Article

Validation of the PCQ-5: A Short Form to Measure State Positive Psychological Capital

Group & Organization Management
2022, Vol. 0(0) 1–31

DOI: 10.1177/10596011221127383
journals.sagepub.com/home/gom
SAGE

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Abstract

Positive psychological capital (PsyCap) is a key measure of workplace positivity, yet its organizational impact may be somewhat limited by current measurement practices. Given its state-like and malleable nature, organizations need accurate yet brief measures to allow for repeated measurement of PsyCap. A very short PsyCap instrument could be used in various ways by organizations to measure and track employee positivity, thus enabling management to make decisions with more insight. Similarly, for researchers, a much shorter scale could dramatically improve research efficiency and response rate, opening up new perspectives in PsyCap research. In this paper, initial evidence is provided for the validity of a short PsyCap measure across multiple samples of working adult populations (N = 1331 in total) from four different countries (United States, China, Germany, and Hungary). Consistent with prior research, we propose a five-item PsyCap measure, the PCQ-5, consisting of one item from the dimensions of self-efficacy, resilience, and optimism and one item for each facet of the hope dimension (agency and

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pathways). The proposed PCQ-5 shows internal consistency reliability and good fit for a single factor global PsyCap model across all samples. Moreover, like the PCQ-24, the PCQ-5 is associated with meaningful workplace outcomes such as job performance, job satisfaction, OCBs, voice, and helping behaviors, and it is negatively related to deviant behaviors like CWBs.

Keywords
positive organizational behavior, psychological capital, scale abridgement, short measures

Psychological Capital (PsyCap) is a core construct of individual-level human strengths, flourishing, and work-related excellence, which consists of four dimensions: hope, self-efficacy, resilience, and optimism. The higher-order PsyCap construct represents a more fundamental conceptual level than its components and is a strong predictor of several key organizational outcomes such as job performance, employee satisfaction, and organizational citizenship behaviors (Avey, Reichard, Luthans, & Mhatre, 2011; Newman, Ucbasaran, Zhu, & Hirst, 2014). PsyCap claims to be distinguished from management fads, popular positivity, pep talks, and common corporate trainings by its evidence-based background rooted in scientific theory as well as empirical research (Luthans & Youssef-Morgan, 2017); however, we argue that its future impact may be limited somewhat by current measurement practices.

Since its introduction into the management literature, PsyCap has been described as a state-like resource, that is malleable and open to development through interventions (Luthans, Avey, Avolio, Norman, & Combs, 2006) thus highlighting the need for repeated measurement. The most widely used PsyCap measurement tool, as confirmed by meta-analytical studies (Avey et al., 2011; Newman et al., 2014), is the PCQ-24 developed by Luthans et al. (2007), although the abridged PCQ-12 (Avey, Avolio & Luthans, 2011) is also available and seems to be favored in cross-cultural settings (Luthans & Youssef-Morgan, 2017). Both measurement instruments represent the four-dimensional higher-order PsyCap construct, with multiple items per dimension. However, the structure of the currently available measures comes at the cost of brevity. And yet, state-like constructs, such as PsyCap, must often be measured repeatedly to assess: (1) changes in PsyCap over time in relation to changes in the environment or other stimuli and (2) the effectiveness of organizational interventions, thus highlighting the need for brief measures.

First, PsyCap is subject to change as time passes and as a result of organizational dynamics or management decisions. The changing levels of PsyCap, in turn, impact employee job performance (Avey, Luthans, Smith, & Palmer, 2010; Paterson, Luthans, & Jeung, 2014; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011); therefore, PsyCap can serve as a good indicator of the psychological impact of recent organizational events on employees. If organizational decision makers are able to quickly assess changes in workforce PsyCap, they may be able to take necessary actions (communication, interventions, etc.) before job performance is negatively impacted. However, this type of "pulse" data collection would require more parsimonious measures than the standard measures of PsyCap, that, due to their length, are not ideal to assess trends and to test employee responses to specific organizational changes frequently.

Second, due to PsyCap's strong links to desirable organizational outcomes and the fact that it can be developed, it is also the target of organizational interventions. The key to its relevance is that relatively simple, short, and low-cost trainings are effective to increase participants PsyCap (Youssef-Morgan & Sundermann, 2014). The return on PsyCap interventions can be as high as 260%, as indicated by Luthans and colleagues (Luthans et al., 2006). Measuring the effect of PsyCap development programs adds value for organizations because it makes quantifying benefits and costs possible, thus aiding with decision-making about future interventions. However, intervention effects are often left unmeasured beyond a single follow-up because of the difficulties involved with longer questionnaires. Repeated measurements, such as pre-, post-, and subsequent to interventions are made easier and less costly (in terms of lost productivity) by short, concise measurements tools.

Beyond organizational benefits, a very short PsyCap inventory is also relevant for the field of PsyCap research. With the increasing popularity of experience sampling methodologies (ESM), especially relevant for constructs such as PsyCap that are expected to fluctuate frequently, extremely short measures are absolutely necessary to avoid participant fatigue and attrition. It is increasingly common for ESM studies to include single-item measures for unidimensional constructs and measures with a single item per dimension for multidimensional constructs (Fisher & To, 2012). Thus, a very short PsyCap measure would be key to opening up opportunities for implementing an ESM approach, which is consistent with PsyCap's state-like nature, within PsyCap research. To date, very few PsyCap studies have utilized an ESM approach and we surmise that part of the reason for this is due to the length of the current measures in use (see Wijewardena, Härtel & Samaratunge, 2017, for one example).

Short scales are not only important as a matter of mere convenience, but they also make new kinds of research possible, as observed by Ziegler, Kemper, & Kruyen. (2014). Short measures open the possibility of highly complex research designs as well as to invert the process of research; that is, to discover first and theorize afterwards, rather than vice-versa, as is usually done. For example, the Academy of Management Discoveries (2019) was created for "exploratory research at the pre-theory stage of knowledge development, where it is premature to specify hypotheses, and which generates surprising findings likely to stimulate and guide further exploration and analysis". The complexity of such research, driven also by the increasing number of constructs and involved statistical methods, require more varied and larger data sets; therefore, shorter scales are often a necessity. As Schoenfeldt (1984) observed: "Many well-conceived research studies have never seen the light of day because of flawed measures" (p. 78). PsyCap being a central construct in positive organizational behavior is likely at the center of several organizationally relevant research questions that are perhaps too complex to tackle, at least initially, with longer measurement tools, thus a very short PsyCap inventory seems to be of theoretical and practical importance for future PsyCap research.

