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RESEARCH

Psychometric Properties of the Portuguese Version of the Autotelic Personality Questionnaire

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Abstract

Flow theory provides a comprehensive framework for understanding intrinsically rewarding experiences, yet individuals differ markedly in their propensity to experience flow across situations. To explain these differences, the construct of autotelic personality has been proposed, referring to a dispositional configuration of motivational and attentional characteristics that facilitate deep engagement in activities. The present study aimed to adapt and validate the Autotelic Personality Questionnaire (APQ) for the Portuguese context. A total of 915 Portuguese adults completed the Portuguese version of the APQ along with measures of dispositional flow, personality traits, positive mental health, and psychological distress. Confirmatory factor analyses did not support the original second-order structure; instead, a first-order model with seven correlated factors demonstrated adequate fit. Bifactor analyses indicated that the use of a global score was not justified, supporting a multidimensional interpretation of autotelic personality. The Portuguese APQ showed adequate to excellent reliability across all subscales and evidence of configural, metric, and scalar invariance across educational groups. Known-groups validity analyses revealed small but meaningful differences according to educational attainment. Convergent and divergent validity were supported through theoretically consistent associations with flow proneness, personality traits, well-being, and distress. Overall, the findings support the psychometric adequacy of the Portuguese APQ and reinforce the conceptualization of autotelic personality as a multidimensional motivational–attentional system, with implications for applied research in positive psychology.

Keywords Autotelic personality · Flow proneness · Positive psychology · Psychometric validation · Well-being

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1 Introduction

Flow theory offers one of the most comprehensive accounts of intrinsically rewarding human experience. Csikszentmihalyi (1975, 1990) described flow as a state of optimal experience characterized by deep concentration, a merging of action and awareness, a sense of control, altered perception of time, and an intrinsically rewarding engagement with the task. Although such experiences can arise in a variety of contexts, the balance between perceived challenges and perceived skills is fundamental for eliciting flow (Nakamura & Csikszentmihalyi, 2014). Importantly, individuals differ markedly in how readily they enter and sustain these states, even when exposed to similar circumstances (Ullén et al., 2012). These individual differences are consequential: more frequent flow experiences are associated with higher well-being, vitality, creativity, academic and professional performance, and more adaptive patterns of emotional functioning (Asakawa, 2010; Rankin et al., 2019).

To explain why some individuals reliably experience flow while others do not, Csikszentmihalyi (1988) introduced the construct of the autotelic personality. Autotelic individuals engage in activities for their inherent value rather than for external rewards, and they derive enjoyment from the process of action itself. They tend to be curious, persistent, intrinsically motivated, less self-centered, and capable of sustaining focused attention. These characteristics facilitate deep engagement and support the psychological conditions necessary for optimal experience. Empirical research confirms that individuals with autotelic tendencies experience flow more frequently, report higher satisfaction with life, and display greater resilience and overall psychological adjustment (Tse et al., 2018).

1.1 Theoretical Models of Autotelic Personality

A comprehensive understanding of autotelic personality emerges from complementary theoretical perspectives that conceptualize it not as a single trait, but as a motivational–attentional system that increases the likelihood of experiencing flow across diverse contexts. These models converge in emphasizing regulatory processes that enable individuals to transform activities into intrinsically rewarding experiences.

The first influential framework is the metaskills model (Nakamura & Csikszentmihalyi, 2002), which conceptualizes autotelic tendencies as a constellation of higher-order psychological capacities, including sustained attentional focus, intrinsic motivation, emotional regulation, and persistence. These metaskills operate as self-regulatory mechanisms that allow individuals to engage deeply with tasks, maintaining concentration and interest even under conditions of increased complexity or demand. Through these capacities, individuals are better able to preserve the balance between perceived challenges and personal skills that is central to the emergence of flow. From this perspective, autotelic personality reflects an internally grounded configuration of cognitive–motivational dispositions that supports immersion, curiosity, and intrinsic satisfaction during activity engagement.

Extending this view, the receptive–active model (Baumann, 2012; Csikszentmihalyi et al., 1993), further elaborated by Baumann (2021), frames autotelic personality as a dynamic pattern of interaction between the individual and the environment.

This model distinguishes two complementary orientations. The receptive orientation refers to openness to situational affordances, sensitivity to emerging opportunities, and a tendency to construe challenges as invitations for exploration rather than as threats. The active orientation captures the capacity to mobilize effort, sustain goal-directed engagement, and invest psychological energy in response to these perceived challenges. Autotelic individuals are thus characterized not only by heightened perception of potential challenges but also by an active readiness to respond to them through purposeful action.

A key contribution of Baumann's (2021) conceptualization is the emphasis on self-regulatory and volitional processes underlying autotelic functioning. Rather than equating autotelic personality with general intrinsic motivation or with broad personality traits, this approach highlights mechanisms such as attentional stability, flexible goal internalization, and affect regulation as central processes that enable individuals to actively structure situations in ways that support flow. Importantly, this implies that autotelic personality is context-responsive and process-based, allowing externally imposed demands to be transformed into self-concordant and engaging activities.

Taken together, the metaskills and receptive–active models position autotelic personality as a multidimensional and adaptive system, integrating internal competencies with situational engagement. Whereas the metaskills model foregrounds the intrapersonal capacities that sustain attentional absorption and intrinsic engagement, the receptive–active model underscores the transactional nature of autotelic functioning, whereby individuals actively co-construct optimal experiences through their interaction with environmental challenges. This integrative perspective supports the view that autotelic personality is not a static trait but a regulatory pattern that shapes how individuals perceive, interpret, and act upon situational demands.

More recent work has tentatively expanded these models by incorporating insights from existential and meaning-centered perspectives. Drawing on Frankl's (1963) conceptualization of meaning, Osin et al. (2016) explored whether self-transcendence, the capacity to orient attention beyond immediate personal concerns toward broader sources of meaning, may influence flow proneness. Their pilot findings suggested a non-linear association: self-transcendence appeared to facilitate flow in contexts characterized by ambiguity or emerging meaning, but was associated with reduced flow in situations already perceived as highly meaningful, possibly due to increased self-reflection or interpretative complexity. Although preliminary and in need of replication, these results suggest that autotelic functioning may also be shaped by meaning-making processes, adding further nuance to existing models and reinforcing the need for theoretically grounded and psychometrically sensitive instruments to capture the complexity of autotelic personality.

