants are needed. Power analysis for correlational analysis (Zhang, 2018) indicated that to find a medium effect size according to Funder and Ozer (2019) (r=.20; or small to medium effect according to Cohen's Classical benchmarks), N=154 should be sufficient to have power 80%, while 243 participants should provide more than 90% power for corroboration of the given effect size that "has some explanatory and practical use even in short-run"[5].

2.2. Procedure and Methods

The study was conducted online via Qualtrics. A convenience sampling procedure was used[6]. Participants were recruited via social media and e-mail communication. Participation was voluntary. By participating in the study, participants could win coupons. The study was approved by the local ethics committee as a part of a bigger research project. Regarding the procedure, participants first read about the study and provided informed consent to participate in the study. Second, they filled in demographic information. After that, they were asked about their current job and were asked to answer items of CPC-12R-SK. Next, they answered questions related to other questionnaires. After the main part, participants were also provided with PCQ12 in the English language. However, they were asked to answer items if they understood English. Otherwise, they could skip this part. They were also asked to rate how problematic it was for them to understand the questions in the English language[7].

The following questionnaires were used:

PsyCap was operationalized via CPC-12R (Dudášová et al., 2021; Lorenz et al., 2016). *CPC-12R* was translated into Slovak via a forward-backward translation pro-

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[4] Note that the questionnaire was started by 416 participants in total (62.7% were women) with a mean age of 31.9 years (SD=10.61) (min 19, max 66 years). However, as A) participation was voluntary and participants could terminate the study at any time; B) participants who did not fit the criteria were not included in the analysis (only full-time or part-time workers were included in the analysis), and C) multivariate outliers were identified and excluded. N=262 was used for the analysis. Furthermore, as only some participants filled PCQ-12 in the English language, N=219 was used for additional analysis including PCQ-12 scale.

[5] Accounting for incomplete data, we planned to sample approximately 267 participants. However, as data collection was not fluent, the completion rate could be lower than expected, and as the number of participants that should be involved in the analysis was not easy to estimate and monitor on a continuous basis, the estimated number was reconsidered as an approximate optimal sample size, and resource constraints in terms of willingness to participate and finish the study determined the final sample size.

[6] A combination of advertising and the snowball method has been used.

[7] As it was not obligatory, lower number of participants filled in PCQ-12 in the English language.

cedure by the bilingual members of the research team. Czech, German, and English versions were consulted. The final version was checked and piloted before data collection. A questionnaire can be found in Appendix 1.

The *cognitive aspect* of general well-being was operationalized via Dalbert's life satisfaction scale (Džuka & Dalbert, 2002). McDonald's ω=.93.

The *emotional aspect* of general well-being was operationalized via the Emotional habitual subjective well-being scales (Džuka & Dalbert, 2002). McDonald's ω=.86 for positive and McDonald's ω =.83 for negative emotional components of habitual well-being.

Stress was operationalized via the Perceived Stress Scale (PSS 10) (Cohen et al., 1994; Ráczová et al., 2018). McDonald's ω=.88 for the whole scale and McDonald's ω=.86 for factor 1 subscale and McDonald's ω=.76 for factor 2 subscale.

Work engagement was operationalized via the Utrecht Work Engagement Scale - UWES-17; Lichner et al., 2018; Schaufeli & Bakker, 2003). McDonald's ω=.96 for the whole UWES scale, ω= .96 for vigour subscale, ω=.78 for the dedication subscale, and ω =.78 for absorption subscale.

Work satisfaction was operationalized via the Work satisfaction scale (Kollárik et al., 1988). McDonald's ω=.93.

Intention to stay in an organization was operationalized via the Staying intention scale (Schraggeová & Rošková, 2016). McDonald's ω=.79.

Personality domains were operationalized via Big-five inventory II (BFI-2-Short) (Kohút et al., 2020; Kohút et al., 2020; Soto & John, 2017). McDonald's ω=.93 for extraversion, ω=.79 for conscientiousness, ω=.85 for negative emotionality, ω=.82 for agreeableness, ω=.80 for openness.

For alternative operationalization of PsyCap (concurrent validity), PCQ12 (Luthans et al., 2014) scale was used. McDonald's ω=.92.

3. RESULTS

3.1. Evidence for Factor Validity

First, we aimed to examine the evidence for factor validity of CPC-12R. For this purpose, Confirmatory Factor Analysis (CFA) was conducted in R (R Core Team, 2017) via the Laavan package (Rosseel, 2012)[8]. For CFA, MLMV estimator (maximum likelihood estimation with robust standard errors and a mean- and variance adjusted test statistic, using a scale-shifted approach) has been used[9]. Model fit was evaluated via

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[8] Before analysis, only people who had less than 5% missing data were selected and missing data were computed via MICE package via pmm method. Next, multivariate outliers were handled via analysis of Mahalanobis distance. Consequently, assumptions for SEM were checked (assumption of additivity, linearity, normality, homogeneity, and homoscedasticity). Lastly, only people who marked that they work full time or part-time were selected, leading to N=262 participants.

