

Protean Career Orientation Scale: A validation study with Portuguese university students

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Abstract: The protean career orientation refers to career agentic and values-driven attitudes in today's changing contexts. This orientation shows readiness for facing lifespan tasks and challenges in diverse work roles, contributing, for example, to university students' academic engagement and employability. Given the importance of this construct, there is a need for valid and reliable measures of protean career orientation. Our study aimed to analyze the internal and criterion-related validity and reliability of a Portuguese language version of the Protean Career Orientation Scale. Participants were 407 Portuguese university students who responded to measures of protean career orientation, academic engagement, and career self-management strategies. Factorial analyses, Pearson correlations, and reliability indicators were computed. Adequate psychometric properties were found after one item deletion. Findings provide evidence for the scale's usage among groups of university students, whether for research or practical purposes. Nevertheless, more studies are needed.

Keywords: *Protean orientation; Psychometric properties; University students; Assessment.*

Protean career orientation is defined by Hall et al. (2018, p.134) as "a career attitude with two important dimensions, a focus on self-direction and an orientation toward intrinsic values". According to them, self-direction refers to one's agency and volition to pursue career goals, and intrinsic values provide meaning to the pursuit. In other words, a protean individual will be involved in a process of meaning-making (identity), response to change (adaptability), and intentional decision-making (agency), which fosters several career outcomes. For example, employability outcomes (e.g., job offers), career satisfaction, career self-management behaviors (e.g., networking), occupational and decision-making self-efficacy, and organizational commitment, among others (e.g., Baruch, 2014; Chui et al., 2020; Cortellazzo et al., 2020; Kaur & Kaushik, 2020; Stauffer et al., 2019). In the contemporary career literature overall, protean career orientation has been conceptualized as a goal-oriented, intrinsic motivational factor, which indicates the level of personal readiness to face whole-life career challenges, whether in a career role of citizen, student, worker, or others (e.g., Hirschi & Koen, 2021; Hirschi et al., 2020).

As a result, we may argue that this agentic orientation is crucial for adapting in today's changing contexts (e.g., Briscoe & Hall, 2006; World Economic Forum, 2020), including facing academic challenges (e.g., vocational, social) (e.g., Álvarez-Pérez & López-Aguilar, 2020; Gazo et al., 2019). According to the literature, more adapted students are also more satisfied and successful individuals, which enables better preparation for the labor market transition (e.g., Gazo et al., 2019; Kaur & Kaushik, 2020; Yıldız-Akyol & Öztemel, 2021). For example, Kim et al. (2023), found that adopting a protean career orientation predicts youth academic commitment and performance, as well as perceived future employability. Therefore, developing a protean career orientation during the academic journey is an asset. However, we need valid and reliable measures to assess students' level of protean career orientation to better understand and explain the role of protean career orientation for life-career success and well-being.

Protean career orientation measures: An overview

Briscoe et al. (2006) played a key role in developing the first protean career measure, the Protean Career Attitude Scale (PCAS). This scale comprises two dimensions. The values-driven dimension is characterized by the individual's willingness to achieve a career path in line with personal values. The other, the self-directed dimension, is characterized by the individual's proactivity in gathering information, developing goals, and making career decisions. Despite PCAS usefulness in extending studies on the subject, several problems have arisen regarding its validity and psychometric qualities. For example, one study with Spanish people (Enache et al., 2012) and another with South Africans (de Bruin & Buchner, 2010) highlight

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the ambiguity of PCAS values-driven dimension. According to these authors, most of the items in this dimension assumed that personal values and those of the company were opposites (e.g., de Bruin & Buchner, 2010; Enache et al., 2012; Gubler et al., 2014). Moreover, Gubler et al. (2014) argued that only item 1 from PCAS self-directed dimension correctly mirrored this dimension definition.