1.2 Operationalization and Psychometric Approaches

Despite the richness of these theoretical accounts, the operationalization of the autotelic personality has developed unevenly. Historically, many studies relied on indirect indicators such as dispositional flow proneness, measured through the Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2002). Johnson et al. (2014) used the DFS-2 as a proxy for autotelic personality, finding strong internal validity and associations

with personality traits. However, such measures arguably conflate trait tendencies with contextual opportunities for flow and do not directly assess the motivational and attentional features central to autotelic personality. Other approaches, such as the use of existential orientations (Osin et al., 2016), highlight meaning-related moderators but provide limited direct assessment of autotelic traits.

The first instrument explicitly developed to measure autotelic personality is the Autotelic Personality Questionnaire (APQ) proposed by Tse et al. (2018). Grounded in Csikszentmihalyi's theoretical model, the APQ conceptualizes autotelic personality as a constellation of dispositional characteristics such as curiosity, persistence, attentional control, intrinsic motivation, low self-centeredness, enjoyment and transformation of challenge, and the capacity to transform boredom into engaging experiences. Across three studies, the APQ demonstrated strong internal consistency, test–retest reliability, and longitudinal invariance, and showed convergent validity through associations with conscientiousness, openness to experience, extraversion, neuroticism and internal locus of control. Criterion validity was evidenced by the prediction of flow proneness, life satisfaction, and the intensity of flow states during a laboratory task, positioning the APQ as a psychometrically robust and theoretically coherent measurement tool.

However, an important limitation of the existing literature concerns the lack of cross-cultural validation. The APQ was developed and validated within a single cultural setting, and neither Johnson et al. (2014) nor Osin et al. (2016) assessed cultural generalizability or tested measurement invariance across different populations. This is a significant omission, given that core elements of autotelic personality, such as autonomy, intrinsic motivation, openness to challenge, and meaning-making styles, are known to be shaped by cultural values and socialization processes. Without empirical evidence from diverse cultural contexts, it remains uncertain whether current instruments assess a universal psychological disposition or reflect culture-bound manifestations of engagement and intrinsic motivation. This gap limits the external validity of existing findings and highlights the need for culturally sensitive adaptation and validation studies that can clarify the cross-cultural robustness of the autotelic personality construct.

The present study addresses this limitation by adapting and validating the Autotelic Personality Questionnaire for the Portuguese population. Following internationally recommended guidelines for test adaptation, the study includes translation and back-translation procedures, expert review for semantic and conceptual equivalence, cognitive interviewing to assess clarity and cultural relevance, and pilot testing to examine the factorial structure and reliability of the Portuguese version. By establishing a culturally robust and psychometrically sound measure of autotelic personality in Portugal, this study contributes to clarifying the universality and cultural contours of this theoretically important construct.

1.3 Present Study

The present study aims to adapt and validate the Autotelic Personality Questionnaire (APQ) for the Portuguese adults. Specifically, it seeks to (a) conduct a rigorous cultural and linguistic adaptation of the APQ; (b) examine its factorial structure through

confirmatory factor analyses; (c) evaluate its reliability; (d) examine its measurement invariance across participants with and without a higher education degree; (e) assess evidence of known-groups validity by comparing APQ scores between participants with and without a higher education degree; and (f) test convergent and divergent validity through associations with dispositional flow (DFS-2), Big Five personality traits (TIPI), positive mental health (MHC-SF), and psychological distress (DASS-21).

2 Method

2.1 Participants

The sample consisted of 915 Portuguese adults recruited through convenience sampling across mainland Portugal and the islands. These participants were aged between 18 and 74 years old ($M = 34.57$; $SD = 13.55$) and were mainly female ($n = 708$, 77.4%). The majority had a medium socioeconomic level ($n = 609$; 66.6%), a higher education degree ($n = 513$; 56.1%), were single ($n = 503$; 57.0%) and employed ($n = 845$; 92.3%).

2.2 Measures

2.2.1 Sociodemographic questionnaire

Sociodemographic data were systematically collected via a self-report questionnaire specifically developed for sample characterization. This instrument comprised items assessing participants' age, gender, socioeconomic status (categorized as low, lower-middle, middle, upper-middle, or high), educational attainment, marital status, and employment. These variables served dual purposes: providing descriptive statistics for the sample and facilitating exploratory analyses to identify potential demographic correlates of the psychological constructs under investigation.

2.2.2 Autotelic Personality Questionnaire (APQ)

Dispositional traits related to engagement and intrinsic enjoyment in everyday activities were assessed using the Autotelic Personality Questionnaire (APQ) (Tse et al., 2018). The comprehensive APQ comprises 26 items distributed across seven distinct subscales. Responses are recorded on a 7-point Likert scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree), with higher scores indicating a greater manifestation of autotelic characteristics. The subscales and corresponding item numbers are:

- Curiosity: Items 1, 8, 15, 22.
- Persistence: Items 2, 9, 16, 23.
- Low Self-Centeredness: Items 3, 10, 17, 24.
- Intrinsic Motivation: Items 4, 11, 18, 25.
- Engagement and Transformation of Challenges: Items 5, 12, 19.
- Engagement and Transformation of Boredom: Items 6, 13, 20, 26.

- Attentional Control: Items 7, 14, 21.

Mean scores were computed for both each subscale. The interpretability of a total scale score was evaluated but not retained for interpretation. The APQ has demonstrated robust psychometric properties, including excellent internal consistency ($\alpha = 0.92$ for the total scale; subscale's α coefficients varied from 0.70 for Intrinsic Motivation to 0.93 for Persistence and Low Self-Centeredness), strong test–retest reliability, and evidence of longitudinal measurement invariance (Tse et al., 2018). Furthermore, autotelic traits, as measured by the APQ, have been empirically shown to predict life satisfaction and the proclivity to experience flow states.