[9] For the sake of transparency, we would like to mention that this is a minor deviation from pre-registration, as we planned to use ULS (unweighted least squares) estimator by default. We decided to use a robust version of the ML estimator instead based on three main reasons. A) Unweighted least squares estimator encountered a problem during the estimation of some models. B) Although the Likert scale in nature, CPC12R has six scale points and some authors suggest that in the context of SEM, scales with five and more points can be treated as continuous variables. In this case, ML estimator is appropriate if other assumptions are met (see, e.g.,Gana & Broc, 2018; Rhemtulla et al., 2012). C) There is some reservation about applying conventional cutoffs to ULS and DWLS as conventional cutoffs were suggested based on (and thus are suitable for) ML estimator. Because applying conventional cutoff scores on results computed with alternative estimators could be problematic and alternative cutoff scores suitable for these estimators are not proposed/widely acceptable yet (see e.g., Xia & Yang, 2019 for further discussion), we consider ML as a more suitable choice via

cut-off scores provided by Gana and Broc (2018). In particular, Root Mean Square Error of Approximation (RMSEA) ≤ 0.05 was considered a very good fit, while ≤ 0.08 was considered an acceptable fit; Standardized Root Mean Squared Residual Fit Index (SRMR) ≤ 0.08 was considered a good fit; Comparative Fit Index (CFI) ≥ 0.95 was considered a very good fit, while CFI ≥ 0.90 an acceptable fit; Tucker–Lewis Index (TLI) ≥ 0.95 was considered a very good fit and TLI ≥ 0.90 was considered an acceptable fit. Furthermore, we examined χ^2. Hover, as significant χ^2 could be caused by the oversensitivity of χ^2, the decision to accept the model was based on RMSEA, SRMR, CFI and TLI rather than the significance of the χ^2 test.

3.1.1 Default Second-Order Factor Structure and Internal Consistency

Results of CFA indicated that the default hierarchical (second-order) model provided an acceptable fit according to less stringent criteria except of significant χ^2 difference test ($\chi^2(40)=108.909$, $p<.001$, CFI=.93, TLI=.91, RMSEA=.07, 90% CI [0.05, 0.08], SRMR=0.05). All factor loadings were high ($\lambda \geq .64$, see Figure 1).

Internal consistency was also acceptable: McDonald's ω=.73 for the whole scale; and ω=.85 for optimism, ω=.78 for hope, ω=.80 for self-efficacy and ω=.71 for resilience as sub-scales.

3.1.2. Alternative Models

To identify potential problems and to inform future research, other possible factor structures were also examined.

As shown in the previous part, the default higher-order model, assuming that the general factor operates through the first-order factors, provided an acceptable fit. In contrast, the one-factor model that focuses solely on single very general factor did not provide an acceptable fit ($\chi^2(54)=273.51$, $p<.001$, CFI=.75, TLI=.69, RMSEA=.13 90% CI [0.11, 0.14], SRMR=0.09); the comparison favored higher-order factor structure instead ($\Delta df=4$, $\Delta\chi^2=201.22$, $p<.001$, $\Delta AIC=280.6$, $\Delta BIC=266.4$). Similar as default higher-order factor model a model with a first-order structure, attributing all variance to first-order factors, provided an acceptable fit, except of significant χ^2 difference test ($\chi^2(48)=101.30$, $p<.001$, CFI=.94, TLI=.92, RMSEA=.07, 90% CI [0.05, 0.08], SRMR=0.05). The comparison of the higher-order model and correlated factors even favoured the first-order structure to some degree ($\Delta df=2$, $\Delta\chi^2=12.81$, $p<.01$, $\Delta AIC=8.70$, $\Delta BIC=1.50$), therefore, future examinations on disentanglement of the explanatory variance of the general vs. first-order factors is recommended (see discussion)[10].

Favoring model with four components, the first-order model with three correlated factors (where resilience and self-efficacy merged) provided a worse fit in comparison to default model ($\chi^2(51)=115.25$, $p<.001$, CFI=.93, TLI=.90, RMSEA=.07, 90% CI

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the present context. D) Robust variant of ML will allow us to compare and discuss the results of our study with other studies with CPC-12R (Dudášová et al., 2021; Lorenz et al., 2016) more meaningfully as the estimator was used in these studies. However, to transparently inform the reader regarding the potential discrepancies, we computed a sensitivity analysis. When the DWLS estimator is used, CFI, RMSEA and SRMR provided a better fit. When robust correction is applied (WLSMV estimator), RMSEA and SRMR provide very similar results, but CFI was lower, and on the verge of a less stringent threshold, though.

