

A bifactor-based Academic PsyCap Questionnaire for students and fresh graduates

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Abstract

Introduction. In the last two decades, great attention has been devoted to the four dimensions of the psychological capital (PsyCap): self-efficacy, hope, optimism, and resilience. These individual differences have been found to positively influence both academic and professional outcomes. This work aims to develop a bifactor-based version of the Academic PsyCap Questionnaire (APCQ), which is an instrument specifically meant for students and fresh graduates.

Method. Cross-sectional data were collected in a large sample of Italian fresh graduates ($N = 1,603$). Data were analysed through exploratory and confirmatory factor analysis. The invariance of the APCQ across males and females and across bachelor and master graduates was tested through Multiple-Group Confirmatory Factor Analyses. The relationships of the scores at the APCQ and its four scales with the soft skills were explored through Pearson's correlations.

Results. The questionnaire includes 20 items that have been found to adequately assess the four dimensions of self-efficacy, resilience, optimism, and hope, as well as the general factor of psychological capital. The bifactor structure of the instrument is in line with the definition of PsyCap in the literature. The APCQ was found to be invariant across genders and levels of academic degrees. Moreover, the APCQ scales were found to be positively associated with a set of soft skills that are relevant to achieving academic and professional success.

Discussion and Conclusion. The paper provides researchers, practitioners, and educators with a valid and reliable instrument that may help them to effectively evaluate PsyCap dimensions in students and fresh graduates in order to design effective interventions and tailored educational programs.

Keywords: PsyCap, Bifactor model, Fresh graduates, Soft skills, Invariance.

Resumen

Introducción. En las últimas dos décadas se ha prestado gran atención a las cuatro dimensiones del capital psicológico (PsyCap): autoeficacia, esperanza, optimismo y resiliencia. Se ha descubierto que estas diferencias individuales influyen positivamente en los resultados académicos y profesionales. Este trabajo tiene como objetivo desarrollar una versión bifactorial del Cuestionario PsyCap Académico (APCQ), que es un instrumento diseñado específicamente para estudiantes y recién graduados.

Método. Se recopilaron datos transversales en una muestra grande de recién graduados italianos (N = 1603). Los datos fueron analizados mediante análisis factorial exploratorio y confirmatorio. La invariancia del APCQ entre hombres y mujeres y entre graduados de licenciatura y maestría se probó a través de análisis factoriales confirmatorios de grupos múltiples. Las relaciones de las puntuaciones del APCQ y sus cuatro escalas con las habilidades sociales se exploraron a través de las correlaciones de Pearson.

Resultados. El cuestionario incluye 20 ítems que se ha encontrado que evalúan adecuadamente las cuatro dimensiones de autoeficacia, resiliencia, optimismo y esperanza, así como el factor general de capital psicológico. La estructura bifactorial del instrumento está en línea con la definición de PsyCap en la literatura. Se encontró que el APCQ era invariable entre géneros y niveles de títulos académicos. Además, se encontró que las escalas APCQ están asociadas positivamente con un conjunto de habilidades blandas que son relevantes para lograr el éxito académico y profesional.

Discusión y conclusión. El documento proporciona a los investigadores, profesionales y educadores un instrumento válido y confiable que puede ayudarlos a evaluar de manera efectiva las dimensiones de PsyCap en estudiantes y recién graduados para diseñar intervenciones efectivas y programas educativos personalizados.

Palabras clave: PsyCap, modelo bifactorial, recién graduados, habilidades blandas, invariancia.