2.2.3 Ten-Item Personality Inventory (TIPI)

To measure the Big Five personality dimensions, the short-form Ten-Item Personality Inventory (TIPI) (Gosling et al., 2003; Nunes et al., 2018) was utilized. While the original Big Five Inventory is a 44-item instrument designed to assess Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Costa & McCrae, 1987), the TIPI offers a time-efficient alternative. The TIPI measures the dimensions of Extraversion, Agreeableness, Conscientiousness, Emotional Stability (the inverse of Neuroticism), and Openness to Experience, with each dimension represented by two items (one positively-keyed and one negatively-keyed). Participants respond on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

The TIPI was selected due to its brevity and its established acceptable test–retest reliability and convergent validity with more comprehensive Big Five instruments. The validated Portuguese version of the TIPI (Nunes et al., 2018) was employed in the current study.

In the current study, the internal consistency of the inventory was adequate for Extraversion and Emotional Stability ($\alpha = 0.69$ and $\alpha = 0.60$, respectively), but was low for the other three dimensions (Cronbach's α ranging between 0.42 and 0.54). This pattern is consistent with the known limitations of very brief two-item personality measures and was therefore considered when interpreting convergent validity findings involving the TIPI.

2.2.4 Dispositional Flow Scale-2 (DFS-2)

The Dispositional Flow Scale-2 (DFS-2) (Jackson & Eklund, 2002) was administered to assess participants' propensity to experience flow states in achievement-related contexts. The scale is composed of 36 items, with four items dedicated to each of the nine distinct dimensions of the flow experience:

- Autotelic Experience (Items 9, 18, 27, 36).
- Altered Perception of Time (Items 8, 17, 26, 35).
- Loss of Self-Consciousness (Items 7, 16, 25, 34).
- Sense of Control (Items 6, 15, 24, 33).
- Concentration (Items 5, 14, 23, 32).

- Perceived Performance (Items 4, 13, 22, 31).
- Clarity of Objectives/Goals (Items 3, 12, 21, 30).
- Task Engagement/Action-Awareness Merging (Items 2, 11, 20, 29).
- Challenge-Skill Balance (Items 1, 10, 19, 28).

Items are rated on a 5-point Likert scale (1 = never, 5 = always). Subscale scores can range from a minimum of 4 to a maximum of 20 points, while the total dispositional flow score ranges from 36 to 180 points. Higher scores denote a greater likelihood of flow experiences during the performance of an activity.

The factorial validity and internal consistency of the Portuguese DFS-2 were confirmed in a validation study with a sample of Portuguese athletes (Gouveia et al., 2012). Reported Cronbach's α coefficients for the Portuguese subscales ranged from 0.74 (Concentration) to 0.91 (Loss of Self-Awareness), demonstrating adequate to excellent reliability. In the current study, similar values were obtained, with Cronbach's α coefficient ranging between 0.79 and 0.91 for all subscales.

2.2.5 Mental Health Continuum – Short Form (MHC-SF)

Positive mental health was assessed using the Mental Health Continuum – Short Form (MHC-SF) (Keyes, 2005), which has been translated and validated for the Portuguese population (Fonte et al., 2020). The instrument evaluates well-being across three core domains: Emotional well-being (e.g., happiness, life satisfaction), Social well-being (e.g., social contribution, integration), and Psychological well-being (e.g., autonomy, purpose, personal growth). The MHC-SF consists of 14 items rated on a 6-point Likert scale ranging from 0 (Never) to 5 (Every day), reflecting the frequency of experiencing each state over the past month. The Portuguese version exhibits strong psychometric properties. In the current investigation, the internal consistency was high across all subscales, with Cronbach's α values ranging from $\alpha = 0.86$ to $\alpha = 0.92$.

2.2.6 Depression, Anxiety, and Stress Scale (DASS-21)

The Depression, Anxiety, and Stress Scale – 21 items (DASS-21) (Lovibond & Lovibond, 1995) was employed as a self-report measure of symptoms related to depression, anxiety, and stress. The scale, adapted and validated for the Portuguese population (Pais-Ribeiro et al., 2004), comprises 21 items equally distributed into three distinct subscales. Participants rate the degree to which each statement applied to them over the past week, utilizing a 4-point Likert scale from 0 (Did not apply to me at all) to 3 (Applied to me most of the time). Raw subscale scores (ranging from 0 to 21) are multiplied by a factor of two to permit comparison with established severity cut-off scores. The Portuguese DASS-21 has shown adequate reliability, with reported Cronbach's α coefficients between 0.74 and 0.85 (Pais-Ribeiro et al., 2004). In the present study, the internal consistency was good to excellent across all subscales, with α values ranging from 0.87 to 0.91.

2.2.7 Procedures

Ethical approval was obtained from an institutional ethics committee (reference available upon request). The study's initial phase focused on the cross-cultural adaptation and psychometric validation of the Autotelic Personality Questionnaire (APQ) (Tse et al., 2018) for the Portuguese population, following explicit written authorization from the original authors.

2.2.8 Instrument Adaptation

The adaptation protocol adhered to rigorous international guidelines for the translation and cultural adaptation of psychological instruments.

1. The original English APQ was independently translated into Portuguese by two native Portuguese speakers proficient in English and trained in psychological methodology.
2. A consensus version was generated through a comparative review and discussion of the two initial translations.
3. This consensus Portuguese version was then back-translated into English by a native English speaker fluent in Portuguese.
4. Semantic equivalence was verified by comparing the back-translated version against the original English instrument to ensure conceptual fidelity and cultural appropriateness.

2.2.9 Data Collection

The resultant Portuguese APQ was initially pilot tested in person with a small, preliminary sample to evaluate item clarity and internal consistency, leading to minor refinements.

Table 1 presents the original 26 items of the APQ and the final version of the Portuguese APQ.

The final version was integrated into the main data collection phase, administered via an online survey platform.

Participants were recruited using a non-probabilistic snowball sampling methodology. The survey link was disseminated through the research team's professional and personal networks, with participants encouraged to further distribute the study invitation. Inclusion criteria mandated participants be at least 18 years of age, fluent in Portuguese, and willing to provide informed consent. No limitations were imposed regarding gender or relationship status, ensuring a diverse and broad sample.