PsyCap Theory and Measurement

The idea of positive psychological capital (PsyCap) was born from the need to go beyond human and social capital, that is, to account for not just *what you know* and *who you know*, but also *who you are* at work in terms of your positive psychological resources (Luthans, Luthans, & Luthans, 2004). PsyCap was conceived from the beginning as a multidimensional construct building on previous research on positive resources that differentiate individuals in the workplace. Moreover, PsyCap has been theorized as a higher-order construct that represents a more fundamental conceptual level than its first-order dimensions. Psychometric evidence supporting the second-order construct was provided by Luthans, Avolio, Avey, & Norman (2007) with four dimensions: self-efficacy, hope, resilience, and optimism. The fact that the global PsyCap measure was superior at predicting job performance and job satisfaction than any of its components stressed the practical significance of the new higher-order positive psychological construct.

The four dimensions of PsyCap are theoretically and empirically distinct from each other, while at the same time they correlate, and together constitute PsyCap as a core positive psychological resource. Hope, for instance, is defined as a "positive motivational state that is based on an interactively derived sense of successful (a) agency (goal directed energy) and (b) pathways

(planning to meet goals)" (Snyder, Irving, & Anderson, 1991, p. 287). Resilience in positive organizational behavior is defined by Luthans (2002) as a "positive psychological capacity to rebound, to *bounce back* from adversity, uncertainty, conflict, failure" (p. 702). Self-efficacy is defined as an employee's positive belief "about his or her abilities to mobilize the motivation, cognitive resources or courses of action needed to successfully execute a specific task within a given context" (Stajkovic & Luthans, 1998, p. 66). Finally, optimists, according to Luthans, Avolio and colleagues (2007), are "those who make internal, stable, and global attributions regarding positive events (e.g., task accomplishment) and those who attribute external, unstable, and specific reasons for negative events (e.g., a missed deadline)" (p. 557). These four distinct dimensions combine to form the global PsyCap construct such that the total is greater than the sum of its parts. Moreover, PsyCap has been found to be positively related to important work-related outcomes across cultures, indicating that its relevance is not limited to Western countries (Donaldson, Chan, Villalobos, & Chen, 2020).

The PCQ-24, the 24-item psychological capital questionnaire, that comprises 6 items for each dimension was introduced in 2007 (Luthans et al., 2007). The items for this higher order measure were selected from preexisting self-efficacy, optimism, hope, and resilience scales. The 6 items of the hope dimension were distributed equally between the two hope facets (agency and pathways) but in confirmatory factor analysis they were forced to load on a single hope factor. To date, the PCQ-24 is the standard measurement tool to assess psychological capital in the workplace, and as a higher-order construct, is usually operationalized in its global form and only rarely, usually in studies analyzing the construct, are dimensions looked at separately in terms of their relationship and outcomes. In fact, a recent study used Latent Profile Analysis to demonstrate that the most common configuration of PsyCap dimensions is a similar level on each dimension, thus supporting a unitary structure of PsyCap (Djourova, Rodríguez, & Lorente-Prieto, 2019).

The PCQ-12, which is an abbreviated form of the PCQ-24, is interesting for the purposes of this current study because it reveals how the original PsyCap theorists approached the dilemma that scale abridgement is bound to bring up in the case of the multidimensional PsyCap construct. The PCQ-12 was developed because of concerns about the length of the original PCQ-24 and it was first documented in two PsyCap studies (Luthans, Avey, Clapp-Smith, & Li, 2008; Avey, Avolio & Luthans, 2011). Since, however, the PCQ-12 has been widely used, and its application is recommended in international settings due to its brevity and because no reversed items were retained in this instrument (Luthans & Youssef-Morgan, 2017). During the scale abridgement process, Avey, Avolio and Luthans kept the best 12 items, three per dimension

on average, but optimism is represented by only two items in the PCQ-12 while hope is represented by four items: two items for the agency facet and two for the pathway facet. At the creation of the PCQ-12, the hope dimension, with its two internal facets, stood out among the other unidimensional PsyCap components and necessarily led to decisions that impacted the conceptualization of PsyCap.

Typically, at least three items are required by factor analysis to measure a dimension, but according to the same logic three items may also measure a unidimensional global construct. In the case of PsyCap, because of its four well-established dimensions (hope, self-efficacy, resilience, and optimism), theory would oblige any short measure to be composed of at least four items, one for each dimension. However, hope, unlike the other PsyCap components, has its own subdimensions or facets, as is well-established in the theory of PsyCap. With only one item representing the PsyCap dimensions, researchers would have to neglect one of the facets of hope, either agency or pathways, which is the same dilemma that Luthans and colleagues were confronted with at the development of the PCQ-12, and they chose to uphold both facets of hope and to represent them with an equal number of items. Building on these theoretical considerations and the precedent of the PCQ-12, in this study we propose a five-item PsyCap measure, the PCQ-5, that includes one item for both agency and pathways (hope), as well as one item for self-efficacy, resilience, and optimism.

Construction and Validation of PCQ-5

Short versions of longer scales have been found useful and operative across several fields like personality (Rammstedt & John, 2007), management (Liden et al., 2015), developmental psychology (Geldhof et al., 2014; Putnam et al., 2014; Putnam & Rothbart, 2006), education (Yan, 2020), and positive psychology (Russell & Daniels, 2018). Our endeavor to construct a very short PsyCap measure from the original item list of the PCQ-24 was guided by previous scholarly work on scale development (Hinkin, 1998) and scale abridgement (Smith, McCarthy, & Anderson, 2000; Stanton et al., 2002) as well as examples of successful short measures (e.g., Liden et al., 2015).

Smith et al. (2000) note two common errors in scale abridgement. First, items are either selected solely based on content validity leading to malfunctioning measurement tools, or second, selection is only based on psychometric considerations leading to scales that often measure only a narrow segment of the original construct due to the prevalence of the statistically best performing items. In order to avoid both extremes, we considered the steps proposed by Hinkin (1998) and Stanton et al. (2002) and robustly validated

the new measure both in terms of content as well as psychometric validity. The steps of the scale abridgement process we followed are summarized in Figure 1.

Content validity, when developing short measures from the original item pool of an existing measure, is a somewhat more limited task compared to cases where researchers develop new items from scratch. In the special case of developing a short measure of an existing multidimensional construct, like in the present study, there may be further limiting factors that predefine the measurement tool on theoretical grounds prior to psychometric analysis. On the one hand, the logic of very short measures leads to the shortest possible solutions; on the other hand, the number of dimensions in a multidimensional construct serves as a theoretical boundary below which the number of items included in the short measure cannot drop. According to Liden et al. (2015), the researchers' choice to include one item per dimension in a short measure is already an assurance that the new measure covers an essential proportion of the domain captured by the standard form. The previously described theoretical considerations about the PsyCap construct and the precedent of the PCQ-12 highlight the importance to include five items in the short measure (hence, the PCQ-5): one for each PsyCap dimension except for hope, which is represented by two items, one for each of its facets: agency and pathways. Following the approach of Liden et al. (2015), as a first step towards adequate content validity, we ensured that the full spectrum of dimensions and facets are covered in our short measure (Step 1). As an additional step, later in the process, we evaluated the breadth of content of individual items using some competing versions of the PCQ-5 based on psychometric results (Step 4).