Introduction

In the last two decades, attention has been devoted to a set of psychological dimensions developed within the framework of positive psychology (Luthans, Avolio et al., 2007; Luthans, Youssef, & Avolio, 2007; Seligman & Csikszentmihalyi, 2014), which is named *psychological capital* (PsyCap; Luthans, Avolio et al., 2007). As shown by several studies, PsyCap dimensions could be associated with numerous positive academic outcomes such as student retention, academic adjustment, motivation, and a state of flow that often results in better performances (Adil et al., 2020; Bandura, 1997; Liran & Miller, 2019; Martínez et al., 2019; Seligman, 2006; Snyder, 2005). On the whole, PsyCap defines a core psychological factor of positivity that is characterized by feelings of self-efficacy, hope, optimism, and resilience (Luthans et al., 2005). Self-efficacy describes one's confidence of having all the abilities and resources needed to successfully execute own tasks and duties (Luthans, Youssef, & Avolio, 2007). In the academic field, this dimension has often been associated with greater probabilities to achieve educational success (Elias & Loomis, 2002; McKenzie & Schweitzer, 2001). Hope defines a positive motivational state that leads to persevering toward ones' objectives, redirecting, when it is necessary, the strategies employed to achieve the goals (Luthans, Youssef, & Avolio, 2007). This dimension has been found to enable students to approach academic issues with a positive focus on success, thus increasing their probability to achieve good results and academic satisfaction (e.g., Conti, 2000; Snyder et al., 2002). Optimism can be conceptualized as the subjective tendency to interpret situations and events positively. In the framework of PsyCap, optimism represents an adaptive characteristic that involves the careful consideration of both positive and negative aspects of reality to draw new bits of knowledge (Luthans, Youssef, & Avolio, 2007; Youssef & Luthans, 2005). Optimistic individuals build positive expectancies that motivate them to deal with difficulties and to persist toward their goals to achieve academic success (Chemers et al., 2001; Sharpe et al., 2011). Resilience is the ability to "bounce back" from adversities and failures. In the academic field, resilience refers to the ability to effectively dealing with academic setbacks, stress, and pressure, and it has been found to be associated with task-oriented and problem-focused coping, which can have a positive effect on academic success (Clifton et al., 2004).

In parallel with the increase of the scientific interest for PsyCap dimensions, also the studies aimed at devising instruments for assessing the PsyCap dimensions have grown up. Much research efforts have been devoted to developing questionnaires that assess PsyCap

dimensions among workers and adult people (e.g., Lorenz et al., 2016; Luthans, Avolio et al., 2007; Mónico et al., 2014). In general, these instruments showed satisfactory psychometric properties and were successfully adapted to different languages and cultures (e.g., Choisy, et al., 2021; Djourova et al., 2019; Hansen et al., 2015; Lupşa & Vîrgă, 2018). Conversely, only a few studies developed instruments specifically addressed to evaluate PsyCap dimensions among students and young people. A contribution in this direction has been recently provided by Robusto et al. (2019). The authors developed an instrument, called Academic PsyCap Questionnaire (APCQ; Anselmi, Colledani, Fabbris, et al., 2021; Robusto et al., 2019), that is aimed to evaluate the four PsyCap dimensions (i.e., self-efficacy, resilience, optimism, and hope) among students and fresh graduates. APCQ was developed and refined through the following steps. First, a large pool of items was generated by a group of scholars and experts in psychology, education, and assessment. The development of the items was inspired by the questionnaires for workers and adults that are available in the literature (e.g., Lorenz et al., 2016; Luthans, Avolio et al., 2007; Mónico et al., 2014). Then, the items were tested on large groups of students and the items with the best psychometrics properties were identified through item-level analyses based on factor analyses. During the validation process, some items were reformulated to improve the content validity of the instrument. In addition, the association of the scale scores with variables related to the professional success of students and fresh graduates was verified. Overall, the results of the analyses showed that APCQ has satisfactory psychometric properties and that its scores are associated with people's entrepreneurial disposition and effectiveness of job seeking strategies.