2.2.10 Ethical Considerations and Quality Control

Prior to accessing the survey, participants were provided with comprehensive information detailing the study's objectives, procedures, and ethical safeguards, including explicit assurances of anonymity and data confidentiality. Informed consent was obtained electronically by requiring the selection of an agreement checkbox to pro-

Table 1 Autotelic Personality Questionnaire's items with corresponding Portuguese translation

Items
1. I am curious about the world. / Tenho muita curiosidade acerca do mundo
2. I am good at finishing projects. / Sou bom a terminar projetos
3. I worry about how people view me. / Preocupo-me com a forma como as pessoas me veem
4. I would choose a job that I enjoy over a job that pays more. / Escolheria mais facilmente um trabalho que me satisfaça a um trabalho melhor pago
5. I enjoy playing difficult games. / Gosto de (jogar) jogos difíceis
6. I have fun doing things that others say are boring. / Divirto-me a fazer coisas que os outros consideram aborrecidas
7. I find it hard to choose where my attention goes. / Para mim é difícil escolher para onde dirigir a minha atenção
8. I actively seek all the information I can about a new situation. / Perante uma situação nova, procuro ativamente toda a informação possível.
9. When a task becomes difficult, I keep going until I complete it. / Quando uma tarefa se torna difícil, persisto até a conseguir finalizar
10. I worry about being laughed at. / Preocupo-me que as outras pessoas possam rir-se de mim
11. I think the process of completing a task is its own reward. / Para mim terminar uma tarefa é uma recompensa por si só.
12. I would prefer a job that is challenging over a job that is easy. / Prefiro um trabalho desafiante a um trabalho fácil
13. I am able to find pleasure even in routine types of work. / Consigo sentir prazer mesmo em trabalhos rotineiros
14. I get distracted easily. / Distraio-me facilmente
15. I take time to explore my surroundings. / Perco tempo a explorar o que há à minha volta
16. I complete tasks even when they are hard. / Termino as tarefas mesmo quando são difíceis
17. I am easily affected by others' impressions of me. / Deixo-me afetar facilmente pelo que as outras pessoas pensam sobre mim.
18. I care more about enjoyment of a task than rewards associated with it. / Dou mais importância ao prazer que sinto em realizar uma tarefa do que às recompensas que possa obter com ela
19. I like solving complex problems. / Gosto de resolver problemas complexos
20. Repetitive tasks can be enjoyable. / Acho que as tarefas repetitivas podem ser agradáveis
21. It is hard for me to stay on task. / É difícil para mim permanecer envolvido numa tarefa
22. Curiosity is the driving force behind much of what I do. / É a curiosidade que me move na maior parte das coisas em que me envolvo.
23. I keep working on a problem until I solve it. / Continuo a trabalhar num problema até que o consiga resolver
24. I am afraid of making the wrong impression. / Tenho receio em causar uma impressão errada sobre mim
25. What matters most to me is enjoying the things I do. / O mais importante para mim é apreciar aquilo que faço
26. I make a game out of chores. / Consigo entreter-me com pequenas tarefas e fazer delas um desafio.

ceed. No personally identifiable information (e.g., name, email address, IP address) was collected, and participants received no financial compensation. The estimated completion time for the full battery of questionnaires was approximately 20 to 30 min.

To maintain data quality, attention-check items (e.g., "Please select 'Strongly Agree' for this item") were embedded within the survey to identify careless or random response patterns. Participants who failed these checks or submitted substantially incomplete responses were systematically excluded from the final dataset. All survey responses were stored securely on a password-protected platform, with access

strictly limited to the research team. Data analysis was subsequently performed using the Statistical Package for the Social Sciences (SPSS) software (version 29.0) and R (version 4.4.0).

2.2.11 Data analyses

R (version 4.4.0) packages *psych* (version 2.4.3), *lavaan* (version 0.6–19), *semTools* (version 0.5-6), and *performance* (version 0.15.0), were used to perform descriptive analyses, confirmatory factor analyses (CFA), reliability analyses, and measurement invariance. SPSS (version 29) was used to perform all other analyses.

The original second-order model of the APQ was examined through CFA. WLSMV (Weighted Least Squares Mean and Variance adjusted) estimator, specifically designed for ordinal data Li (2016), was used. The Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA; 90% CI RMSEA), and the Standardized Root Mean Squared Residual (SRMR) were used to assess goodness of fit, with values of CFI ≥ 0.90, TLI ≥ 0.90, RMSEA ≤ 0.08, and SRMR ≤. 08 being considered adequate (Kline, 2016; Marôco, 2014). In accordance with Marôco (2014), RMSEA values slightly over 0.08 were also considered acceptable, but only when the upper bound of the RMSEA 90% confidence interval was lower than 0.10. Despite being sometimes used to assess the goodness of fit of the models, the Chi-square test is very sensitive to sample size (Marôco, 2014). Therefore, we chose not to use it to assess the goodness of fit of our models; nevertheless, it was decided to report both the Chi-square statistic (χ^2) and its degrees of freedom in the results that will be presented.

Since the fit of the original second-order model was not adequate, a first-order model with seven correlated factors was considered and the interpretability of a total score was assessed through a bifactor model. The fit of these models was also evaluated through CFA. Furthermore, the omega hierarchical (omegaH), the explained common variance (ECV), and the percentage of uncontaminated correlations (PUC) were calculated using Dueber (2017) calculator. The use of a total score was considered justified only if omegaH > 0.80, ECV > 0.70, and PUC > 0.70.

The internal consistency measures ordinal Cronbach's alpha (α) and McDonald's omega coefficient (ω), and the corrected item – total correlations were used to assess reliability. Values of alpha and omega equal to or higher than 0.70 (Field, 2013), and corrected item-total correlations higher than 0.30 (De Vaus, 2002) were considered adequate, with values of the internal consistency measures equal to or higher than 0.60 also being considered acceptable.