The authoritative works of Smith et al. (2000), Hinkin (1998) and Stanton et al. (2002) show agreement in that confirmatory factor analysis and internal

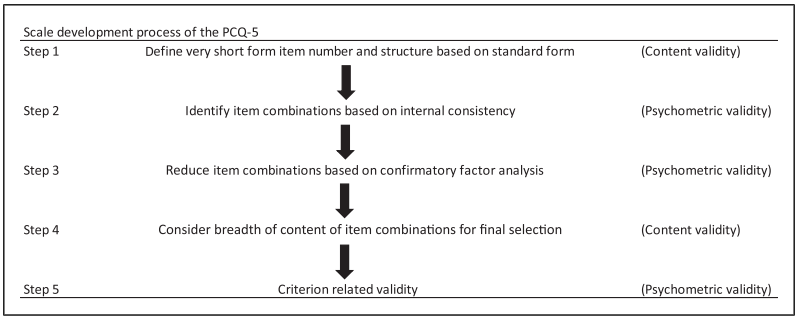

Figure 1. Scale development process of the PCQ-5.

consistency are necessary for psychometrically valid scale development. Internal consistency reliability is a key issue for short measures because the reduced number of items is bound to result in diminished reliability (Cortina, 1993) so much so that low internal reliability could render short measures unviable. We used internal reliability as a way to narrow down the possible PCQ-5 item combinations and to select best candidates. Keeping in mind the restriction previously imposed on the process (in Step 1), to select all five items from different dimensions or facets, we analyzed all possible item combinations on all samples in terms of internal consistency. Item combinations with Cronbach's alpha lower than .7 on any samples were rejected as inadequate (Step 2).

Factor analysis is used in two ways during the creation of a short measure: (1) per Avey et al. (2011), factor loadings of items can be considered based on data from the original PsyCap studies, and/or, (2) as in Liden et al. (2015) CFA can be computed for the short measure just identified as a confirmatory process. Arguably, the second approach is psychometrically more convincing and since we didn't have the data from the original PsyCap studies to evaluate item factor loadings, we resorted to CFA to evaluate our potential versions of the short measure of PsyCap. The remaining PCQ-5 combinations (after Step 2), ordered by internal reliability, were used for confirmatory factor analysis: combinations with good fit for the single factor model were retained (Step 3).

Our expectation with regards to the PCQ-5 is that its individual items each capture the core domain of the four dimensions (and two facets of hope) and that they together meaningfully represent the global PsyCap construct. We expect that the PCQ-5 will offer utility to researchers in need of a very brief measure as we theorize that it will be a representation of the PCQ-24 that meets the strict psychometric standards described in the literature including internal consistency reliability and construct validity.

Research Question 1: Is PCQ-5 a valid one-dimensional representation of the higher-order PsyCap construct behind the PCQ-24 and PCQ-12 according to the following psychometric qualities across samples: (1a) high internal consistency reliability; (1b) good fit for the single factor PsyCap model; and (1c) strong correlation with the PCQ-24 and PCQ-12?

Beyond internal consistency reliability and construct validity captured in RQ1, short measures should also manifest good criterion-related validity (Credé Harms, Niehorster, & Gaye-Valentine, 2012; Hinkin, 1998; Liden et al., 2015; Society for Industrial & Organizational Psychology (SIOP), 2003). We intend to provide such evidence by connecting the PCQ-5 to work-related outcomes belonging to the established nomological network of the

PsyCap construct (Step 5, Figure 1). Since the PCQ-5 contains one item from each PsyCap dimension/facet and it represents the higher-order construct, we expect the PCQ-5 and the PCQ-24 to be strongly aligned in their correlations with the outcome measures.

Among the many PsyCap outcome measures included in the literature over the past 20 years, some stand out as more relevant than others in terms of positive organizational behavior. Job performance and job satisfaction have been the leading work-related outcomes for PsyCap from the beginning. In fact, Luthans, Avolio and colleagues (2007) originally justified the utility of the PsyCap construct by showing that it is a stronger predictor of job performance and job satisfaction than any of its components. In a meta-analysis of 51 samples (Avey et al., 2011), PsyCap was found to predict self-rated, supervisor-rated, and objective performance as well as positive attitudes, such as job satisfaction. Arguably, job performance is the key outcome measure in positive organizational behavior because that is what many organizations ultimately prioritize. In fact, Luthans defines positive organizational behavior (POB) as "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement" (Luthans, 2002, p. 59). While performance is directly linked to the bottom line, sustained performance depends on the job satisfaction of the employees of an organization. The components of PsyCap like hope and optimism, but even resilience and efficacy, have rather obvious links to work-related satisfaction. In fact, job satisfaction is an outcome measure with which PsyCap has an even stronger positive relationship than with performance (Luthans et al., 2007).

Meta-analytic findings (see Avey et al., 2011 and Avey, Luthans, & Youssef-Morgan, 2010) point also to outcome variables such as organizational citizenship behaviors (OCBs) (Williams & Anderson, 1991), while an inverse relationship is reported between PsyCap and deviant behaviors like counterproductive work behaviors (CWBs) (Spector, Bauer, & Fox, 2010). OCBs include behaviors that are not part of the formal system of expectations in organizations, like helping colleagues to get up to speed or participating at non-mandatory events. Counterproductive work behaviors include deviant actions such as gossiping, talking bad about the organization or damaging equipment, stealing, and bullying. OCBs and CWBs, although negatively correlated, are not two ends of a spectrum but rather two separate constructs with distinct outcomes; thus, employers have a stake not just in maximizing the former or minimizing the latter, but rather to do both. Empirical studies (Avey et al., 2011) have found that positive employees are more likely to engage in OCBs and less likely to engage in CWBs, thus PsyCap, as

a state-like resource that is open to development, can be an effective means to advance a desirable organizational culture.

Desirable behaviors that further enrich the organizational culture, like helping and voice behaviors (Van Dyne & LePine, 1998), are also among the PsyCap outcomes listed in the evidence-based assessment of PsyCap by Luthans & Youssef-Morgan (2017). Voice is defined by Van Dyne & LePine (1998) as a "promotive behavior that emphasizes expression of constructive challenge intended to improve rather than merely criticize" (p. 109); therefore, employee voice is linked to the capability of an organization to sustain and develop positivity. Helping behaviors impact the culture of an organization through the mechanism described by social exchange theory, because helping behaviors tend to be reciprocated. Employee positivity captured by PsyCap is reported to be positively related to voice and helping behaviors (see: Luthans & Youssef-Morgan, 2017).