Further criticism of PCAS includes its lengthy size (Baruch, 2014; Porter et al., 2016) and the absence of items conveying career issues of youth with little or no work experience (Borges et al., 2015). In response, Porter et al. (2016) suggested a shorter measure that includes 7 of the 14 PCAS items. Meanwhile, Baruch (2014) proposed a new 7-item unidimensional measure, the Protean Career Orientation Scale (PCOS). As for extending PCAS to other career realities, Borges et al. (2015) suggested rewriting some items and adding others, resulting in a 20-item version. Nevertheless, recalling the ambiguity of the PCAS values dimension (de Bruin & Buchner, 2010; Enache et al., 2012), Baruch's proposal is the most promising. For instance, a recent meta-analysis developed by Kostal and Wiernik (2017) indicates that the most commonly used measures to assess one's protean career orientation are the Briscoe et al. (2006) PCAS and the Baruch (2014) PCOS. Nevertheless, other measures are also covered by the literature (e.g., Drenzo et al., 2015; Kruanak & Ruangkanjanases, 2014). However, these alternatives include items designed to respond to each study's goals, which limits a broader use. For example, Kruanak and Ruangkanjanases's (2014) protean career orientation measure includes items such as "I believe that having international experience is essential for my subsequent career success", which may not be suitable for individuals without international experience.

As a result, this metric heterogeneity may hinder the comparison and interpretation of different empirical studies on protean orientation (Gubler et al., 2014). Therefore, instead of proposing a new measure addressing Briscoe et al.'s (2006) weaknesses, we will consider the 7-items measure presented by Baruch (2014). This scale considers the original unidimensional definition of the protean career orientation construct (Hall, 1976), which answers the PCAS values-driven problems (e.g., Enache et al., 2012), making the measure less ambiguous. As a result, Baruch's measure could be a reasonable alternative for the short-bidimensional PCAS version proposed by Porter et al. (2016). Another aspect to highlight from the Baruch measure is that items do not seem to be exclusive to a specific, already developed career path (Cortellazzo et al., 2020). Therefore, Baruch also considers Borges et al.'s (2015) warning, increasing the measure's usability among different contexts and populations.

Baruch's measure has shown good psychometric qualities among workers and university students from different countries. In his initial study specifically, Baruch (2014) integrated several samples of French students and English and Chinese workers. In these studies, the author found reliability indices above .70, and significant correlations of the measure with other constructs (e.g., organizational commitment, job satisfaction, performance). The same was later found for German university students (Herrmann et al., 2015) and Chinese employees (Ngo & Hui, 2018). Apart from measuring reliability, these authors also verified significant correlations with other constructs, such as career planning, work engagement, and self-efficacy. Meanwhile, Cortellazzo et al. (2020) considered the 5-items version, which does not include item 2 of employability nor item 3 of job search. According to Baruch (2014), these items can be excluded whenever the purpose of the study warrants it. Nevertheless, Cortellazzo et al. (2020) also found a reliability index above .70 in a sample of Italian university students. We may, therefore, conclude that the Baruch scale is reliable and presents good criterion-related validity across different occupational and cultural groups. However, data on its internal validity is still scarce. To our best knowledge, only a Brazilian study has explored the internal structure of the measure (Andrade et al., 2022). According to the authors, after the 2 item exclusion (i.e., items 1 and 3) and model re-specification (i.e., error correlation impositions), adequate fit indicators were verified ($\chi^2/df = 4.90$, RMSEA = .11, TLI = .92, and CFI = .92), supporting PCOS unidimensionality. Nevertheless, considering the psychosocial nature of the protean career orientation construct (Hall et al., 2018), further cross-cultural studies are needed. Analyzing the scale's behavior in countries that share the same language but not the same culture may thus be especially relevant. For example, while Brazil presents characteristics of a developing economy, Portugal presents characteristics of a developed economy (Institute for Economics & Peace, 2022; United Nations, 2022). This may influence how a career is portrayed.

The study's aims and hypotheses

Accordingly, we propose to extend the study of 7-items PCOS to a sample of Portuguese university students. We believe this will extend knowledge of its psychometric qualities, as well as the literature on protean orientation among university students.