Measurement invariance by groups defined by having or not a higher education degree was evaluated using multi-group analysis. First, the fit of the model in each group was assessed and configural invariance was evaluated by assessing the fit of the model simultaneously adjusted to both groups. Afterwards, following the guidelines of Svetina et al. (2019) and Wu and Estabrook (2016), increasing constraints were imposed to thresholds, factor loadings (metric invariance) and intercepts (scalar invariance), and, at each level, constrained and free models were compared using Satorra and Bentler (2001) proposed scaled chi-square difference test, ΔCFI and ΔRMSEA. A significant chi-square difference test supplemented by ΔCFI ≤ −0.002

and ΔRMSEA ≥ 0.010 were used as a criterion for lack of invariance (Rutkowski & Svetina, 2017).

Known-groups validity was assessed by comparing APQ scores between those who have and those who have not a higher education degree. A MANOVA (Multivariate Analysis of Variance) was performed, after having validated the assumptions of multivariate normality and homogeneity of the variance-covariance matrix (Pestana & Gageiro, 2020). Since statistically significant differences between both groups were found, posterior ANOVAs (Analysis of Variance) were performed, one for each subscale. The estimate of effect size partial eta squared (η_p^2) was calculated, with $\eta_p^2 = 0.0099$, $\eta_p^2 = 0.0588$, and $\eta_p^2 = 0.1379$ representing small, medium, and large effects, respectively (Cohen, 1988). Convergent and divergent validity was assessed by correlating APQ scores with TIPI, DFS-2, MHC-SF, and DASS-21. Pearson's correlations were considered, with $.10 \leq |r| \leq .29$, $.30 \leq |r| \leq .49$, and $.50 \leq |r| \leq 1.00$ representing weak, moderate, and strong correlations, respectively (Cohen, 1988).

A significance level of 0.05 was considered.

3 Results

3.1 Reliability

Table 2 presents the descriptive statistics of all APQ's items and of all APQ's subscales. Corrected item-total correlations and internal consistency measures ordinal Cronbach's alpha and McDonald's omega are also presented.

As can be seen in Table 2, all ordinal Cronbach's alphas and McDonald's omega coefficients were acceptable, and all corrected item-total correlations were adequate.

3.2 Confirmatory Factor Analysis

The original second-order model with seven first-order factors, 26 items and one second-order factor did not present an adequate fit ($\chi^2(292) = 2582.710$, $p < .001$; RMSEA = 0.093; 90% CI RMSEA = 0.089-0.096; SRMR = 0.076; CFI = 0.898; TLI = 0.886). However, when considering a first-order model with seven correlated factors and 26 items, the fit was adequate ($\chi^2(278) = 1770.885$, $p < .001$; RMSEA = 0.077; 90% CI RMSEA = 0.073-0.080; SRMR = 0.057; CFI = 0.933; TLI = 0.922). A bifactor model was also evaluated and, according to most fit indices, the fit was adequate, but worse than the first-order model ($\chi^2(273) = 2063.194$, $p < .001$; RMSEA = 0.085; 90% CI RMSEA = 0.081-0.088; SRMR = 0.068; CFI = 0.920; TLI = 0.905).

Figure 1 presents the first-order model with seven correlated factors, 26 items, and standardized factor loadings, all of which reached statistical significance.

We note that, according to Fig. 1, the correlations between some of the first-order factors are very low, which also does not provide support for a higher-order factor. In addition, although PUC and omegaH values were high (PUC = 0.89, omegaH = 0.81), ECV was very low (ECV = 0.51). Therefore, consistent with theoretical

Table 2 Descriptive statistics and reliability of the Autotelic Personality Questionnaire ($n = 915$)

Subscales	Item	Range	M (SD)	P25	P50	P75	α	ω	cITC
Curiosity		2.25-7.00	5.57 (0.88)	5.00	5.75	6.25	0.76	0.72	
	1	1.00–7.00	6.28 (1.01)	6.00	7.00	7.00			0.46
	8	1.00–7.00	5.75 (1.17)	5.00	6.00	7.00			0.48
	15	1.00–7.00	5.09 (1.33)	4.00	5.00	6.00			0.54
	22	1.00–7.00	5.16 (1.35)	4.00	5.00	6.00			0.47
Persistence		1.25-7.00	5.62 (1.00)	5.00	5.75	6.50	0.89	0.87	
	2	1.00–7.00	5.48 (1.25)	5.00	6.00	6.00			0.60
	9	1.00–7.00	5.73 (1.17)	5.00	6.00	7.00			0.75
	16	1.00–7.00	5.71 (1.16)	5.00	6.00	7.00			0.77
	23	1.00–7.00	5.55 (1.19)	5.00	6.00	6.00			0.72
Low Self-Centeredness		1.00–7.00	3.65 (1.53)	2.50	3.50	4.75	0.90	0.88	
	3	1.00–7.00	3.08 (1.60)	2.00	3.00	4.00			0.67
	10	1.00–7.00	3.98 (1.89)	2.00	4.00	6.00			0.76
	17	1.00–7.00	4.15 (1.89)	3.00	4.00	6.00			0.77
	24	1.00–7.00	3.39 (1.80)	2.00	3.00	5.00			0.73
Intrinsic Motivation		2.00–7.00	5.67 (0.88)	5.00	5.75	6.25	0.71	0.65	
	4	1.00–7.00	5.70 (1.38)	5.00	6.00	7.00			0.38
	11	1.00–7.00	5.96 (1.18)	5.00	6.00	7.00			0.42
	18	1.00–7.00	5.29 (1.31)	4.00	5.00	6.00			0.48
	25	2.00–7.00	5.74 (1.12)	5.00	6.00	7.00			0.44
Engagement and Transformation of Challenges		1.00–7.00	5.18 (1.16)	4.33	5.33	6.00	0.76	0.72	
	5	1.00–7.00	4.80 (1.64)	4.00	5.00	6.00			0.47
	12	1.00–7.00	5.56 (1.29)	5.00	6.00	7.00			0.53
	19	1.00–7.00	5.18 (1.39)	4.00	5.00	6.00			0.64
Engagement and Transformation of Boredom		1.25-7.00	4.82 (1.01)	4.25	4.75	5.50	0.69	0.67	
	6	1.00–7.00	4.84 (1.49)	4.00	5.00	6.00			0.30
	13	1.00–7.00	4.93 (1.48)	4.00	5.00	6.00			0.57
	20	1.00–7.00	4.17 (1.50)	3.00	4.00	5.00			0.47
	26	1.00–7.00	5.33 (1.27)	5.00	5.00	6.00			0.47
Attentional Control		1.00–7.00	4.25 (1.31)	3.33	4.33	5.33	0.70	0.67	
	7	1.00–7.00	4.21 (1.79)	3.00	4.00	6.00			0.52
	14	1.00–7.00	3.54 (1.71)	2.00	3.00	5.00			0.52
	21	1.00–7.00	5.01 (1.54)	4.00	5.00	6.00			0.40