As shown above, the nomological network of PsyCap has been extensively explored in the literature (see also Loghman et al. (2022) for a recent meta-analytical take on this). In our study, we rely on four samples and all the above constructs as outcome variables to establish the criterion-related validity of the PCQ-5. Due to the data collection method, we will explore concurrent criterion validity on our cross-sectional samples (US and Hungarian samples) encompassing outcome variables such as performance, satisfaction, OCBs, and CWBs, and we will look into predictive validity on our Chinese sample for which outcome measures (voice and helping behaviors) were collected at a later point in time compared to PsyCap. We anticipate that the PCQ-5 will offer similar criterion validity to the PCQ-24 in relation to both positively and negatively related outcome measures of PsyCap.

Research Question 2: Does the PCQ-5 offer similar criterion validity (concurrent and predictive) as the PCQ-24 and PCQ-12 in terms of: (2a) their correlations with each criterion variable, and (2b) such that the linear regression results between PCQ-5 and each criterion variable are significant and similar in strength and rank order to PCQ-24 and PCQ-12 results?

PCQ-5 may be a valid representation of the PCQ-24 in terms of content and psychometric criteria and it may even provide similarly good predictive power, yet because its main advantage is its brevity, if its association to outcome variables is not superior to each of the PsyCap dimensions, which are similar in length (6 items), the PCQ-5 will be limited in its usefulness. Therefore, we performed a usefulness analysis similar to what has been carried out for the PCQ-24 (Luthans et al., 2007).

Research Question 3: Is the PCQ-5 more strongly associated with criterion variables than the 6-item PsyCap dimensions of self-efficacy, hope, resilience, and optimism?

Method

As we set out to create and provide initial evidence for the validity of the PCQ-5, step 1 (Figure 1) was to establish content validity for the one-dimensional PCQ short measure representing the four-dimensional higher-order PsyCap construct by predetermining that each dimension from the PCQ-24 be represented by one item in the PCQ short measure (see Liden et al. (2015). As special theoretical consideration related to the PsyCap construct, following the precedent of Luthans et al. (2008) and Avey et al. (2011), it was determined that both facets of hope be represented in our measure, hence the 5 item PCQ-5 measure with one item for its dimensions of self-efficacy, resilience, and optimism and two for its hope dimension, one for each of its facets: agency and pathways. In the following sections, we describe the development of the PCQ-5 and initial attempts at providing evidence for its validity. Having established the basic structure that the PCQ-5 would take, we then proceeded with steps 2 through 5 (see Figure 1), all of which required data from multiple samples.

Samples

In our effort to provide initial evidence for the validity of a very short PsyCap measure, we followed the advice of Hinkin (1998), Smith et al. (2000) and Credé et al. (2012) to validate the PCQ-5 on multiple samples from multiple cultures globally to show that the measure proposed performs consistently and is applicable internationally. Hence, we obtained and collected samples from four countries (US, China, Germany, and Hungary) representing a total of 1331 working adults. Three samples were collected by the authors; however, these samples include different criterion variables and diverse socio-demographic details as they were collected as part of larger research projects. The fourth sample, from Germany, is an open source PCQ-24 sample that includes no criterion variables. All samples were used to establish reliability and construct validity as captured in RQ1, but only the three original samples were used to test criterion-related validity, as only these included criterion variables. All samples contained the PCQ-24 (Luthans, Youssef & Avolio, 2007) in official translation to the national languages. Standard 6-point Likert-type scales were applied (ranging from 1 = strongly disagree to 6 = strongly agree).

Sample 1: U.S. Working Adults. In order to test the psychometric validity of the PCQ-5, including reliability, factor structure, construct validity, and criterion-related validity, we collected data from 369 working adult US residents through Prolific. 367 (99%) provided useable data (two failed the attention checks and were excluded). Demographics of this sample are: 70% Caucasian, 8% African-American, 10% Latino or Hispanic, 9% Asian, 2% Two or More, 1% Other/Unknown, and one person was Native American and one preferred not to say. 59% were male, 41% female, and one person identified with neither. The average age was 34.82 years. The average time with their current employer was 5.9 years and the average time spent in their current position was 5.23 years. The highest level of completed education was reported as: 7% High School, 20% Bachelor's Degree, 47% Master's Degree, 21% PhD or higher, and 4% Trade School.

Sample 1 Measures. Participants completed the English original PCQ-24 (Luthans et al., 2007), a subset of which contains the PCQ-5 (see Table 1 for the list of items). Cronbach's alphas for PCQ-24 and PCQ-5 are .93 and .83, respectively (Mean: 109.34 and 23.22; SD: 15.87 and 3.96, respectively). Organizational citizenship behaviors (OCBs) and job performance were measured with the 14 and 7 item scales of Williams & Anderson (1991). Likert-type scales were applied ranging from 1 = strongly disagree to 5 = strongly agree. Cronbach's alphas for OCBs and job performance are .80 and .82, respectively (Mean: 10.57 and 31.63; SD: 6.78 and 3.37, respectively). Counterproductive work behaviors (CWBs) were measured with the 10-item scale from Spector et al. (2010). Standard 5-point Likert-type scales were applied ranging from 1 to 5 with the following values: 1 = Never, 2 = Once or twice, 3 = Once or twice/month, 4 = Once or twice/week, and 5 = Every day. Internal consistency reliability for CWBs scale is $\alpha = .82$ (Mean: 14.77; SD: 4.31). Measurement of job satisfaction was carried out using the 5-item scale from Judge, Locke, Durham, & Kluger (1998). Standard 7-point Likert-type scales were applied ranging from 1 = strongly disagree to 7 = strongly agree. Cronbach's alpha for job satisfaction is .90 (Mean: 24.85; SD: 6.96).

Sample 2: Chinese Working Adults. We collected data from participants working at a large Chinese social media company to test the psychometric validity of the PCQ-5, including reliability, factor structure, and criterion-related validity. PsyCap was collected at Time 1 and the criterion-related variables were collected at Time 2 (approximately 2 weeks later). The invited participants worked in a number of job domains such as content creation, retail consumer relations, corporate consumer relations, and social media marketing. The

Table 1. Comparison of PCQ-5, PCQ-12, and PCQ-24 psychometrics in Samples 1–4.