For that purpose, we will evaluate the measure's (1) factorial structure, (2) reliability, (3) convergent, and (4) concurrent validity. An (H1) unidimensional structure and (H2) acceptable reliability indices are expected. Regarding measure convergent validity, the Portuguese version of PCAS (Briscoe et

al., 2006; Marques, 2017) will be used, expecting (H3) significant correlations between the constructs. Namely with the self-directed dimension (Hall et al., 2018). As for the concurrent validity, one measure of academic engagement and another of career strategy will be used. The first measure was chosen based on the rationale that individuals capable of making an autonomous and enlightened career decision would be willing to invest time and energy in their career construction (Ngo & Hui, 2018). The second measure was chosen based on the rationale that individuals with a clear sense of personal identity and flexibility to respond to a volatile environment will more easily engage in personal career management behaviors (e.g., networking) (Kaur & Kaushik, 2020). Therefore, (H4) significant correlations for the concurrent validity analysis are also expected.

METHOD

Participants

Participants were recruited through a convenience sampling technique. In line with the study's goals, two samples were created. Sample A included participants that voluntarily responded to the protean career measure. Sample B included participants that voluntarily responded to the entire protocol.

Sample A comprised 119 Portuguese university students. The majority were women ($n = 95$, 79.8%) aged 18 to 37 ($M = 21.08$, $SD = 3.28$). 110 (92.4%) were Caucasian; 1 (0.8%) Black and 8 (6.8%) identified with another ethnicity. Regarding the type of education, 89 (74.8%) were studying in university education and 30 (25.2%) in polytechnic education. All institutions were from the North to the South of Portugal. At the time of the survey, the participants were attending the following higher education programs: 26 (21.8%) were in Social Sciences, Journalism and Information; 25 (21%) in Business, Administration and Law; 21 (17.6%) in Natural Sciences, Mathematics and Statistics; 17 (14.3%) in Health and Welfare; 15 (12.6%) in Engineering, Manufacturing and Construction; 10 (8.4%) in Arts and Humanities; 2 (1.7%) in Agriculture, Forestry, Fisheries and Veterinary Medicine; 2 (1.7%) in Education; and 1 (0.8%) in Information and Communication Technologies. Among the 119 students, 19 (16%) combined studying with working, and of these only 3 (2.5%) had the working student's status.

Sample B comprised 288 Portuguese university students. The majority were women ($n = 224$, 77.8%) aged 18 to 61 ($M = 21.53$, $SD = 4.39$). 275 (95.5%) were Caucasian, 3 (1%) Black and 10 (3.5%) identified with another ethnicity. Regarding the type of education, 183 (63.5%) were studying in university education and 105 (36.5%) in polytechnic education. All institutions were from the North to the South of Portugal, including The Azores. At the time of the survey, the participants were attending the following educational programs: 71 (24.7%) were in Health and Welfare; 55 (19.1%) in Social Sciences, Journalism and Information; 52 (18.1%) in Business, Administration and Law; 48 (16.7%) in Natural Sciences, Mathematics and Statistics; 24 (8.3%) in Arts and Humanities; 16 (5.6%) in Engineering, Manufacturing and Construction; 13 (4.5%) in Agriculture, Forestry, Fisheries and Veterinary Medicine; 7 (2.4%) in Education; and 2 (0.7%) in Information and Communication Technologies. Among the 288 students, 57 (19.8%) combined studying with working, and of these only 21 (7.3%) had the working student's status.

Samples A and B were used for exploratory and confirmatory factor analyses, respectively. Although demographic differences were observed between samples, there were no statistically significant differences between samples' protean career orientation total scores, $t(405) = .709$, $p = .479$. This finding provided the confidence to proceed with the analyses.

Measures

Protean career orientation was accessed by two measures. First, the Protean Career Orientation Scale (PCOS) from Baruch (2014) that includes 7 items (e.g., "I am in charge of my own career"). Although the original measure features a 7-point response scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), Baruch (2014) also considered a 5-point scale as an alternative. Therefore, a 5-point scale was preferred based on the following rationale: (1) no significant reliability and validity increments are verified when the number of alternatives exceeds 5; (2) this rating scale also includes a middle point as the 7-point scale; (3) the smaller number of options makes it easier and faster for the participants to respond; and (4) this decision allows us to reduce the protocol's response variability, considering the remaining scales (Vieira & Dalmoro, 2008).