The present work has three aims. The first is to provide a new refinement of APCQ adopting a bifactor approach. This method allows for modeling the structure of a questionnaire through the definition of both a general factor and a set of domain-specific factors. In the case of APCQ, the general factor is the positive psychological capital, whereas the domain-specific factors are the four distinct dimensions it consists of. The use of a bifactor approach offers several advantages. It allows for a better understanding of the structure of the psychological capital. Moreover, it allows for developing a questionnaire that, while assessing the four dimensions of PsyCap, also provides an effective measure of its general factor. In addition, the bifactor approach well fits with the conceptualization of PsyCap provided by its authors. Indeed, Luthans et al. (2005) defined PsyCap as a psychological factor of positivity whose dimensions share a common sense of control, intentionality, agency, and positivity that is associated with the probability of achieving success through perseverance and motivation

(Luthans, Avolio et al., 2007). However, the four dimensions also have unique and distinctive characteristics. For instance, the dimensions of hope, efficacy, and optimism are proactive in nature, whereas resilience is more associated with the reaction toward a situation, either positive or negative, that has already happened (Luthans & Youssef-Morgan, 2017). Finally, the bifactor approach seems to be coherent also with the results of several studies that suggest the existence of a general factor accounting for an overlap often observed between the four domain-specific factors (Baron et al., 2016; Choisy et al., 2021; Luthans, Avolio et al., 2007). In particular, while supporting the usefulness of considering the single PsyCap components, the research also showed that they often act synergistically and that, in certain occasions, a broader construct is more effective than the distinct components in predicting individuals' attitudes and performances (Baron et al., 2016; Dawkins et al., 2013; Luthans, Avolio et al., 2007, Luthans et al., 2016).

The second aim of the present work is to test the invariance of the four scales of the APCQ across genders and levels of academic degrees (bachelor and master students). To meaningfully compare groups of individuals, invariance represents a relevant test property that needs to be verified in the validation process (Anselmi, Colledani, Andreotti, et al., 2022; Colledani, 2018; Colledani et al., 2019a; 2019b; Colledani, Anselmi, et al., 2018; Colledani, Robusto, et al., 2018; Fagnani et al., 2021; Vandenberg & Lance, 2000).

The last aim of the present work is to investigate the criterion validity of the APCQ by exploring its relationships with a series of soft skills (e.g., publicly presenting the results of analyses or research; working in a team to define common decisions; designing and managing complex projects) that can be associated with professional and academic achievements and performances. Soft skills were considered because such skills are trained and valued during the academic career and project towards professional success.

The ultimate goal of this work is to provide researchers, practitioners, and educators with a valid and reliable instrument to assess PsyCap and its dimensions in students and fresh graduates.

Method

Participants

A sample of 1,603 fresh graduates (Males 38.5%, Mean age = 24.44, $SD = 4.36$) took part in the study. All participants were surveyed within one month after graduation at the University of Padua. The survey was administered via a CAWI (Computer-Assisted Web-based Interviewing) system. Students in medicine and nursing courses were not included in the sample as they represent a particular target that often differs from others in academic and professional careers. Among respondents, 24.9% were students from engineering courses, 6.5% from “hard” sciences, 13.2% from life sciences, 38.4% from social sciences, and 17.0% from human sciences.

Instruments

The original pool of 37 items of the APCQ (Anselmi, Colledani, Fabbris, et al., 2021) was administered to all participants. Among these items, 11 were intended to measure resilience (e.g., “I always try to give my best in all the things I do without getting discouraged in the face of obstacles”), 9 self-efficacy (e.g., “I have the resources to handle even unforeseen situations”), 9 optimism (e.g., “I always try to see the glass half full”), and 8 hope (e.g., “Willpower was a key to obtaining an academic degree”). All items were scored on a 4-point Likert scale (from 1 “*Completely disagree*” to 4 “*Completely agree*”).

In addition, six items were administered to evaluate soft skills that are associated with academic and professional success. In particular, these items asked participants to evaluate their ability to: (a) manage technical/professional problems; (b) design and manage complex projects; (c) organize their own work and that of the others; (d) take responsibilities and initiatives; (e) publicly present the results of analyses and research; (f) work in a team for defining common decisions. These items were scored on a 4-point Likert scale (from 1 “*Very low*” to 4 “*Very high*”). These items were specially developed by the authors for this study.