[10] As fit indices argued in favor of an acceptable fit of the hierarchical model to the data; the differences between the two models were small; and first-order structure could be favored in some cases even when higher-order structure is present in data; we don't make any strong conclusions, but rather argue for the need for future research, where bi-factor model could be used to disentangle the role of the general vs. first-order factors.
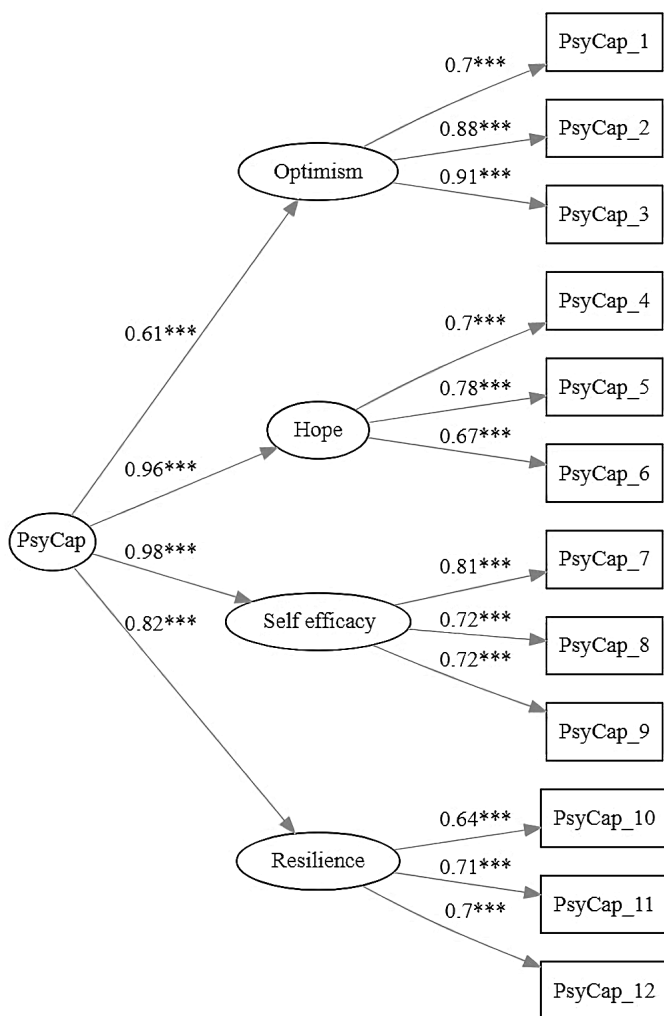
Figure 1 Second-order model of CPC-12R_SK

[0.05, 0.09], SRMR=0.05; $\Delta df=1$, $\Delta\chi^2=7.61$, p<.01, $\Delta AIC=7.30$, $\Delta BIC=3.70$); and the second order model, where resilience and self-efficacy are merged, had convergence problems (Heywood case).

3.2. Evidence for Convergent and Divergent Validity

Secondly, we aimed to provide evidence for convergent and divergent validity. For analysis, sum scores were used instead of latent score analysis due to potential problems that can occur with complex SEM models and modest sample size. Although we choose classical Frequentist Null Hypothesis Significance Testing as our primary interpretational approach, we also list the results of Bayesian analysis in terms of the

Bayes factor (BF)[11]. Results concerning the evidence for convergent and divergent validity are summarized in Table 2.

3.2.1 Convergent Validity Concerning Well-Being Domain

As hypothesized, CPC-12R_SK has been shown to be related to all selected variables concerning more general well-being. CPC-12R_SK was associated with the *cognitive aspect of more general well-being* (Life satisfaction), as well as both *positive*, and *negative* emotional components of habitual well-being. Furthermore, the scale was associated with *perceived stress as a whole*, and both, the *first* and *second subscale* of the perceived stress scale.

3.2.2 Convergent Validity Concerning Work-Related Domain

CPC-12R_SK was also related to selected work-related variables as hypothesized. More specifically, CPC-12R_SK was associated with *intention to stay in an organization*, *work satisfaction*, and *work engagement*. When specific subscales of engagement were analysed, CPC-12R was associated with *vigor* subscale, *dedication* subscale, and *absorption* subscale.

3.2.3 Convergent Validity Concerning Personality Domain

CPC-12R_SK was also related to personality traits previously associated with psychological capital. In particular, CPC-12R_SK has been shown to be associated with *negative emotionality*, *conscientiousness*, and *extraversion*. There was also a relationship between PsyCap and *openness* and PsyCap and *agreeableness*, but, as expected, the effect size was smaller in magnitude in comparison to emotive emotionality, conscientiousness, and extraversion.

3.2.4 Divergent Validity

In terms of divergent validity, we expected that the relationship between CPC-12R_SK and facets of aesthetic sensitivity (as a facet of openness to experience) and of compassion (as a facet of agreeableness) will be very small to non-existent. Although significant, a very small correlation between CPC-12R_SK and the *compassion facet* has been observed. In fact, in contrast to all other correlations, the relationship will not be statistically significant if correction for multiple comparisons is applied.[12] Crucially, a negligible and non-significant correlation between CPC-12R_SK and *aesthetic sensitivity* was found (indicating that the null hypothesis cannot be rejected).[13]

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[11] Incorporating BF could be beneficial for several reasons. For example, based on observed data, this analysis can inform the reader regarding the relative support of H_1 over H_0 and vice versa. Thus, providing additional information needed for more nuanced discussion in case the results are not statistically significant (as H_0 could be rejected but not accepted according to the p-value) - BF can enrich the main interpretation framework, especially with regard to divergent validity. Moreover, as results could be significant, but with a high risk of type one error due to multiple comparisons, BF can provide more gradual evidence. Note, however, that Bayesian analysis was not explicitly incorporated into power analysis and it is rather considered as a supplement to the NHST in the present study.