Second, we applied the Portuguese version of the Protean Career Attitudes Scale (PCAS, Marques, 2017). It includes 14 items distributed by 2 factors: the self-directed career management factor includes items 1 to 8 (e.g., "Overall, I have a very independent, self-directed career."), and values-driven includes items 9 to 14 (e.g., "I navigate my own career, based on my personal priorities, as opposed to my employer's priorities."). The response is given in a 5-point Likert scale ranging from 1 (*to little or no extent*) to 5 (*to a*

great extent). Marques (2017) found good reliability indices ($0.75 < \alpha < 0.83$). The same was verified for the present study ($.66 < \alpha < .77$).

The academic engagement was accessed with the Portuguese version of the Utrecht Work Engagement Scale for Students (UWES-S, Cadime et al., 2016). This scale comprises 14 items distributed by 3 factors: absorption with 6 items (e.g., “I can get carried away by my studies.”), vigor with 6 items (e.g., “When I get up in the morning, I feel like going to class.”), and dedication with 5 items (e.g., “My studies inspire me.”). The response is given in a 7-point Likert scale ranging from 0 (*never*) to 6 (*every day*). Cadime et al. (2016) found good reliability indices ($.82 < \alpha < .86$). The same was verified for the present study ($.86 < \alpha < .94$).

The career self-management strategies were accessed by the Portuguese version of the Career Strategies Inventory (CSI, Matias, 2013). This inventory comprises 14 items distributed by 4 factors: networking with 4 items (e.g., “Built a network of contacts within the division for obtaining information about events, changes, or activities within the division”), creating opportunities with 3 items (e.g., “Tried to develop skills which may be needed to attain your career goal”), self-nomination with 3 items (e.g., “Make my supervisor aware of your accomplishment”), and sought career guidance with 4 items (e.g., “Discussing my career interests with others”). The response is given in a 5-point Likert scale ranging from 1 (*to a very small extent*) to 5 (*to a very large extent*). Matias (2013) found good reliability indices ($.77 < \alpha < .93$). The same was verified for the present study ($.66 < \alpha < .92$).

Procedure

Consent for the measure’s validation was obtained, followed by the analysis and translation of the items by two bilingual (Portuguese-English) researchers, both familiar with the measure. Afterwards, the items were back-translated from Portuguese to English by a third bilingual, external to the study, and with English language training. This last version was presented and discussed with Baruch, who approved the translation (items formulation in Appendix A.). The research protocol, approved by the Ethics Committee for Research in Social Sciences and Humanities (CEICSH 093/2021), was then built on SPSS Data Collection. Confidentiality and anonymity were guaranteed, and the study’s aim was presented at the beginning of the research protocol. The estimated completion time for the protocol was 10 minutes. Data collection took place between November 2020 and February 2021 and included two phases. In the first phase, the protocol was sent by email to several Portuguese student associations. In addition, some graduates and lecturers helped in the protocol’s dissemination. The participants did not receive any kind of material benefit or suffer any loss. For the second phase, the same Portuguese student associations were contacted, offering a free webinar on self-career management. To ensure greater adherence, a Saturday afternoon was chosen for the presentation. Firstly, the research was presented, and participants were asked to fill in the protocol. Later, the webinar took place and a participation certificate was offered. No losses were suffered by the participants.

Data analyses

Data were analyzed with the Statistical Package for Social Sciences (IBM SPSS), version 27.0 for Macintosh, and the Analysis of Moment Structures (AMOS), version 27.0 for Windows.

First, we verified the internal factor structure with sample A ($n = 199$) using the exploratory factor analysis. Kaiser-Meyer-Olkin (KMO)’s index above 0.7 and Bartlett’s p -value below 0.05 indicate sample adequacy (Tabachnick & Fidell, 2013). As the structure of measure was established in previous studies, the main component method was preferred. The selection criteria for the factorial solution were as follows: consistency with the theoretical framework underlying the measure; assessment of Cattell’s (1966) test; correlation matrix of the items; Kaiser criteria for factor retention (i.e., eigenvalues equal or greater than 1); and factor loadings retention equal or greater than 0.45 (Tabachnick & Fidell, 2013).