M mean, *SD* standard deviation, *P25* 25th percentile, *P50* 50th percentile, *P75* 75th percentile, *α* ordinal Cronbach's alpha, *ω* McDonald's omega, *cITC* Corrected item-total correlation

expectations, we do not consider a total score to be interpretable and, since the fit of the first-order model was adequate, this model will be considered in the following analyses and only factor scores will be interpreted.

3.3 Measurement Invariance

In order to compare APQ's scores between those who have a higher education degree and those who have not, measurement invariance by these groups was first analyzed (see Table 3).

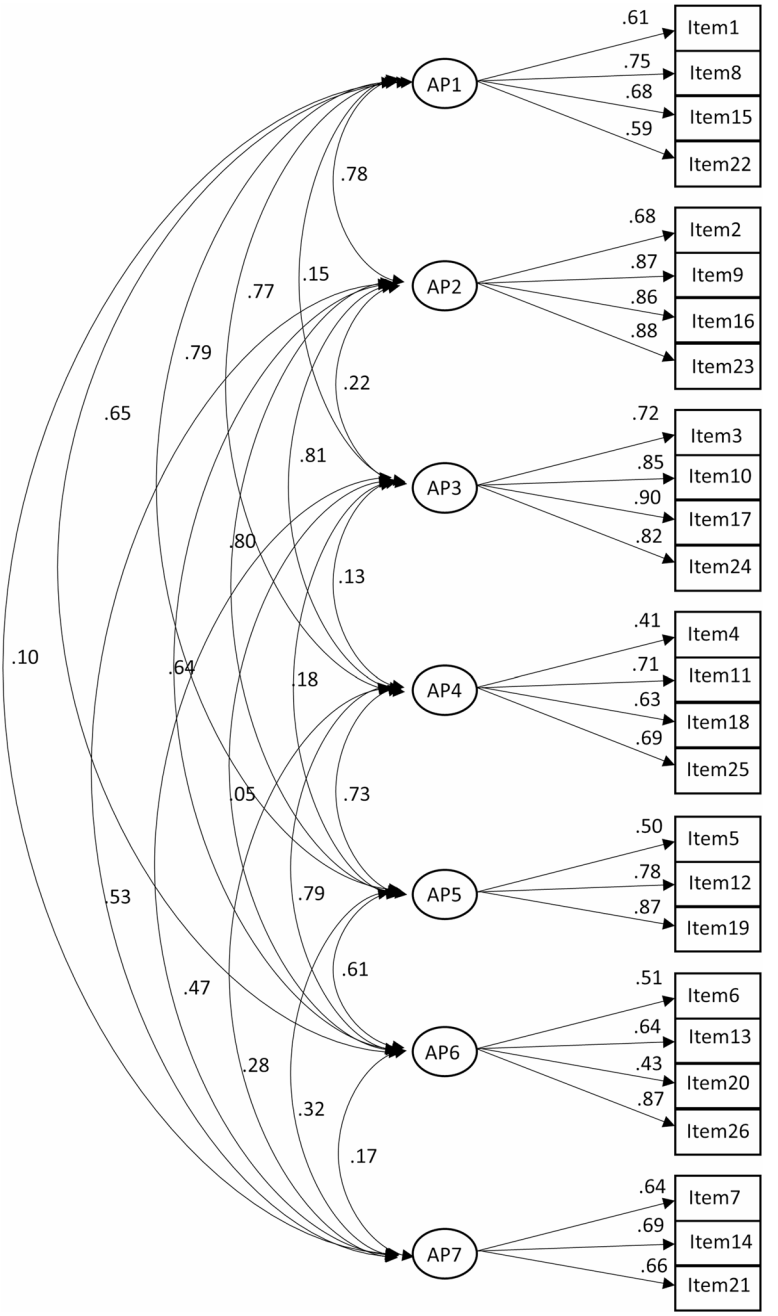

Fig. 1 First-order model of the Autotelic Personality Questionnaire with standardized factor loadings. Notes. AP1: Curiosity; AP2: Persistence; AP3: Low Self-Centeredness; AP4: Intrinsic Motivation; AP5: Engagement and Transformation of Challenges; AP6: Engagement and Transformation of Boredom; AP7: Attentional Control.

Table 3 Measurement invariance of the first-order model of the Autotelic Personality Questionnaire by having or not a higher education degree ($n=915$)

Models	χ^2	df	p	RMSEA (90% CI)	SRMR	CFI	TLI	Difference test[(a)]			ΔRMSEA	ΔCFI
								$\Delta\chi^2_{scaled}$	Δdf	p		
Without a higher education degree ($n=402$)	917.610	278	<0.001	0.076 (0.070-0.081)	0.065	0.933	0.921	-	-	-	-	-
With a higher education degree ($n=513$)	1266.149	278	<0.001	0.083 (0.079-0.088)	0.079	0.928	0.915	-	-	-	-	-
Configural	2175.289	556	<0.001	0.080 (0.076-0.083)	0.065	0.930	0.918	-	-	-	-	-
Thresholds	2306.552	658	<0.001	0.074 (0.071-0.077)	0.065	0.929	0.929	138.38	102	0.010	−0.006	−0.001
Thresholds+Loadings (metric invariance)	2200.488	677	<0.001	0.070 (0.067-0.073)	0.066	0.934	0.937	37.845	19	0.006	−0.004	0.005
Thresholds+Loadings+Intercepts (scalar invariance)	2178.590	696	<0.001	0.068 (0.065-0.072)	0.066	0.936	0.940	37.245	19	0.007	−0.002	0.002

[(a)] $\Delta\chi^2$ was calculated using Satorra and Bentler (2001) proposed scaled chi-square difference test

As can be seen in Table 3, the first-order model presented an acceptable fit in both groups (with and without a higher education degree). The configural model also showed an acceptable fit and the $\Delta\chi^2$ significance analysis, together with ΔRMSEA and ΔCFI values, were indicative of thresholds, loadings, and intercepts invariance. Therefore, the APQ's scores can be meaningfully compared between the aforementioned groups.