[12] Only anecdotal evidence for H_1 over H_0 was observed according to the Bayes factor, indicating that there is an absence of evidence regarding this relationship and, therefore, it will not be further interpreted.

[13] As one can not differentiate between the situation where data supports H_0 and the situation where there is an absence of evidence based on a non-significant p-value, the Bayes factor was further consulted. BF indicated moderate evidence in favor of H_0 over H_1, supporting the notion of divergent validity. Data are about seven times more probable under the null compared to the alternative hypothesis.

Table 2 Means, standard deviations, and correlations with confidence intervals

	Variable	*M*	*SD*	Correlation with CPC12R_SK	BF_{10}	95%*CI*
	PsyCap (CPC12R)	54.16	8.50	–	–	–
	Convergent validity					
General well-being domain	1. Life satisfaction	18.11	6.05	.56**	> 1000	[.47, .64]
	2a. Positive emotional components of habitual well-being	12.40	3.47	.50**	> 1000	[.41, .59]
	2b. Negative components of habitual well-being	25.79	4.28	-.46**	> 1000	[-.55, -.36]
	3. Perceived stress	27.27	6.14	-.53**	> 1000	[-.61, -.44]
	3a. Perceived stress – Factor 1	17.26	4.29	-.44**	> 1000	[-.53, -.34]
	3b. Perceived stress – Factor 2	10.01	2.37	-.58**	> 1000	[-.65, -.49]
Work-related domain	1. Engagement	83.59	17.95	.49**	> 1000	[.40, .58]
	1a. Engagement - Vigour	29.71	6.43	.52**	> 1000	[.42, .60]
	1b. Engagement - Dedication	25.09	6.24	.49**	> 1000	[.40, .58]
	1c. Engagement - Absorption	28.78	6.83	.36**	> 1000	[.25, .46]
	2. Intentions to stay	11.02	3.56	.24**	351.18	[.13, .35]
	3. Work satisfaction	44.02	11.33	.45**	> 1000	[.35, .54]
Personality domain	1. Extraversion	20.29	4.47	.44**	> 1000	[.34, .54]
	2. Agreeableness	22.23	4.03	.24**	367.22	[.13, .36]
	3. Conscientiousness	22.44	4.15	.36**	> 1000	[.25, .46]
	4. Negative emotionality	16.19	4.86	-.59**	> 1000	[-.66, -.50]
	5. Openness	21.71	4.11	.24**	221.80	[.12, .35]
	Divergent validity					
Personality domain	1. Compassion	7.52	1.82	.14*	1.94	[.02, .26]
	2. Aesthetic Sensitivity	6.86	2.31	-.02	.15	[-.14, .10]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate a 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation.
* indicates *p* < .05. ** indicates *p* < .01

3.3. Evidence for Concurrent Validity

We also examined concurrent validity with PCQ12. First, we computed a correlation between the sum scores of CPC-12R and PCQ12. The correlation was relatively large in magnitude as expected (r=.65, p<.001, BF_{10}=3.32e+24). Furthermore, to account for potential problems with items in the English language, we conducted regression where a subjective rating of the problems with understanding of items was added as a predictor alongside the PCQ score. Results indicated that CPC-12R score was predicted by PCQ12 (b=.59, SE=.05, p<.001) even when problems in understanding of items of PCQ12 in English were accounted for (participants rated to what degree they had a problem to understand items) (b=.04, SE=.02, p=.01). The model explained 43% of variance of criterion variable (R^2_{adj}=.43, F(2, 216)=84.74, p<.001, BF_{10}=1.37e+18).

3.4. Additional Analysis

For the interested reader, we also computed Multi-trait Multi-method SEM and extended correlation matrices with both, CPC-12R and PCQ12 as this step could be important with the aim to gain further insight into commonalities and differences between the two measures.

3.4.1. Multi-trait Multi-method SEM

Multi-trait Multi-method SEM with Wideman approach was conducted to provide further information. We computed four models (Model 1 - Correlated traits/Correlad methods model, Model 2 – No Traits/Correlated Methods model, Model 3 – Perfectly Correlated Traits/Freely Correlated Methods model, and Model 4 – Freely Correlated Traits/Uncorrelated Methods). As Model 2 was worse than Model 1 ($\Delta\chi^2$ = 389.85, $p < .001$), this provides evidence that methods converge for measuring traits. As model 3 was worse than Model 1 ($\Delta\chi^2$ = 97.321, $p < .001$), this provides evidence that traits are discriminating. As model 4 was not worse than Model 1 ($\Delta\chi^2$ = 0.32683, p =.568), this indicates that different measures each assess different parts of the latent variables.