Second, we accessed measurement’s goodness-of-fit with sample B ($n = 288$) using the confirmatory factor analysis. As evidence of multivariate non-normality, found through Mardia’s coefficient, the Maximum Likelihood Estimation method with 500 samples bootstrap was used (Gilson et al., 2013). Outliers were identified through Mahalanobis’ Distance. Three outliers were found, hence, analyses with and without these extreme observations were run to control possible biases (Pinto et al., 2013). Due to goodness-of-fit variability, we preferred the results without outliers. A 1-factorial measurement model was specified (Baruch, 2014), and a factor loading was fixed to 1. Model fit was evaluated through χ^2/df , Root Means Square Error of Approximation (RMSEA) with a 90% confidence interval (CI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Goodness-Fit-Index (GFI), Standardized Root Mean Square Residual (SRMR), and Akaike Information Criterion (AIC). Values of χ^2/df lower than five are adequate (Arbuckle, 2008). Values of CFI, TLI, and GFI above 0.90, RMSEA below 0.08, and SRMR below 0.10 represent acceptable fit, whereas values above 0.95, below 0.06, and 0.05, respectively, represent good fit (Hu &

Bentler, 1999). AIC values were used for model fit comparison. Lower AIC values indicate a better fit (Tabachnick & Fidell, 2013). As evidence of a poor model fit, we followed Hooper et al. (2008) recommendations, removing squared multiple correlations lower than 0.20. Moreover, Cronbach's alpha with and without problematic items was also analyzed, both for exploratory and confirmatory analyses.

Reliability was accessed with Cronbach's alpha, Average Variance Extracted (AVE) and Composite Reliability (CR). AVE was used as a complement due to its lower sensitivity to the scale's number of items (Valentini & Damasio, 2016). Cronbach's alpha above 0.7 indicates good precision (Hair et al., 2020). The same happens for AVE values equal to or above 0.5, and CR values equal to or above 0.7 (Hair et al., 2020). Both AVE and CR indices were calculated in Microsoft Excel, version 16.39 for Macintosh, based on factorial weights presented in the exploratory factor analyses' component matrix. The formulas applied were, respectively, $\sum(\lambda^2)/[\sum(\lambda^2) + \sum \varepsilon]$ and $(\sum \lambda)^2/[(\sum \lambda)^2 + \sum \varepsilon]$ (Valentini & Damasio, 2016). Regarding convergent and concurrent validity, again the SPSS version 27.0 for Macintosh was used, and *Person* correlations were calculated for sample B.

RESULTS

Exploratory factor analysis

The sensitivity of the items is presented in Table 1. The values of skewness between -.84 and .35 and kurtosis between -.64 and 1.48 indicate suitable conditions to proceed with the exploratory factor analysis (EFA).

Table 1. Item analyses

	1	2	3	4	5	6	Min-Max	Mean	Skewness	Kurtosis
It1							1-5	3.82	-.36	-.09
It2	.43***						2-5	3.61	-.14	-.64
It3	.19***	.47***					1-5	2.54	.35	-.18
It4	.22*	.49***	.35***				1-5	4.00	-.83	.78
It5	.15	.44***	.30**	.57***			2-5	4.24	-.84	1.48
It6	.23*	.51***	.25**	.38***	.47***		2-5	3.98	-.40	.19
It7	.13	.26**	.16	.14	.23*	.31**	2-5	3.60	-.27	-.51

Note: It = item

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

The EFA results indicated the adequacy of the sample ($KMO = .789$), and the correlations between the items were sufficiently high to perform a main component analysis, $\chi^2(21) = 196.82$, $p < 0.000$. One component with eigenvalues over Kaiser's criteria of 1 was extracted, explaining 42.72% of the variance. This result was convergent with Cattell's (1966) test. Hence, one component was retained for further analysis. As evidence of only one component, no rotation was applied. All items, except number 7, presented factor loadings above the recommended 0.45 cutoff criteria (Table 2) (Tabachnick & Fidell, 2013). Therefore, the analysis was repeated without this item. An improvement in the total variance explained by the model is presented, approaching 50%. As a result, reliability analysis was run with and without item 7.