Item Number					CFA Standardized Factor Loadings			
PCQ-24	PCQ-12	PCQ-5			Sample 1	Sample 2	Sample 3	Sample 4
3	2	1	Self-Efficacy item		.623	.835	.550	.634
10	5	2	Hope item - agency facet		.813	.873	.754	.784
11	6	3	Hope item - pathways facet		.818	.836	.859	.775
17	10	4	Resilience item		.603	.786	.510	.530
22	12	5	Optimism item		.672	.819	.548	.612
.93	.90	.83	Sample 1 Cronbach alpha	CFI	.986	.999	.979	.988
.98	.95	.92	Sample 2 Cronbach alpha	SRMR	.025	.011	.036	.03
.92	.89	.78	Sample 3 Cronbach alpha	RMSEA	.072	.025	.075	.06
.93	.90	.80	Sample 4 Cronbach alpha	Chi-square (df)	14.53 (5)	6.16 (5)	13.97 (5)	9.62 (5)
				Chi-square significance	.013	.291	.016	.087
				Correlation between PCQ-5 and PCQ-24	.919	.962	.926	.931
				Correlation between PCQ-5 and PCQ-12	.95	.972	.947	.952

Note. All samples are from working adult population. Sample 1 = United States ($N = 367$); Sample 2 = China ($N = 383$); Sample 3 = Germany ($N = 321$); and Sample 4 = Hungary ($N = 260$). Correlation calculated between PCQ-24/PCQ-12 and PCQ-5 within sample; correlations are significant at $p < .001$ level. Response scale: strongly disagree = 1; disagree = 2; slightly disagree = 3; slightly agree = 4; agree = 5; and strongly agree = 6.

average age of the participants was 32.4 years, 56% were female, and the average organizational tenure was 6.9 years.

Sample 2 Measures. PsyCap was measured with the Chinese version of the PCQ-24 a subset of which comprises the PCQ-5 (see Table 1 for the list of items) at Time 1. Cronbach's alphas for PCQ-24 and PCQ-5 are .98 and .92, respectively (Mean: 101.1 and 20.93; SD: 20.8 and 4.58, respectively). Voice was measured with the 6-item scale from Van Dyne and LePine (1998), while helping was measured with the 4-item short version used by Ng & Van Dyne (2005) of the helping scale developed by Van Dyne and LePine (1998) at Time 2. Cronbach's alphas for voice and helping, respectively, are .90 and .87 (Mean: 22.49 and 13.65; SD: 4.68 and 3.19, respectively).

Sample 3: German Working Adults. Internal reliability as well as construct validity of the PCQ-5 were tested on an open source German sample of 321 working adults (see Lorenz, Beer, Pütz, & Heinitz, 2016). The PCQ-24 in this sample was used for construct validity at the construction of the Compound PsyCap scale; therefore, no PsyCap outcome measures were available. We included this sample in our study to augment supporting evidence for RQ1. As reported in Lorenz et al. (2016), participants were recruited online, and the survey was conducted in German. The average age of participants was 34.89 years, 60% were women, and participants had been employed 7.91 years on average. 48% of the participants had a university degree.

Sample 3 Measures. The German version of the PCQ-24 was administered to participants (see Lorenz et al., 2016) a subset of which composes the PCQ-5 (see Table 1 for the list of items). Cronbach's alphas for PCQ-24 and PCQ-5 are .92 and .78, respectively (Mean: 108.35 and 22.3; SD: 13.65 and 3.62, respectively).

Sample 4: Hungarian Working Adults. For analysis relevant to RQ1 and RQ2, we collected data in Hungary from working adults for additional evidence of reliability, factor structure, construct validity, and criterion-related validity of the PCQ-5. Participants were gathered through flyer distribution, email lists, and social media. Online answers were obtained from 260 participants. The average age was 38 years, 48% of the participants were female, and the average tenure was 4.56 years. Among the participants 64% had university degrees, 21% had PhDs, and 15% had high school or other degrees.

Sample 4 Measures. The Hungarian version of the PCQ-24 was used to measure PsyCap, a subset of which composes the PCQ-5 proposed in this

paper (see Table 1 for the list of items). Cronbach's alphas for PCQ-24 and PCQ-5 are .93 and .8, respectively (Mean: 110.41 and 23.23; SD: 15.99 and 3.9, respectively). Measurement of job satisfaction was carried out using the 5-item scale from Judge et al. (1998). Cronbach's alphas for job satisfaction in this sample is .84 (Mean: 23.74; SD: 4.48). Job performance was measured with 3 items of the Job subscale of Welbourne, Johnson, & Erez (1998). Reliability for job performance in the sample of Hungarian working adults is .8 (Mean: 14.43; SD: 2.38).

Item Selection

In Steps 2 and 3, we sought to identify the psychometrically valid PCQ-5 combinations that fit the basic content validity requirement to have all four dimensions and the two facets of hope included. Based on recommendations from Hinkin. (1998) and Stanton et al. (2002), we used first the tests of internal consistency and then factor analysis to arrive at PCQ-5 combinations that satisfy the requirement defined in RQ1 across all samples. With only a few viable PCQ-5 options for consideration, we dedicated our attention to content validity in order to identify the final version of the PCQ-5. We compared the psychometrically best performing combinations in terms of item content to increase breadth of domain beyond the simple criterion of having each dimension and facet represented (Step 4). For the dimensions of hope and optimism, items 10 (agency), 11 (pathways), and 22 (optimism) of the original PCQ-24 scale were among those included in the viable PCQ-5 combinations. All of these, in terms of content, represent the core of their respective factors. For self-efficacy, items 3 and 4 were included in viable PCQ-5 combinations. Both of these are strong items, in terms of content, capturing a broad segment of the self-efficacy construct; therefore, no decision was based on these variations. As for resilience, items 14, 17 and 18 of the original PCQ-24 scale were included in the psychometrically sound PCQ-5 options. Among these we found significant difference as to how much they capture the "*bouncing back* from adversity" domain of the resilience dimension. Having reviewed the content of these items, we concluded that item 17 best represents the core of resilience while the other two items capture fewer aspects of the construct.

Driven by the wish to maximize the content validity among psychometrically sound five-item combinations, we selected the following items for inclusion in the final PCQ-5: "I feel confident contributing to discussions about the organization's strategy" (Efficacy), "Right now I see myself as being pretty successful at work" (Hope: Agency), "I can think of many ways to reach my current work goals" (Hope: Pathways), "I can get through difficult times at work because I've experienced difficulty before" (Resilience), and "I'm

optimistic about what will happen to me in the future as it pertains to work" (Optimism). These items are freely available for use by researchers and organizations. Users must cite this paper when using the PCQ-5 and state: Items for the PCQ-5 were dawn with permission from the original PCQ-24 (Source: Luthans, F., Youssef, C.M. & Avolio, B.J. (2007), *Psychological capital*, New York: Oxford, pp. 237–238 and empirical validation is found in Luthans, F., Avolio, B.J., Avey, J.B., & Norman, S. M. (2007). Positive psychological capital. *Personnel Psychology, 60*, 541–572).