3.4.2. Complex Pattern of Correlations (with both, CPC-12R and PCQ12)

For the interested reader, we also provide the matrices where correlations with both CPC-12R and PCQ12 are listed side by side and patterns of relations can be easily inspected visually. Correlation matrices can be found in Appendix 2 to 4[14].

4. DISCUSSION

In the present study, we aimed to examine the factor, convergent, divergent, and concurrent validity, and related aspects of the Slovak version of the Revised Psychological Compound Scale (CPC-12R_SK). Such an endeavour is crucial not only with regard to the adaptation of scale to the new language, but also for the further development of CPC-12, and for the development of PsyCap in general (see recommendations provided by Dawkins et al., 2013; Dudášová, Procházka et al., 2021; and Youssef-Morgan, 2014, which will be echoed throughout the discussion).

First, we conducted CFA to examine the factorial structure. Results indicated that, except significant χ^2 difference test, the default model with a second-order factor (PsyCap) and four first-order factors (hope, self-efficacy, resilience, and optimism) preliminary provided an acceptable fit.

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[14] Note that a lower sample size has been used in this analysis as only some participants answered PCQ12 in the English language.

This is an important finding as some previous studies documented problems with the factor structure of PsyCap measures (see e.g, Cheung et al., 2011; Rego et al., 2010 and Sahoo & Sia, 2015 with regards to PCQ). Dawkins et al. (2013) argued for the examination of alternative factor structures, and such endeavour was considered as important also in the context of CPC-12, as Dudášová et al. (2021) found problems in terms of overlap between self-efficacy and resilience factor. This problem, however, seems not to be eminent in the revised version of the scale - the model with merged factors provided a worse fit in comparison to the default higher-order model or did not converge (second-order structure). Besides the second-order model, we also examined the alternative model where four correlated sub-scales are examined with a first-order structure similarly as Dudášová et al. (2021). They found that both the second-order model and the model with four first-order correlated factors provided an acceptable fit. This is in line with our results. Dudášová et al. (2021) recommended preferring the second-ordered model, though, as "it had fewer parameters than the model with four correlated factors, and it also corresponded better to theory on psychological capital" (p. 12). We lean toward this suggestion as a second-order factor is the default choice according to the theory covering psychological capital and differences were not substantial. However, we also think that future research is necessary. For example, in line with more general recommendations provided by Dawkins et al. (2013) and DiStefano and Morgan (2014), the bifactorial SEM (Nested-Factor Model) could be employed in future research to disentangle the role of general and first-order factors. As bifactorial representation assumes that each indicator is dependent on three sources (common factor, specific factor, and measurement error), this would allow for assessment of the relevance of subcomponents (hope, optimism, self-efficacy, and resilience) over general factor and vice versa (Gana & Broc, 2018). In fact, as stressed by Gana and Broc (2018), this analysis could indicate: A) multidimensionality (the crucial role of sub-scores), or B) the importance of the main factor over sub-dimensions, or C) utility of both total score and sub-dimensions; and this is considered as important next step regarding the adaptation of CPC-12R.

We also provided evidence for convergent and divergent validity. It was suggested that by believing in own skills, creating a path to success, expecting that good things will happen, and being more immune to potential setbacks, PsyCap encourages people to be enthusiastic about their work (engagement), to feel more satisfied with their work (work satisfaction), and to be shielded from becoming "quitters" (turnover intentions) (Avey et al., 2010; Loghman et al., 2022). As hypothesized, we found that CPC-12R SK was related to work satisfaction, intention to stay in the organization, and work engagement. Moreover, PsyCap was related to general engagement but also to all three dimensions of engagement - vigor, absorption, and dedication. Our findings are in line with previous research. For example, Avey et al. (2011) conducted a meta-analysis focused on the impact of psychological capital on attitudes and behaviour. It was found that, among other criterion variables, PsyCap was positively related to desirable attitudes, such as work satisfaction (k=10, r=.54); and negatively related to undesirable attitudes, such as turnover intentions (k=5, r=-.32). Similarly, Avey et al. (2008) found that PsyCap was related to engagement (r=.50) and convergent results were found in a more recent meta-analysis conducted by Loghman et al. (2022).

Beyond work-specific outcomes, Avey et al. (2011) also found in their meta-analysis that PsyCap was also positively related to more general variables such as well-being (k=3, r=.57) and negatively to stress and anxiety (k=4, r=-.29). Furthermore, beyond growing empirical evidence, an emerging conceptual framework could be mentioned (Youssef-Morgan & Luthans, 2015; but see also Luthans & Youssef-Morgan, 2017).

Youssef-Morgan and Luthans (2015) suggested that PsyCap facilitates positive appraisals and has a positive effect on positive affective states. Furthermore, PsyCap can facilitate the retention of positive memories and interpretation of negative experiences, and diminish negative bias. It is also worth noting that the work domain is one of the crucial aspects of general well-being (Luthans & Youssef-Morgan, 2017; Youssef-Morgan & Luthans, 2015). In the present study, CPC-12_SK was related to subjectively perceived stress (negatively), to life satisfaction (positively), and positively to positive and negatively to negative emotional components of habitual well-being.