Table 2. Item's factor loadings from the Principal Component Analysis (sample A)

Items	Factor 1	Factor 1
1	.48	.48
2	.82	.82
3	.60	.61
4	.73	.75
5	.73	.73
6	.71	.70
7	.43	.
KMO test	.789	.777
Total items	7	6
Eigenvalue	2.99	2.86
Total variance explained (%)	42.72	47.68

Reliability analysis with all 7 items indicated good precision indices (AVE = .427, CR = .834, α = .755), which improved for the 6-item version (AVE = .468, CR = .837, α = .764). Overall, these preliminary analyses seem to indicate a 1-factor structure, with better results for the 6-item version. Nevertheless, considering the primacy of this scale's study in Portugal, both 6 and 7-item versions were tested in the confirmatory factor analysis.

Confirmatory Factor analysis

Considering the theoretical framework and previous EFA results, we first defined a 1-factorial measurement model, assuming 7 observable variables and one latent variable (M1). Although GFI, SRMR, and χ^2 /df indicated acceptable fit (i.e., above .90, below .10, and 5, respectively), the remaining indices were below the cutoff criteria (Table 3) (Hu & Bentler, 1999). Therefore, modification indices (MI) were explored, and the model was respecified. Correlation between errors from items 4 and 5 was established (M1'). Results indicate improvements in some fit indices, namely for CFI that is now above the recommended cutoff value of .90 (Hu & Bentler, 1999).

Table 3. Fit indices for the specified measurement models (sample B)

	χ^2 /df	CFI	TLI	GFI	SRMR	RMSEA (90% CI)	AIC
M1	4.102	.869	.804	.944	.061	.105 (.077-.133)	85.431
M1' (MI > 14)	2.907	.925	.879	.964	.051	.082 (.052-.113)	67.786
M2	3.979	.912	.854	.960	.051	.102 (.069-.139)	59.813

Note: M1 = model with 7 items; M1' = model with 7 items respecified with correlations between errors 4-5; M2 = model with 6 items (item 7 is excluded).

Nevertheless, the literature indicates correlating errors may mask underlying unrecognized factors, recommending a more parsimonious approach. A solution includes assessing the fit between the construct and each item and searching for low squared multiple correlations (Hooper et al., 2008). Overall, item analyses indicated a high error level for item 7 ($r^2 = 0.048$). Moreover, alpha reliability coefficients were computed in tandem for this new sample (i.e., sample B). An improvement was observed after excluding item 7 ($\alpha_{\text{complete scale}} = .698$, $\alpha_{\text{without item 7}} = .726$). These results seem in line with the EFA previously conducted. As a result, a second model assuming 6 observable variables and 1 latent variable was specified and run (M2). Overall, fit indices improved.

Comparing the two most well-adjusted models, M1' and M2, the latter is preferable due to its parsimony and lower AIC values (Hooper et al., 2008; Tabachnick & Fidell, 2013). Furthermore, the EFA previously run with sample A also indicates higher values of total variance explained by the model with 6 items. As a result, the following analyses were performed with the 6-item version.

Criterion-related validity

Convergent validity was examined through PCOS and PCAS correlations. Results indicated a large correlation effect between PCOS and PCAS, namely with the self-directed dimension (table 4) ($r \geq .50$, Cohen, 1988).

Concurrent validity was examined through PCOS and UWES-S correlations, as well as PCOS and CSI correlations (Table 4).

Table 4. Criterion-related validity (sample B)

	Protean career orientation
Self-directed attitude	.63
Values driven attitude	.41
PCAS total	.64
Absorption	.23
Vigor	.25
Dedication	.25
UWES-S total	.27
Networking	.21
Creating opportunities	.22
Self-nomination	.27
Sought career guidance	.23
CSI total	.28

Note: All correlations are significant at $p < .001$ level.

Correlations ranged from .21 to .28, indicating a moderate effect ($.30 \leq r < .50$, Cohen, 1988), which supported criterion-related validity. These values indicated that PCO accesses a distinct construct from UWES-S and CSI. Moreover, all the correlations between the constructs were positive and statistically significant.