Data Analysis

Factor structure

A bifactor Exploratory Factor Analysis (EFA) was run on the 37 items of the APCQ. This analysis was run on a subsample comprising 801 participants (Males 42.3%, Mean age = 24.81, $SD = 4.70$) randomly sampled from the total sample. Relying on the results of this

analysis and on the investigation of item content, 20 items (five for each dimension) were selected to compose the new bifactor-based version of the instrument. The items were chosen that were characterized by large loadings on the general and/or specific target factors, and whose content was central to the dimensions. In particular, 11 items were selected based on large loadings on the general factor (λ from .532 to .843), 3 on both the general (λ from .497 to .715) and specific target factors (λ from .143 to .186), 3 on the specific target factors (λ from .214 to .314), and 3 were selected mainly considering their content. The factor structure of the resulting instrument was investigated through confirmatory factor analysis (CFA), which was run on a second subsample comprising the remaining 802 participants (Males 34.7%, Mean age = 24.07, $SD = 3.70$). Three models were tested and compared, namely a one-factor model, a correlated four-factor model, and a bifactor model. In the first model, all the 20 items of the instrument were loaded on a single dimension (PsyCap). In the second model, four different and correlated factors were defined (i.e., self-efficacy, resilience, optimism, and hope), each consisting of five items. Finally, a bifactor model was run that included one general factor (i.e., PsyCap) measured by all the 20 items of the scale, and four domain-specific factors, each measured by five items. All models were run using Mplus7 (Muthén & Muthén, 2012) and the WLSMV (weighted least squares mean and variance-adjusted; Muthén & Muthén, 2012) estimator, which is recommended for categorical data (e.g., Brown, 2006; Flora & Curran, 2004).

The goodness-of-fit of the three models was evaluated using several fit indices: χ^2 , Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). A non-significant χ^2 ($p \geq .05$) suggests adequate fit. Since this statistic is sensitive to sample size, other fit measures should be considered. CFI close to .90 (over .95 for excellent fit), SRMR less than .08, and RMSEA smaller than .06 (.06 to .08 for reasonable fit) were taken as indicators of good model fit (Marsh et al., 2004). These competing models were compared using the Akaike Information Criterion (AIC; Akaike, 1974). Smaller values of AIC are indicative of a better fit. Following Olatunji et al. (2019) and Rhemtulla et al. (2012), the 4-point Likert scale data were temporarily treated as continuous, and the Robust Maximum Likelihood estimator (Muthén & Muthén, 2012) was used. Relative differences were considered meaningful if models differed in AIC (ΔAIC) by 10 or more (Burnham et al., 2011).

Concerning the bifactor model, a series of indices were also considered, namely the Explained Common Variance (ECV; Sijtsma, 2009; Ten Berge & Sočan, 2004), the Percent Uncontaminated Correlations (PUC; Rodriguez et al., 2016b), and McDonald's (1999) omega (ω) and hierarchical omega (ω_h) coefficients. The ECV represents the ratio between the common variance explained by the general factor and the total common variance (Reise, Bonifay et al., 2013; Reise, Scheines, et al., 2013; Rodriguez et al., 2016a). High values (.70 to .80) indicate that the factor loadings obtained from a unidimensional model well approximate those on the general factor obtained from the bifactor solution, and this suggests that the scale is substantially one-dimensional (Rodriguez et al., 2016a). Contrariwise, PUC describes the percentage of covariance terms which only reflect the variance from the general dimension (Dueber, 2017; Rodriguez et al., 2016b), and measures the biasing effects of forcing bifactor data into a one-dimensional model. PUC values lower than .70-.80 indicate a slight bias and the essentially unidimensional structure of the scale (Reise, Scheines, et al., 2013; Rodriguez et al., 2016a). McDonald's (1999) ω and ω_h coefficients are factor-analytic "model-based" estimates of internal consistency. The former represents the proportion of variance of the scores that can be attributed to all sources of variance (i.e., general and domain-specific factors), whereas the latter quantifies the amount of variance accounted for by the general factor (Revelle & Zinbarg, 2009; Zinbarg et al., 2005, 2007). In the present study, ω was computed for the general factor and for each domain-specific factor, whereas ω_h was computed for the general factor only. Concerning ω , values close to or greater than .70 are satisfactory. Concerning ω_h , values larger than .75-.80 indicate that the general factor can be interpreted as the measure of a single construct despite multidimensionality (Reise, Bonifay et al., 2013; Reise, Scheines et al., 2013).