Moreover, in line with previous research and conceptualizations (Lorenz et al., 2016; Luthans et al., 2007), we found that CPC-12R_SK also relates to more stable trait-like personality traits in terms of the Big-five. In particular, we found that the scale is positively related to extraversion, and conscientiousness; and negatively to negative emotionality. Although it was found that openness and agreeableness were related to CPC-12R, the effect sizes were lower in comparison to the three above-mentioned personality dimensions as expected.

Moreover, there was support for the notion of divergent validity. The relationship between CPC-12R and aesthetic sensitivity (as a facet of openness) was negligible and not statistically significant. In fact, Bayes factor indicated that data provided evidence in favour of H_0 over H_1. Although compassion (as a facet of agreeableness), was statistically significantly related to CPC-12R, the effect size was very small, as expected. It has a lower bound of confidence interval approaching zero and correction for multiple comparisons indicated correlation will no longer be significant if correction for multiple comparisons is applied. However, the Bayes factor indicated the absence of evidence rather than evidence for the absence of the effect.

Additionally, inspired by Lorenz et al. (2016), we examined the concurrent validity of CPC-12R_SK. We have chosen the golden standard of PsyCap research, the PCQ scale (Dawkins et al., 2013; Luthans & Youssef-Morgan, 2017). The short version has been selected. However, we faced a challenge as the scale is not adapted to Slovak yet. Thus, we used the English version and checked for problems with the understanding of items. As expected, we found that PCQ-12 predicted CPC-12R even when problems with understanding the wording of items were accounted for. The scale accounted for the substantial variance of the criterion variable. The magnitude of correlation was very close to the one that was obtained by Lorenz et al. (2016) (r=.65 vs. r=.70 respectively), and, considering the confidence intervals, overlapping.

Moreover, we conducted a Multitrait-multimethod matrix to compare CPC-12R_SK and PCQ12 side by side. Both CPC-12R_SK and PCQ12 were shown to be related to variables of interest to a similar degree (although some differences concerning the size of the effect can be spotted, and are worth future investigation; i.e., PCQ-12 was more strongly related to work-related variables, while CPC-12R was more strongly related to general well-being, but CI were overlapping in a majority of cases so further research with higher sample size is necessary).

Some aspects were not examined in the present study. For example, Dawkins et al. (2013) recommended to "further establishing the psychometric properties of PsyCap, with a particular focus on test-retest reliability and within-subject variability implementing true longitudinal designs" (p. 357). Due to the cross-sectional nature of data collection, this was not possible in the present study. Nonetheless, we agree that test-retest reliability and longitudinal design with latent state-trait models could be of interest for future research concerning CPC-12R. Moreover, it is assumed that PsyCap is state-like (Luthans & Youssef-Morgan, 2017), and, thus, more plastic and prone to change due to interventions than more trait-like constructs. However, it should be

explicitly corroborated if this is a case even concerning CPC-12R as items are formulated more generally than in PCQ. Thus, echoing the recommendation of DiStefano and Morgan (2014) who suggested to "investigate the plasticity of traits and trait-like characteristics, which may expand developmental potential" (p. 135); latent trait-state models could allow examining stable (trait variance) and non-stable (state variance and error variance) aspects of a construct over time (Gana & Broc, 2018). Furthermore, multigroup analysis (Multigroup SEM) and invariance testing across gender, age, various types of employment, languages, and other potential moderators should be corroborated in future research. Incremental validity with personality traits should be also examined in future research to document that PsyCap predicts important variables of interest over and above well-documented Big-five domains. Last but not least, as discussed above, the implementation of the bifactor model is recommended.

In sum, we provided preliminary evidence of the construct, convergent, divergent, and concurrent validity of the Slovak version of the revised psychological compound scale (CPC-12R_SK). This is important, as this scale has significant potential implications for both research and practice, as PsyCap has been shown to be related to various important correlates in work settings and beyond. Moreover, as PsyCap has been suggested to be a state-like construct, intervention could be implemented to cultivate HERO within. However, besides practical implications and related strengths, the present study has limitations that should be reflected upon.

4.1. Limitations and Perspectives for Future Research

Firstly, convenience sampling was used. Although we don't think that this should distort the results; more representative samples are recommended to be used for future research with the opportunity for systematic multigroup SEM and invariance testing across age, gender and sector or type of work. Moreover, the reader should bear in mind that although the model provided an acceptable fit according to less stringent criteria, the fit was not perfect according to more stringent criteria and considering all possible nuances. Thus, the present results are not definitive and should be not considered as such, especially considering some questions that emerged - e.g., the plausibility of two alternative models regarding factor structure. Rather, the bifactor model and latent trait-state models should be corroborated in future research to provide more definitive information regarding the role of second-order factors and first-order facets of PsyCap and CPC-12R in particular. Moreover, data were collected during the Covid-19 pandemic. Although we do not think that data collection during a pandemic should harm the validity of our results, future studies should examine the malleability of PsyCap and potential moderating factors. For example, Avey et al.'s (2011) meta-analysis indicated the existence of two boundary conditions - country of origin and sector. Not only these factors could play some role in the present results, but other potentially important moderating factors could exist and should be addressed in future research. Last but not least, we highly recommend following the recommendations provided by Dawkins et al. (2013) and Youssef-Morgan (2014) in future research to facilitate a rigorous evidence-based and practically oriented approach that will help us fully understand and cultivate HERO within.