3.3.1 Known-Groups, Convergent, and Divergent Validity

To assess known-groups validity, differences in APQ subscales between those who have a higher education degree and those who have not were analyzed. Considering all seven subscales as dependent variables, statistically significant differences were found between both groups, Pillai's trace = 0.028; $F(7; 907) = 3.685$; $p < .001$; $\eta_p^2 = 0.028$. Posterior ANOVAs revealed statistically significant differences between both groups in Curiosity, Persistence, Engagement and Transformation of Challenges, and Attentional Control, with those who have a higher education degree presenting a higher score (see Table 4).

To assess convergent and discriminant validity, all APQ subscales were correlated with all TIPI, DFS-2, MHC-SF, and DASS-21 subscales. These correlations are presented in Table 5. As can be seen, all APQ subscales were positively and significantly

Table 4 Differences in the subscales of the Autotelic Personality Questionnaire between those who have and those who have not a higher education degree ($n = 915$)

Subscales	Higher education degree	M (SD)	Effect[(a)]
Curiosity			
	No ($n = 402$)	5.47 (0.90)	$F(1; 913) = 9.510$; $p = .002$; $\eta_p^2 = 0.010$
	Yes ($n = 513$)	5.65 (0.86)	
Persistence			
	No ($n = 402$)	5.54 (1.02)	$F(1; 913) = 4.603$; $p = .032$; $\eta_p^2 = 0.005$
	Yes ($n = 513$)	5.68 (0.98)	
Low Self-Centeredness			
	No ($n = 402$)	3.58 (1.60)	$F(1; 913) = 1.427$; $p = .233$; $\eta_p^2 = 0.002$
	Yes ($n = 513$)	3.70 (1.48)	
Intrinsic Motivation			
	No ($n = 402$)	5.65 (0.86)	$F(1; 913) = 0.489$; $p = .484$; $\eta_p^2 = 0.001$
	Yes ($n = 513$)	5.69 (0.89)	
Engagement and Transformation of Challenges			
	No ($n = 402$)	5.06 (1.15)	$F(1; 913) = 7.050$; $p = .008$; $\eta_p^2 = 0.008$
	Yes ($n = 513$)	5.27 (1.15)	
Engagement and Transformation of Boredom			
	No ($n = 402$)	4.80 (1.05)	$F(1; 913) = 0.214$; $p = .643$; $\eta_p^2 = 0.000$
	Yes ($n = 513$)	4.83 (0.99)	
Attentional Control			
	No ($n = 402$)	4.08 (1.31)	$F(1; 913) = 12.383$; $p < .001$; $\eta_p^2 = 0.013$
	Yes ($n = 513$)	4.38 (1.29)	

[(a)] Univariate ANOVAs were performed, *M* mean, *SD* standard deviation

Table 5 Correlations between the Autotelic Personality Questionnaire and, the Ten-Item Personality Inventory, the Dispositional Flow Scale-2, the Mental Health Continuum – Short Form, and the Depression, Anxiety, and Stress Scale

Instrument	Subscales	APQ						
		C	*P*	LSC	IM	ETC	ETB	AC
TIPI	Extraversion ($n=826$)	0.271*	0.265*	0.184*	0.185*	0.227*	0.120*	0.130*
	Agreeableness ($n=826$)	0.155*	0.213*	0.123*	0.215*	0.118*	0.131*	0.243*
	Conscientiousness ($n=826$)	0.159*	0.407*	0.185*	0.217*	0.170*	0.198*	0.411*
	Emotional Stability ($n=826$)	0.239*	0.294*	0.366*	0.164*	0.305*	0.171*	0.311*
	Openness to Experience ($n=826$)	0.467*	0.439*	0.258*	0.288*	0.356*	0.204*	0.225*
DFS-2	Autotelic Experience ($n=448$)	0.378*	0.479*	0.213*	0.424*	0.440*	0.343*	0.287*
	Altered Perception of Time ($n=448$)	0.269*	0.190*	0.045	0.235*	0.192*	0.244*	−0.025
	Loss of Self-Consciousness ($n=448$)	0.146*	0.201*	0.269*	0.189*	0.119	0.153*	0.069
	Sense of Control ($n=448$)	0.366*	0.489*	0.260*	0.360*	0.411*	0.301*	0.346*
	Concentration ($n=448$)	0.348*	0.512*	0.221*	0.413*	0.372*	0.329*	0.399*
	Perceived Performance ($n=448$)	0.357*	0.495*	0.286*	0.325*	0.403*	0.252*	0.353*
	Clarity of Objectives/Goals ($n=448$)	0.348*	0.513*	0.264*	0.356*	0.368*	0.246*	0.402*
	Task Engagement/Action-Awareness Merging ($n=448$)	0.337*	0.388*	0.172*	0.308*	0.321*	0.277*	0.201*
	Challenge-Skill Balance ($n=448$)	0.442*	0.584*	0.257*	0.380*	0.490*	0.300*	0.356*
MHC-SF	Emotional well-being ($n=915$)	0.265*	0.342*	0.142*	0.215*	0.230*	0.212*	0.223*
	Social well-being ($n=915$)	0.286*	0.338*	0.155*	0.196*	0.266*	0.227*	0.155*
	Psychological well-being ($n=915$)	0.361*	0.420*	0.229*	0.281*	0.288*	0.248*	0.246*
DASS-21	Depression ($n=826$)	−0.228*	−0.370*	−0.257*	−0.165*	−0.273*	−0.168*	−0.400*