Criterion Validity

Subsequent to the item selection process, the PCQ-5 was put to the test of criterion-related validity to establish the overall validity of the measure. In order to compare the criterion-related validity of the PCQ-5, PCQ-12, and PCQ-24, we computed correlations and linear regressions between the PsyCap measures and several PsyCap outcomes, namely job performance, job satisfaction, OCBs, CWBs, helping, and voice. In addition, a usefulness analysis was run with multiple hierarchical regressions to determine if the PCQ-5, just like the PCQ-12 and PCQ-24 has additional predictive power over the PsyCap dimensions.

Results

We used four working adult samples from three continents and four countries for the analysis in this study. As indicated in the Methods section, each sample consists of same-source data with only one of our four samples including data collected at multiple points in time, thus introducing the possibility of common methods bias. In order to investigate the degree to which this type of bias may have been evident in our datasets, we performed Harman's one-factor test (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The exploratory factor analysis showed that total variance extracted by the single factors was less than 50% for all three of the samples where criterion variables are available. With concerns for common methods bias reduced, we proceeded with answering our research questions.

Related to RQ1, across all samples the PCQ-5 manifested good internal consistency reliability. Cronbach's alphas for the PCQ-24 were between .92 and .98, while for the PCQ-5 estimates were between .78 and .92. While the standard threshold is .7 for internal consistency reliability, alpha for the PCQ-5 went below .8 only in the case of Sample 3 from Germany. Lower alpha values are typical at scale abridgement because alpha is a function of scale length (Cortina, 1993), thus alpha estimates are deflated for short measures compared

to the full questionnaires. Our results based on the four samples in this study support an affirmative response to Research Question 1a and confirm the expected good internal consistency reliability for the PCQ-5.

Consistent with expectations related to RQ1b, confirmatory factor analysis conducted in R lavaan module (Rosseel, 2012) suggest that the unidimensional PCQ-5 representing the global PCQ-24 fits the data across the four samples. All fit indices for all samples conform to the accepted cut-off criteria indicating that the construct validity of the PCQ-5 is sustained across cultures and languages. CFA fit indices and factor loadings for all samples are available in Table 1.

Supporting the contention expressed in RQ1c that the PCQ-5 represents the global PsyCap construct, Pearson correlations between the PCQ-24 and the PCQ-5 scales were between .92 and .96 across the four samples. The results summarized in Table 1 support the hypothesized internal consistency reliability, factor structure and construct validity of the PCQ-5 measure. As additional analysis, comparative information about the PCQ-12 is also included in Table 1: Cronbach alphas and correlation with PCQ-5. PCQ-12 related results generally support the main findings for Research Question 1, namely that PCQ-5 is a valid unidimensional representation of the PsyCap construct.

Related to Research Question 2, we tested the criterion-related validity of the PCQ-5. Table 2 summarizes the correlations between the variables for each sample. The PCQ-24 and PCQ-5 correlation results with the criterion variables are aligned as required in RQ2 in that their differences are below 0.1. That is to say, the PCQ-5 is very close in predictive power to the PCQ-24. PCQ-12 results are mixed compared to the PCQ-5. The PCQ-12 is more strongly related to job performance in Sample 1 compared to PCQ-5, while in Sample 4 they are equal. PCQ-5 however is more closely associated with job satisfaction on both Samples 1 and 4. To go beyond correlations, we conducted linear regressions to assess the significance of the relationships between PsyCap measures and the outcomes. Results are summarized in Table 3. All relationships are significant at $p < .001$, moreover when comparing the strengths of the association with criterion variables of the PCQ-24 and the PCQ-5, we find that the PCQ-5 results closely approximate the PCQ-24 results, and a similar pattern of relationships emerge for both PsyCap measures, that is, the rank order of their outcomes is nearly the same: OCBs, satisfaction, and performance are the most strongly related criterion variables for both PCQ-24 and PCQ-5. Thus, evidence is consistent with the expectations with regards to RQ2.

Research Question 3 proposes a usefulness analysis, which was modeled after Luthans et al. (2007), based on hierarchical regression analysis where PsyCap

Table 2. Means, standard deviations, Cronbach's alphas and correlations between PCQ-24, PCQ-12, PCQ-5, and criterion measures for Samples 1–4. OCB-I, and in-role performance.

	Measures	Mean	SD	1	2	3	4	5	6	7
Sample 1										
1	PCQ-24	109.34	15.87	(.93)						
2	PCQ-12	56.05	8.63	.97	(.9)					
3	PCQ-5	23.22	3.96	.92	.95	(.83)				
4	OCBs	10.57	6.78	.62	.58	.56	(.8)			
5	Job performance	31.63	3.37	.52	.5	.45	.60	(.82)		
6	Job satisfaction	24.85	6.96	.60	.56	.59	.42	.31	(.9)	
7	CWBs	14.77	4.31	−.29	−.25	−.21	−.41	−.30	−.34	(.82)
Sample 2										
1	PCQ-24	101.10	20.80	(.98)						
2	PCQ-12	50.41	10.7	.99	(.95)					
3	PCQ-5	20.96	4.58	.96	.97	(.92)				
4	Voice	22.49	4.68	.38	.38	.38	(.90)			
5	Helping	13.65	3.19	.38	.38	.38	.44	(.87)		
Sample 3										
1	PCQ-24	108.35	13.65	(.92)						
2	PCQ-12	54.17	7.75	.97	(.89)					
3	PCQ-5	22.30	3.62	.93	.95	(.78)				
Sample 4										
1	PCQ-24	110.14	15.99	(.93)						
2	PCQ-12	55.53	8.72	.97	(.9)					

(continued)

Table 2. (continued)

	Measures	Mean	SD	1	2	3	4	5	6	7
3	PCQ-5	23.23	3.90	.93	.95	(.8)				
4	Job performance	14.43	2.38	.46	.45	.45	(.84)			
5	Job satisfaction	23.74	4.48	.56	.53	.56	.37	(.8)		

Note. Internal consistency reliability is reported in parenthesis on the diagonal. All correlation results are significant at $p < .001$ level. All samples are from working adult population. Sample 1 = United States ($N = 367$); Sample 2 = China ($N = 383$); Sample 3 = Germany ($N = 321$); and Sample 4 = Hungary ($N = 260$).

Table 3. Linear Regression R Square Results for Criterion Variables of PCQ-24, PCQ-12, and PCQ-5.

Samples	Sample 1				Sample 2		Sample 4	
Measures	OCBs	Performance[a]	Satisfaction	CWBs	Voice	Helping	Performance[a]	Satisfaction
PCQ-24	.386	.266	.355	−.081	.144	.141	.214	.311
PCQ-12	.333	.252	.317	−.063	.139	.144	.226	.278
PCQ-5	.314	.201	.351	−.045	.140	.147	.204	.316

Note. All R square results are significant at $p < .00{,}001$ level. All samples are from working adult population. Sample 1 = United States ($N = 367$); Sample 2 = China ($N = 383$); and Sample 4 = Hungary ($N = 260$).