DISCUSSION

This study sought to extend the study on PCOS psychometric properties. Specifically, evaluating its reliability, internal validity, and criterion-related validity in a sample of Portuguese university students. As expected, our results support the unidimensional nature of the construct (H1), which is in line with previous studies (Baruch, 2014; Cortellazzo et al., 2020; Herrmann et al., 2015; Ngo & Hui, 2018). However, when analyzing fit indices, we noticed improvements by excluding item 7. This evidence was found both in factor analyses and reliability indices. Unlike previous studies, especially the Brazilian validation that assessed this psychometric property, our results are far from the expected. While in the Brazilian version items 1 and 3 were excluded, the present sample excluded item 7. These results seem to support the idea that one's environment influences the construction of meaning about what a protean career orientation entails. As mentioned by Andrade et al. (2022), Brazil suffers from high unemployment rates, social inequalities, and scarce State support. Portugal, however, experiences these conditions to a lesser degree, and the internal security levels are higher, which decreases unpredictability feelings (Institute for Economics & Peace, 2022). These environmental differences may justify why Brazilians understand flexibility (i.e., core concept in item 7) as protean and the Portuguese do not. In a dynamic context that is, at the same time, reasonably predictable, individuals may consider that only in a structured vocational context will they be capable of control, influence, and, therefore, managing their career path. Flexibility, in turn, might be interpreted as a symbol of uncertainty and unclarity. These results may indicate that career agency for the Portuguese people depends more on how autonomous, free, and responsible they are for their chosen path than on work flexibility. Nevertheless, further studies are needed: either by reproducing our approach in other samples of Portuguese university students or by extending the study to other groups (e.g., adolescents, job seekers). When including more than one group, we suggest testing the measure's metric invariance to understand its consistency across groups.

As for the internal validity, good reliability indices were found, supporting H2. The same happens among American (Baruch, 2014), Italian (Cortellazzo et al., 2020), and German (Herrmann et al., 2015) university students. Therefore, our findings reinforce the idea that the PCOS measure is faithful to the protean career orientation construct's definition (Hall, 1976).

Convergent validity results indicate significant correlations between PCOS and PCAS, namely with the self-directed dimensions of the latter. Hence, our results support H3. The evidence is in agreement with Hall et al.'s (2018) statement. According to these authors, Baruch's (2014) PCOS "focus mainly on self-directed and career success" (p.135). We agree. Despite the existence of items about personal values (e.g., item 6, "Freedom and autonomy are driving forces in my career") the self-directed dimension is dominant (e.g., item 4 "I am in charge of my own career"). Nevertheless, the PCOS is consistent with the original concept of protean orientation (Hall, 1976), accessing this construct with a reduced number of items. In addition, we may assume that Baruch responds to Gubler et al.'s (2014) suggestion by bringing the underlying processes of PCO into the formulation of the items. For example, the adaptability process can be identified in item 2 ("I navigate my own career, mostly according to my plans"). Navigating through one's career involves taking action and replying to challenges that arise, which matches the adaptability definition (Hall et al., 2018). Meanwhile, the identity awareness process can be identified in item 1 ("For me, career success is how I am doing against my goals and values"). Here the meaning of career success is assigned to how well a person is doing against their goals and values. As stated by Hall et al. (2018), identity awareness is defined as a meaning-making process. Therefore, we assert that Baruch's PCOS is an adequate measure to evaluate one's PCO, offering a shorter alternative to PCAS.

Concurrent validity analyses indicate significant positive correlations between protean career orientation and academic engagement, which meets Ngo and Hui's (2018) results. These authors found the same pattern for work engagement among a sample of Chinese employees, also reporting that work engagement may be a mediator between this proactive career attitude and career satisfaction. Regarding career strategies, our results indicate significant and positive correlations between this variable and the protean career orientation. This evidence was also found in previous studies. For example, Kaur and Kaushik (2020) indicate positive relations between protean career orientation and strategies such as networking, career exploration, and learning. Together this evidence supports H4 and highlights the importance of fostering university students' protean orientation. This orientation can motivate students to actively engage in the learning processes. Moreover, it can empower students to actively manage their

careers, ensuring their lifelong employability. Furthermore, the moderate effects found between these variables underline that PCOS evaluates attitudes rather than beliefs or behaviors (Cadime et al., 2016; Matias, 2013).