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S Ú H R N

Škála psychologického kapitálu v slovenskom jazyku: Validácia revidovanej škály Compound Psychological Capital Scale (CPC-12R_SK)

Cieľ. Napriek tomu, že je v posledných rokoch venovanej Psychologickému kapitálu stále viac výskumnej pozornosti, škála, ktorá by tento konštrukt zachycovala v slovenskom jazyku, absentuje. V tejto pred-registrovanej štúdii sa autori preto podujali na adaptovanie revidovanej Compound Psychological Capital scale (CPC-12R) do slovenského jazyka a na predstavenie úvodných faktorových, konvergentných, divergentných a súbežných dôkazov validity.

Metódy. Výskumný súbor tvorilo 262 účastníkov. Boli využité CPC-12R a ďalšie škály, týkajúce sa rôznych oblastí (sféra práce, duševnej pohody a osobnostných čŕt).

Výsledky. Čo sa týka dôkazov validity, týkajúcich sa faktorovej štruktúry, primárny model druhého rádu (PsyCap ako faktor druhého rádu a 4 subfaktory) ukázal predbežne akceptovateľné parametre. Čo sa týka konvergentných a divergentných dôkazov validity, výsledky ukázali, že škála súvisela s premennými z oblasti práce, všeobecnejšie chápanou duševnou pohodou, ako aj stabilnejšími osobnostnými črtami. Presnejšie, škála bola vo vzťahu s pracovnou spokojnosťou (r=.45), úmyslom zotrvať v organizácii (r=.24), ako aj angažovanosťou a jej troma zložkami (r=.52, .36, a .24). Škála sa taktiež ukázala byť vo vzťahu so subjektívne vnímaným stresom (r=-.53), životnou spokojnosťou (r=.56) a viac emočne ladeným aspektom v intenciách pozitívneho (r=.50) a negatívneho (r=-.46) komponentu habituálnej životnej pohody. Okrem toho sa súvis preukázal s črtami modelu veľkej päťky, ako extraverzia (r=.44), svedomitosť (r=.36) a negatívna emocionalita (r=-.59), ale nie s estetickou senzitivitou (r=.02) (dôkaz divergentnej validity). Čo sa týka súbežných dôkazov validity, výsledky poukázali na to, že CPC-12R bolo v tesnom vzťahu s PCQ12 a to aj vtedy, keď autori zobrali do úvahy potenciálnu jazykovú bariéru účastníkov výskumu.

Limity. Medzi hlavné limity patria predovšetkým prierezový charakter štúdie a príležitostný výber výskumného súboru.

Závery. Štúdia prináša CPC-12R do slovenského jazykového prostredia a ponúka úvodne dôkazy pre viaceré druhy validity.

Appendix 1

CPC-12R_SK

The questionnaire consists of 12 items (3 questions per dimension: optimism [items: 1–3], hope [items: 4–6], self-efficacy [items: 7–9] and resilience [items: 10–12], respectively). As positive psychological capital can vary in some areas, it is important to relate the questions to the work context in instruction. Respondents rate questions on a six-point Likert scale.

Instruction:
Nasledujúce výroky sa týkajú vašej súčasnej pracovnej pozície. Prostredníctvom škály nižšie uveďte to, do akej miery súhlasíte s nasledujúcimi tvrdeniami, pokiaľ uvažujete o Vašom súčasnom zamestnaní. Pokiaľ máte viac než jedno zamestnanie, vyberte si jedno, o ktorom budete uvažovať.

Scale:
1 – úplne nesúhlasím, 2 – nesúhlasím, 3 – skôr nesúhlasím, 4 – skôr súhlasím, 5 – súhlasím, 6 – úplne súhlasím

Items:
1. Teším sa na život, ktorý mám pred sebou.
2. Očakávam, že sa mi stane viac dobrých ako zlých vecí.
3. Verím, že mi budúcnosť prinesie veľa dobrého.
4. Pokiaľ by som sa ocitol/a v problémoch, dokázal/a by som prísť na viac spôsobov, ako sa z nich dostať.
5. Napadá mi mnoho spôsobov, ako dosiahnuť moje ciele.
6. V tejto chvíli sa považujem za pomerne úspešného/úspešnú.
7. Verím, že si dokážem s neočakávanými udalosťami poradiť.
8. Pokiaľ investujem potrebné úsilie, zvládnem vyriešiť väčšinu problémov, s ktorými sa stretnem.
9. Dokážem zachovať pokoj aj v náročných situáciách, pretože sa môžem spoľahnúť na to, že to zvládnem.
10. Neúspech ma neodradí.
11. Považujem sa za človeka, ktorý veľa vydrží.
12. Po vážnych životných ťažkostiach sa dám opäť rýchlo do poriadku.