[a]The Job performance measures in Sample 1 and 4 are not the same: Williams & Anderson, 1991; and Welbourne et al., 1998, respectively.

dimensions were regressed on the criterion variables and as a second step the PCQ-5 was added to see if it has additional predictive power over the similarly short constructs. Results show that self-efficacy is consistently overperformed by PCQ-5. Out of the eight instances of criterion variables across three samples, hope is overperformed five times, resilience is overperformed seven times, and optimism is overperformed six times by PCQ-5; therefore, evidence supports an affirmative conclusion to RQ3. Caveats are that hope is the PsyCap dimension which has shown predictive power over the PCQ-5 three times for criterion variables such as CWBs (Sample 1), performance and satisfaction (Sample 4), and CWBs seem to escape the predictive edge of the PCQ-5 because three out of the four PsyCap dimensions predict it better than the PCQ-5.

Discussion

We proposed that in order to better reflect the state-like and malleable nature of PsyCap, organizations and researchers need access to a very brief measure of PsyCap to track changes over time. Based on previous scholarly work on scale development and scale abridgement (Smith et al., 2000; Hinkin, 1998; Stanton et al., 2002; and Liden et al., 2015), we took several steps (see Figure 1) to develop a short PsyCap measure that is both psychometrically valid and captures the content domain of the higher-order PsyCap construct. In the current study, we provided robust empirical support for the PCQ-5 scale which captures the higher-order PsyCap construct and is a unidimensional representation of the PCQ-24. Compared to the longer PsyCap scales, the clear advantage of the proposed 5-item scale is its brevity while still measuring all four PsyCap dimensions and both facets of hope, thus it represents the core of the PsyCap construct with just five items. Of course, the PCQ-5 is not meant to substitute the multidimensional PsyCap scales such as the original PCQ-24 (Luthans et al. 2007) or the PCQ-12 (Avey et al. 2011) which cover more ground in terms of breadth of content and are suitable to analyze the relationships between the PsyCap dimensions (although recent evidence (Djourova et al., 2019) suggests a unitary PsyCap structure, thus making the unidimensional nature of the PCQ-5 less of an issue). The PCQ-5 may be highly useful to track changes in PsyCap over time following organizational changes or interventions, in exploratory research alongside many other measures, or in ESM studies where measure length is a critical issue.

During the process of scale abridgement of the standard form PCQ-24, we took two steps to strengthen the content validity of the PCQ-5 (Step 1 and 4 of Figure 1). First, we determined on theoretical grounds that each PsyCap dimension and each facet of the hope dimension should be represented in the

new inventory, thus the PCQ-5 consists of one item from the dimensions of self-efficacy, resilience, and optimism, and one item for each facet of the hope dimension (agency and pathways). Second, we evaluated the content validity of the psychometrically viable PCQ-5 candidates and selected the best item-combination in terms of breadth of content.

The psychometric analysis (Step 2, 3, and 5 of Figure 1), carried out on four samples from three continents and four languages, demonstrated internal consistency reliability, model fit for a single factor representing the global PsyCap construct, and high correlation with the PCQ-24 (Table 1). In addition, as recommended by Hinkin (1998), Smith et al., (2000), and Credé et al., (2012), we used three samples and seven outcome variables to verify the similarity between the nomological networks of the PCQ-5 and the PCQ-24 and to establish the criterion-related validity of the new 5-item measure (Tables 2 and 3). Relationship to criterion variables confirm the adequacy of using the PCQ-5 as a representation of the global PsyCap construct if the relative loss in breadth of content and the absence of dimensionality are considered. Further, to demonstrate the usefulness of the PCQ-5, above and beyond the original 6-item PsyCap dimensions, we carried out hierarchical regressions with the criterion variables as outcomes to test the added value of the PCQ-5. Table 4 demonstrates that the PCQ-5 is more predictive of all the outcome variables (OCBs, performance, satisfaction, CWBs, voice, and helping behaviors) than any of the PsyCap dimensions.

Contributions

The PCQ-5, due to its parsimony and strong reliability as demonstrated in this paper, presents several opportunities to researchers and organizations alike. Relevant to both audiences, PsyCap may now be measured with greater frequency and ease, a critical development due to its state-like and developmental nature (Lupşa, Vîrga, Maricuțoiu, & Rusu, 2020; Luthans et al., 2006) and strong relationship to positive workplace outcomes above and beyond its component dimensions (Avey et al., 2011; Newman et al., 2014). As stated previously, the impact of PsyCap may be limited somewhat by current measurement practices. As a state-like and malleable core positive psychological construct, PsyCap fluctuates as a result of changes within the person and in her environment. As such, PsyCap will need repeated measurement in order to reflect accurate current levels. However, the standard 24-item measure and its 12-item counterpart are sufficiently long to make it cumbersome to adequately gauge PsyCap variability. Thus, PsyCap may remain underutilized by organizations compared to its potential and

Table 4. Added Value of PCQ-5 Compared to 6-Item Dimensions of PCQ-24.

Samples	Sample 1				Sample 2		Sample 4	
Measures	OCBs	Performance	Satisfaction	CWBs	Voice	Helping	Performance	Satisfaction
1. Self-Efficacy	.257***	.195***	.17***	.029**	.136***	.13***	.181***	.134***
2. PCQ-5	.33***	.226***	.354***	.046*	.146*	.149**	.218***	.33***
1. Hope	.303***	.208***	.319***	.069***	.115***	.112***	.245***	.334***
2. PCQ-5	.326***	.216***	.357***	.071	.143***	.154***	.246	.351[a]
1. Resilience	.312***	.276***	.164***	.048***	.121***	.126***	.109***	.133***
2. PCQ-5	.359***	.284*	.354***	.054	.141**	.148**	.204***	.321***
1. Optimism	.241***	.11***	.39***	.099***	.14***	.136***	.067***	.267*
2. PCQ-5	.331***	.202***	.434***	.099	.147[a]	.151*	.207***	.336***

Note. The table entries are R square results of regression models. In step 1, separate dimensions of PCQ-24 are regressed on criterion variables. In step 2, PCQ-5 is added.

All samples are from working adult population. Sample 1 = United States (N = 367); Sample 2 = China (N = 383); and Sample 4 = Hungary (N =260). The Job performance measures in Sample 1 and 4 are not the same: Williams & Anderson, 1991; and Welbourne et al., 1998, respectively.

*p < .05; **p < .01; ***p < .001.

[a]p < .1.

researchers' insights about the causes and effects of PsyCap's fluctuation may remain elusive.