Invariance

The invariance of the four scales of the APCQ across males and females and across bachelor and master graduates was tested on the total sample ($N = 1,603$) through Multiple-Group Confirmatory Factor Analyses (MG-CFA). The analyses were performed using the WLSMV as estimator (Muthén & Muthén, 2012) and the theta parameterization (Muthén & Muthén, 2012). In the first step, the model was simultaneously fitted to the specific subsamples (males and females; bachelor and master graduates) to test configural invariance (i.e., the same pattern of fixed and free factor loadings were specified across groups). Subsequently, a series of constrained models was tested and compared to evaluate scalar (i.e., invariance of both factor loadings and item thresholds) and strict invariance (i.e., invariance of factor load-

ings, item thresholds, and residual variances). Metric invariance (invariance of factor loadings only) was not tested because it is not appropriate for ordered polytomous categorical variables when a variable loads on more than one factor (i.e., general factor and domain-specific factors). The test of change in CFI (ΔCFI) was used to compare nested models. ΔCFI values lower than or equal to $|\text{.01}|$ are indicative of invariance (Cheung & Rensvold, 2002).

Criterion validity

The relationships of the scores at the APCQ and its four scales with the soft skills were explored through Pearson's correlations.

Results

Factor Structure

Table 1 shows the factor loadings of the three models that were run on the 20 items selected through the bifactor EFA, whereas Table 2 shows the fit indices of these models. Both the correlated four-factor model and the bifactor model fit the data better than the one-factor model. In the correlated four-factor model, consistently with theoretical expectations, all items showed meaningful loadings on the intended dimensions (λ s from $.532$ to $.872$, $p \leq .001$). However, there could be some concerns associated to the large correlations between factors (r s = from $.586$ to $.977$, all $p \leq .001$). In the bifactor model, all items significantly loaded on the general factor (λ s = from $.346$ to $.775$, all $p \leq .001$) and on the relative domain-specific factors (λ s from $.140$ to $.725$, $p \leq .05$; except for one item of resiliency whose loading on the intended factor was non-significant). The inspection of ΔAIC s indicated that the bifactor model was superior compared with the other two models (ΔAIC between the one-factor model and the correlated four-factor model = 982.026 ; ΔAIC between the one-factor model and the bifactor model = 1292.462 ; ΔAIC between the correlated four-factor model and the bifactor model = 310.436). Finally, given the large correlations between the latent factors in the correlated four-factor model (from $.636$ to $.977$), the bifactor solution seems to be the most suitable option to represent the structure of the APCQ.

In the bifactor model, the ECV of the general factor was $.69$, indicating that the APCQ should be intended as multidimensional. However, ω_h was $.87$ and PUC was $.79$. These results indicate that multidimensionality is not severe enough to disqualify the interpretation of the one-dimensional construct underlying the instrument (Reise, Scheines, et al., 2013). With

regard to internal consistency, ω coefficients were satisfactory for both the general and domain-specific factors (ω s = .96, .89, .90, .85, and .83 for general, self-efficacy, optimism, resilience, and hope factors, respectively).

Table 1. *Factor loadings of the bifactor, correlated four-factor, and one factor models*