Theoretical and Practical Implications

Our study's strengths include the extension of protean career orientation research to university students. Specifically, our findings introduce a new reliable and valid measure to assess this group's protean orientation toward a career. On the one hand, this allows for theoretical advances in the psychological assessment literature, providing a shorter alternative measure for PCAS – Portuguese version. PCOS may, therefore, be used by researchers and practitioners. We believe its reduced size may be especially attractive for large surveys and practical work that requires a short administration time (e.g., organizational contexts and research follow-up). As a result, we hope to motivate further studies on protean orientation within the Portuguese context. A second theoretical advance comprises our findings supporting possible differences in the protean career orientation conceptualization. Specifically, among individuals living in countries with distinct cultures and work structures, such as Portugal and Brazil (Institute for Economics & Peace, 2022; United Nations, 2022). We believe that our findings, when compared to the Brazilian PCOS validation (Andrade et al., 2022), contribute to the ongoing debate about the psychosocial nature of protean orientation and its consequent impact on individuals' assessment (e.g., Hall et al., 2018; Kostal & Wiernik, 2017).

Other strengths of the present study include some practical advances. PCOS will be useful to monitor career interventions focused on developing students' protean orientation, as well as guiding educational and supervision processes. For example, Baruch (2014, p.2718) states that protean individuals "tend to take initiatives, and to be engaged with self-setting their training needs". In contrast, less protean individuals may be more dependent on external feedback. This thesis is also supported by other authors, such as Briscoe and Hall (2006), who further state that even protean people can present different profiles. As a result, it will be necessary to adapt educational and supervision strategies to capture each student's profile, maintaining their interest and engagement. While protean students might benefit from a less structured approach, with openness for reflection, self-planning, and personal choice; traditional students might prefer a proximal, more directive approach. The PCOS items may thus be a guide for teachers and supervisors to understand students' preferences. Regarding career interventions, we believe it will be advantageous to include PCOS in the evaluation toolkit, either as a means of initial assessment or process monitoring.

Limitations and future research directions

Without underrating these theoretical and practical contributions, we need to mention this study's limitations. First, the cross-sectional design adopted prevented us from analyzing PCOS test-retest reliability. As stated by Hall et al. (2018), one's protean orientation toward a career is a dynamic process. Therefore, further longitudinal research on the measure is needed to assure that findings are justified by individual rather than metric differences. Another aspect to point out is the focus on university students. Although this feature broadens the study of protean career orientation to this specific group, we agree that further studies are needed. Especially, among groups such as high school students or people with some physical or psychological disability, for example. In this regard, studies with more than one group might be advantageous to evaluate the measure's invariance.

Conclusion

To conclude, PCOS seems to be a psychometrically sound instrument to measure one's protean career orientation. Namely, among Portuguese university students. Our findings support its reliability and validity after the item 7 exclusion. Therefore, we hold that the PCOS might be an economical and pertinent alternative to the PCAS – Portuguese version. This 6-item alternative might be suitable for studies with large protocols, as well as practical purposes for university students' career counseling and assessment. Specifically, this measure might motivate further studies on the protean career orientation nomological network. Moreover, whether in educational or organizational settings (e.g., trainees), PCOS may also facilitate the adaptation of teaching and supervision methods through the information gathered on students' protean patterns. Meanwhile, career counselors will find PCOS a useful ally to monitor their practice. As indicated by previous studies, adopting a protean orientation toward a career is advantageous, because it improves one's employability outcomes and career satisfaction (e.g., Cortellazzo et al., 2020; Kaur & Kaushik, 2020; Stauffer et al., 2019). Therefore, we hope to motivate further interventions in the field. Nevertheless, more studies are needed. Mainly to extend the PCOS study to other Portuguese groups and cultures.

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Joana Soares: Conceptualization; Funding acquisition; Literature Review; Data collection; Data analysis; Data interpretation and discussion; Manuscript writing. **Maria do Céu Taveira:** Conceptualization; Funding acquisition; Data interpretation and discussion; Manuscript review. **Ana Daniela Silva:** Data collection; Manuscript review.

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