The PCQ-5 has several implications specific to PsyCap research. First, because the PCQ-5 can be utilized in longitudinal and ESM studies where survey brevity is often a necessity, the degree to which PsyCap fluctuates over time can be adequately tracked. This is of significance to the theory of PsyCap because the construct has been conceptualized as state-like since its inception (Luthans et al., 2006). And yet, due to the length of current measures, longitudinal and ESM studies of PsyCap are scarce. With the PCQ-5, researchers will be able to establish the stability of PsyCap over time. In other words, how "state-like" PsyCap truly is can be empirically established. It is possible that PsyCap is more stable than initially hypothesized (i.e., more trait-like) or even more highly variable (i.e., a true state).

Second, the very short PCQ-5 will open up opportunities to better decipher the causal relationships between PsyCap and its correlates. As ESM, longitudinal, and repeated measures study designs are made more accessible by the PCQ-5, the degree to which other constructs influence PsyCap, and how quickly these impacts are manifest, can be more accurately gauged. The same is true for PsyCap's influence on other important organizational outcomes. Thus, the PCQ-5 will open up opportunities for better identifying and specifying the causal chains in studies of PsyCap, thus refining our theoretical understanding of PsyCap.

Third, as observed by Ziegler et al. (2014), very short measures make new kinds of research possible: (1) highly complex research designs with multiple measures and multiple measurements and (2) studies where the process of research is inverted to theorize first and measure later. Exploratory research is essential to tap into organizational phenomena that are undetectable otherwise. As a result, these types of exploratory (i.e., "pre-theory") studies can be the genesis for theoretical breakthroughs. The PCQ-5 will make exploratory studies possible due to its brevity and reliability.

From a practical perspective, the parsimony offered by the PCQ-5 also opens up new possibilities for the application of PsyCap in the workplace. The PCQ-5 makes it easy to measure and track work-related positivity, allowing management to obtain "pulse" data for quick and actionable decisions. PsyCap, as a malleable and state-like resource, is meant to be measured frequently allowing for the possibility to detect trends and helping management to evaluate decisions and events in the life of the organization that impact employee positivity.

Another area where the PCQ-5 offers improvements over the existing measures is with respect to organizational interventions. Typically, PsyCap interventions have employed a pre-test and post-test of PsyCap with

potentially an additional follow-up a month or so later. With the availability of a five-item measure (vs. the 24- or 12-item versions) organizations can potentially include more follow-up measurements post-intervention to evaluate the degree to which PsyCap interventions result in lasting impact. The results of these longer-term PsyCap measurements can also inform organizational decision makers regarding the optimal frequency for PsyCap interventions. For example, if intervention effects have been erased after 3 months then perhaps this would be an optimal time to have interventions targeting further development of hope, efficacy, resilience, and optimism. Another idea that could be employed in organizational interventions is using ESM methodologies to test PsyCap using the PCQ-5 during interventions to see which aspects have the greatest impact on participants' PsyCap.

Limitations and Future Research Directions

In this paper, we provide initial evidence for the validity of a very short PsyCap measure, the PCQ-5. Based on results presented, the five-item measure represents the global PsyCap construct accurately in terms of domain of content and also meets psychometric standards across multiple samples of working adult populations ($N = 1331$ in total) from four different countries (United States, China, Germany, and Hungary). Moreover, the PCQ-5, similar to the PCQ-24, demonstrates stronger predictive power in relation to important work-related outcome measures, than any of the component dimensions of PsyCap. However, the limitations of the current study should also be considered.

The first set of potential limitations relate to the samples used to provide initial evidence for the validity of the PCQ-5. For example, because the four PsyCap samples used in this study have been collected independently by the researchers, different socio-demographic data and criterion variables are available for each. Moreover, the samples are convenience samples with cross-sectional data. Convenience and cross-sectional samples also raise the question of common methods bias. One of our samples included data collected at multiple time points which is one way of reducing concerns around common methods bias. For the other samples, we conducted Harman's single-factor test (Podsakoff et al., 2003) to assess the degree to which common methods bias may be a concern and we conclude that our samples are not heavily impacted. Another potential limitation is that the evidence provided in this paper in support of the validity of the PCQ-5 doesn't extend to repeated measurements and experience sampling, while one of the stated objectives of the proposed very brief measure is to facilitate multiple measurements. Future research will have to confirm the

performance of the PCQ-5 through research designs involving repeated measurements and ESM.

The cross-cultural nature of the samples also raises questions whether the PsyCap construct is equally reliable in different cultural settings. Our four samples come from countries with different organizational cultures ranging from China, with a communal culture that puts more emphasis on humility and serving the common good, and the US where individual achievements are valued. As for the country of origin of our two European samples, while both are westernized countries, the business cultures of Germany and Hungary also differ somewhat in that order and rules are more strictly followed in German organizations, while Hungarian organizations tend to put slightly more emphasis on relationships and less on bureaucracy. Hence the question arises how appropriate it is to generalize PsyCap across cultures. In this study, we limited our inquiry to compare the proposed PCQ-5 measure to the original PCQ-24 and to show that the very short measure derived from the standard measure is adequate. Although not the central focus of our validation efforts, our analysis provides some limited evidence (only four countries surveyed) that the PsyCap construct is meaningful psychometrically cross-culturally and that it is related to workplace outcome measures. This is consistent with the extant literature showing that PsyCap has been used extensively internationally (Luthans & Youssef-Morgan, 2017) and that PsyCap positively relates to work performance cross-culturally (Donaldson et al., 2020). However, future research may focus on the cross-cultural implications of PsyCap more explicitly especially as it relates to measurement.

Finally, while the PCQ-5 is a reasonable one-dimensional representation of the PCQ-24, just like any other short measure it entails certain compromises. Despite strong content validity, a 5-item measure cannot capture the same breadth of content as the PCQ-24. Also, in this very short measure the dimensionality of PsyCap is dissolved into a global measure, thus limiting the possibilities of any analysis of the PsyCap construct involving its dimensions.

Conclusion

We recommend the PCQ-5 for use by organizations and researchers when measure brevity is critical. The PCQ-5 adequately captures the evidence-based PsyCap construct and, because of its brevity, is ideal for use in periodic employee surveys, to measure trends, or to assess how certain events in an organization affect employee positivity. Since PsyCap is strongly related to key workplace outcomes, PsyCap "pulse" data has high

added value for management. The impact of organizational interventions is often left unmeasured due to the time and difficulty of repeated follow-up measurements. The PCQ-5 may provide an adequate solution to this problem. Moreover, the PCQ-5 will also be valuable for future PsyCap research. Very short measures are often a requirement for highly complex research designs, longitudinal research, and ESM studies. With the development and validation of the PCQ-5, we hope to advance the field of POB and contribute to the applicability of PsyCap in organizational settings.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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Submitted Date: September 24, 2021
Revised Submission Date: August 23, 2022
Acceptance Date: September 2, 2022

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