Items	Bifactor Model			
	General factor	Domain-specific factors	Correlated four-factor model	
Self-efficacy	Usually, when I face a problem, I am able to identify different solutions.	0.616	0.473	0.739
	I have the resources to handle even unforeseen situations.	0.651	0.310	0.736
	If I were in a difficult situation I would be able to find a way out.	0.670	0.368	0.767
	In difficult situations, I feel effective in finding a way out.	0.775	0.341	0.872
	I believe I am able to analyze a problem and identify a possible solution.	0.690	0.481	0.813
Optimism	I'm usually optimistic about the future.	0.625	0.482	0.766
	I always try to believe that behind every cloud there is a blue sky.	0.658	0.494	0.804
	I am convinced that my willpower will prevail over bad luck.	0.690	0.146**	0.769
	I always try to see the glass half full.	0.694	0.589	0.864
	Even in difficult situations, I try to take the best opportunities and the bright side.	0.717	0.407	0.845
Resilience	Until now, my successes have largely depended on the choices I made.	0.506	0.524	0.622
	I'm proud of everything I have achieved by now.	0.677	0.280	0.726
	My efforts and my skills are the basis of the results I have achieved.	0.526	0.610	0.659
	Usually, in one way or another, I try to overcome difficulties.	0.715	0.154*	0.739
	I always try to give my best in all the things I do without getting discouraged in the face of obstacles.	0.722	0.109†	0.736
Hope	The goals I have achieved so far are due to my planning skills.	0.346	0.725	0.563
	I think I will be able to achieve my current goals by counting on my determination.	0.685	0.318	0.795
	I have a hard time planning things to do when I have to reach a goal. (R)	0.370	0.525	0.532
	Willpower was key to obtaining an academic degree.	0.577	0.468	0.725
	At present, I think I'm a successful person in carrying out my duties.	0.640	0.140**	0.700

Note. All parameters were significant at $p \leq .001$, excluding those indicated with * $p \leq .05$ and ** $p \leq .01$. The parameter indicated with † was non-significant ($p > .05$).

Table 2. *Model fit indices*

	χ^2	df	p	RMSEA	C.I. RMSEA	CFI	SRMR	AIC
1-factor model	2582.451	170	.000	0.133	0.129, 0.138	0.813	0.104	28471.289
Correlated 4-factor model	1087.918	164	.000	0.084	0.079, 0.089	0.929	0.067	27489.263
Bifactor model	441.881	144	.000	0.051	0.045, 0.056	0.977	0.036	27178.827

Invariance

The invariance of the bifactor model was tested across males and females and across bachelor and master graduates. The results are displayed in Table 3. All models showed a successful fit in all samples and the values of the ΔCFI supported the considered levels of invariance.

Table 3. *Fit indices of multiple-group confirmatory factor analyses for invariance*

Model	Gender invariance (Males = 617; Females = 986)						Bachelor/Master invariance (Bachelor = 1,004; Master = 599)						
	RMS						RMS						ΔCFI I
	χ^2	df	p	EA	CFI	ΔCFI	χ^2	df	p	EA	CFI		
Configural	896.481	288	.000	.051	.976		843.953	288	.000	.049	.978		
Scalar	880.088	358	.000	.043	.980	-.004	805.032	358	.000	.039	.982	-.004	
Strict	824.748	378	.000	.038	.983	-.003	838.677	378	.000	.039	.982	.000	

Criterion validity

The scores at the APCQ and its four scales positively and significantly correlated with the soft skills (Table 5; descriptive statistics Table 4). In particular, the total score at the APCQ was positively and moderately associated with the ability to organize one’s own and other people’s work, the capability to take responsibility and initiatives, and the ability to work in a team (*r* from .308 to .409). Self-efficacy resulted to be moderately associated with all the considered soft skills (*r* from .294 to .396). Resilience was moderately associated with the ability to take responsibilities and initiatives (*r* = .339), while it showed weak, yet significant correlations with all the other five considered soft skills (*r* from .211 to .288). Hope resulted to be moderately associated with the capability of organizing one’s own and other people’s work (*r* = .404) and with the ability to take responsibilities and initiatives (*r* = .378).

Weaker but significant correlations were observed between hope and the other soft skills (r from .199 to .282). Finally, optimism showed only weak, yet significant correlations with the soft skills (r from .111 to .241).