Appendix 2 Extended correlation matrix 1 (N=219)
Means, standard deviations, and correlations with confidence intervals

Variable	M	SD	1	2	3	4	5	6	7
1. CPC-12R	53.68	8.60							
2. PCQ12	51.52	9.72	.65** [.57, .72]						
3. Life Satisfaction	17.98	5.97	.51** [.43, .59]	.47** [.37, .57]					
4. SEHP_positive	12.21	3.63	.45** [.36, .53]	.43** [.32, .53]	.68** [.62, .73]				
5. SEHP_negative	25.49	4.38	-.40** [-.49, -.31]	-.39** [-.49, -.27]	-.44** [-.53, -.35]	-.35** [-.44, -.26]			
6. PSS	27.96	6.18	-.48** [-.56, -.39]	-.51** [-.60, -.41]	-.45** [-.53, -.36]	-.44** [-.52, -.35]	.60** [.52, .66]		
7. PSS_HS	17.75	4.34	-.39** [-.48, -.29]	-.42** [-.52, -.30]	-.38** [-.47, -.29]	-.39** [-.48, -.29]	.55** [.47, .62]	.96** [.95, .97]	
8. PSS_SE	10.20	2.38	-.53** [-.60, -.45]	-.58** [-.66, -.48]	-.46** [-.54, -.37]	-.42** [-.51, -.33]	.54** [.46, .61]	.85** [.82, .88]	.66** [.60, .72]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate a 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation. ** indicates $p < .01$.

Appendix 3 Extended correlation matrix 2 (N=219)
Means, standard deviations, and correlations with confidence intervals

Variable	M	SD	1	2	3	4	5	6	7
1. CPC-12R	53.68	8.60							
2. PCQ12	51.52	9.72	.65** [.57, .72]						
3. Engagement	82.65	18.15	.48** [.39, .56]	.60** [.51, .68]					
4. Engagement_Vigour	29.45	6.44	.51** [.42, .58]	.63** [.55, .71]	.93** [.91, .94]				
5. Engagement_Dedication	24.77	6.29	.47** [.38, .55]	.55** [.45, .63]	.92** [.90, .94]	.78** [.74, .82]			
6. Engagement_Absorbtion	28.40	6.89	.36** [.26, .45]	.49** [.38, .58]	.93** [.91, .94]	.79** [.74, .83]	.78** [.74, .82]		
7. Intentions to stay	10.86	3.51	.24** [.13, .34]	.33** [.20, .44]	.42** [.32, .50]	.41** [.31, .49]	.41** [.32, .50]	.34** [.24, .44]	
8. Work Satisfaction	-44.65	11.86	.47** [.38, .55]	.55** [.45, .64]	.79** [.75, .83]	.73** [.68, .78]	.79** [.74, .83]	.69** [.63, .74]	.53** [.44, .60]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate a 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation. ** indicates $p < .01$.

Appendix 4 Extended correlation matrix 3 (N=219)
Means, standard deviations, and correlations with confidence intervals

Variable	M	SD	1	2	3	4	5	6	7	8
1. CPC-12R	53.68	8.60								
2. PCQ12	51.52	9.72	.65** [.57, .72]							
3. Extraversion	20.24	4.61	.42** [.33, .51]	.49** [.39, .59]						
4. Agreeableness	22.34	3.96	.23** [.13, .33]	.15* [.02, .28]	.20** [.09, .30]					
5. Conscientiousness	22.40	4.21	.37** [.27, .46]	.37** [.25, .48]	.33** [.23, .43]	.37** [.28, .46]				
6. Negative emotionality	16.47	5.02	-.56** [-.63, -.48]	-.55** [-.63, -.45]	-.43** [-.51, -.34]	-.28** [-.37, -.17]	-.41** [-.50, -.32]			
7. Openness	21.87	4.02	.20** [.09, .30]	.27** [.14, .39]	.30** [.20, .39]	.30** [.20, .40]	.18** [.07, .28]	-.20** [-.30, -.09]		
8. Compassion	7.56	1.78	.14* [.03, .24]	.06 [-.07, .19]	.15** [.05, .26]	.81** [.77, .84]	.29** [.18, .38]	-.10 [-.21, .00]	.25** [.14, .35]	
9. Aesthetic Sensitivity	6.96	2.26	-.03 [-.14, .08]	.02 [-.11, .15]	.09 [-.02, .19]	.20** [.09, .30]	-.01 [-.12, .09]	.07 [-.04, .18]	.77** [.72, .81]	.16** [.06, .27]

Note. M and SD are used to represent mean and standard deviation, respectively. Values in square brackets indicate a 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation. * indicates p < .05. ** indicates p < .01.