Table 4. *Descriptive statistics of scores at the Academic PsyCap Questionnaire and soft skills*

<i>Measure</i>	<i>M</i>	<i>SD</i>
APCQ-total score	3.19	0.41
Self-efficacy	3.17	0.46
Optimism	3.01	0.61
Resilience	3.38	0.46
Hope	3.19	0.5
Manage technical/professional problems	3.07	0.61
Design and manage complex projects	2.94	0.71
Organize one's own work and that of others	3.25	0.68
Take responsibility and initiatives	3.25	0.68
Publicly present the results of analysis/research	2.83	0.77
Work in a team for defining common decisions	3.27	0.63

Table 5. *Correlations between scores at the Academic PsyCap Questionnaire and soft skills*

	<i>APCQ- total score</i>	<i>Self- efficacy</i>	<i>Optimism</i>	<i>Resilience</i>	<i>Hope</i>
Manage technical/professional problems	0.292	0.372	0.152	0.211	0.238
Design and manage complex projects	0.297	0.355	0.117	0.246	0.282
Organize one's own work and that of others	0.335	0.326	0.111	0.288	0.404
Take responsibility and initiatives	0.409	0.396	0.239	0.339	0.378
Publicly present the results of analysis/research	0.295	0.294	0.193	0.232	0.252
Work in a team for defining common decisions	0.308	0.313	0.241	0.251	0.199

Note. All correlations were significant at $p \leq .001$.

Discussion and conclusion

In this work, a bifactor approach was used to develop a new version of the APCQ, which is an instrument specifically meant for assessing the four dimensions of PsyCap among students and fresh graduates. The resulting instrument comprises 20 items and adequately assesses the four dimensions of self-efficacy, resilience, optimism, and hope, as well as the general factor of PsyCap. The bifactor structure of the new questionnaire is in line with the definition of psychological capital given by Luthans et al. (2005). This construct, in fact, has been conceptualized as a collection of dimensions that, altogether, contribute to defining a core psychological disposition of positivity. In addition, the bifactor approach allows for overcoming the limitations associated with the overlap between the four domain-specific factors of the psychological capital, which has often been observed in instruments intended to measure this construct (Baron et al., 2016; Choisy et al., 2021; Luthans, Avolio et al., 2007). In the new bifactor-based version of the APCQ, both the domain-specific and the general factors showed adequate internal consistency and factorial validity. In addition, the APCQ was found to be invariant across males and females and across bachelor and master students. This property ensures a comparable functioning of the questionnaire across the considered groups. The inspection of correlations between the scores at the APCQ and its four scales and the considered soft skills showed that all the dimensions of the psychological capital are positively associated with individuals' abilities that may positively impact professional and academic achievements and performances. This result is in line with the research expectations and with the findings in the literature that showed positive associations between soft skills and PsyCap dimensions (Aryani et al., 2021; Sameer et al, 2019).

On the one hand, our results support the structural and criterion validity of the new bifactor-based version of APCQ. On the other, they highlight the relevance of considering the four distinct PsyCap dimensions in the academic field. Moreover, as pointed out by several studies, these dimensions can be improved through targeted interventions (Luthans et al., 2008), and this can in turn increase individuals' well-being and performances (Datu & Valdez, 2016; Luthans et al., 2012).

The present paper provides researchers, practitioners, and educators with a valid and reliable instrument for the assessment of PsyCap in students and fresh graduates. This instrument may help professionals to design effective interventions and tailored educational pro-

grams. Future studies are advocated that extend our results in cross-cultural contexts and validate the APCQ in different language and cultures (Colledani et al., 2021; Geisinger, 1994; Choisy, et al., 2021; Djourova et al., 2019; Hansen et al., 2015; Lușă & Vîrgă, 2018).

Future studies should also better explore the nomological network of APCQ scales and their relationships with variables that are relevant for academic and professional success (Bagozzi, 1988; Colledani, Capozza et al., 2018; De Carlo et al., 2020; Hepworth et al., 2018; Newman et al., 2014; Romanelli et al., 2006; Zajacova et al., 2005). Moreover, an interesting development could be represented by the definition of specific latent profiles of psychological capital and their relationships with academic and work outcomes (Dal Corso et al., 2020; Ferguson & Hull, 2018; Martínez et al., 2019).

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Received: 28-12-2021

Accepted: 24-05-2022