Table 5 (continued)

Instrument	Subscales	APQ						
		C	*P*	LSC	IM	ETC	ETB	AC
	Anxiety ($n=826$)	−0.091	−0.224*	−0.251*	−0.057	−0.156*	−0.081	−0.293*
	Stress ($n=826$)	−0.148*	−0.257*	−0.252*	−0.079	−0.201*	−0.138*	−0.309*

APQ Autotelic Personality Questionnaire, *C* Curiosity, *P* Persistence, *LSC* Low Self-Centeredness, *IM* Intrinsic Motivation, *ETC* Engagement and Transformation of Challenges, *ETB* Engagement and Transformation of Boredom, *AC* Attentional Control, *TIPI* Ten-Item Personality Inventory, *DFS-2* Dispositional Flow Scale-2, *MHC-SF* Mental Health Continuum Scale – Short Form, *DASS-21* Depression, Anxiety, and Stress Scale. The significance of the correlations was assessed using the Holm method. * Statistically significant correlations after applying Holm method (Holm, 1979)

correlated with all subscales of TIPI. The correlations between APQ and both Extraversion and Agreeableness were weak, while correlations between APQ and the remaining subscales of TIPI were weak to moderate. Similarly, all correlations between APQ and MHC-SF were positive, statistically significant, and weak to moderate. Regarding DFS-2, apart from the correlations between Altered Perception of Time and both Low Self-Centeredness and Attentional Control, and between Loss of Self-Consciousness and Attentional Control, that were not statistically significant, all other correlations between APQ subscales and DFS-2 subscales were positive and mainly moderate. Finally, when considering the correlations between APQ and DASS-21, several were not statistically significant and the statistically significant correlations were all negative and weak to moderate.

4 Discussion

The present study aimed to culturally adapt and psychometrically validate the Portuguese version of the Autotelic Personality Questionnaire (APQ). Specifically, it examined its factorial structure, reliability, measurement invariance, known-groups validity, and convergent and divergent validity. Overall, the findings support the psychometric soundness and conceptual coherence of the APQ within the Portuguese context. They also provide theoretically informative evidence regarding the multidimensional organization of autotelic personality.

Factorial structure and the multidimensional nature of autotelic functioning

The first objective was to examine the factorial structure of the Autotelic Personality Questionnaire (APQ) among Portuguese adults. Contrary to the second-order structure originally proposed by Tse et al. (2018), the higher-order model did not demonstrate adequate fit. Importantly, this result should not be interpreted as a psychometric shortcoming. Rather, it appears theoretically informative. Although autotelic personality has often been described as a global disposition toward intrinsically rewarding engagement (Csikszentmihalyi, 1990; Tse et al., 2021), contemporary theoretical models increasingly converge on the view that autotelic functioning reflects a multidimensional motivational–attentional system, rather than a unitary trait.

The metaskills model (Nakamura & Csikszentmihalyi, 2002) conceptualizes autotelic personality as a constellation of higher-order regulatory capacities. These

include sustained attentional focus, intrinsic motivation, emotional regulation, curiosity, and persistence, whichjointly increase the likelihood of flow across contexts. From this perspective, these metaskills function as partially independent self-regulatory mechanisms. They enable individuals to maintain engagement, interest, and challenge–skill balance even under demanding conditions. Crucially, this framework does not imply that all components should cohere into a single latent factor. Instead, it allows distinct regulatory processes to contribute differently to optimal experience.

This multidimensional interpretation is further strengthened by the receptive–active model of autotelic personality (Baumann, 2012; Csikszentmihalyi et al., 1993), particularly in its more recent elaboration (Baumann, 2021). In this formulation, autotelic functioning is understood as a dynamic and process-based pattern of person–environment interaction, integrating two complementary orientations. The receptive orientation reflects openness to situational affordances, sensitivity to emerging opportunities, and a tendency to construe challenges as invitations for exploration rather than as threats. The active orientation captures the capacity to mobilize effort, sustain goal-directed engagement, and invest psychological energy in response to these perceived challenges. Importantly, these orientations are complementary but not redundant. They may also vary independently, depending on individual self-regulatory capacities and contextual demands.

Baumann's (2021) contribution is particularly relevant for interpreting the present findings. It shifts the focus away from broad trait-based explanations and toward self-regulatory and volitional mechanisms underlying autotelic functioning. From this perspective, autotelic personality is not reducible to general intrinsic motivation or to stable personality traits. Rather, it is grounded in processes such as attentional stability, flexible goal internalization, affect regulation, and the capacity to actively structure situations in ways that support engagement and flow. This process-oriented view directly aligns with the empirical pattern observed in the present study, where the seven-factor first-order model demonstrated good fit and all factor loadings were substantively meaningful.

The bifactor analysis further corroborated this interpretation. Although a general factor was present, the explained common variance (ECV) was insufficient to justify the use of a single total score. This pattern is theoretically coherent within Baumann's (2021) framework, which explicitly cautions against collapsing heterogeneous self-regulatory processes into a single index. Doing so risks obscuring meaningful differences in how individuals perceive, interpret, and respond to situational challenges—differences that are central to understanding engagement, learning, and well-being in applied contexts.

Taken together, these findings support a conceptualization of autotelic personality as a multidimensional and adaptive regulatory system. This system integrates internal competencies with active situational engagement. Whereas the metaskills model foregrounds intrapersonal capacities that sustain attentional absorption and intrinsic engagement, the receptive–active model emphasizes the transactional nature of autotelic functioning. In this view, individuals actively co-construct optimal experiences through their interaction with environmental demands (Baumann, 2021). This inte-

grative perspective helps explain the present factorial structure. It also reinforces the relevance of multidimensional assessment approaches in positive psychology, particularly in educational and developmental settings where different facets of engagement and self-regulation may have distinct implications for well-being and performance.

4.1 Reliability and Internal Consistency

All seven APQ subscales demonstrated adequate to excellent internal consistency, as indicated by ordinal alpha and omega coefficients meeting recommended criteria. These results closely replicate the psychometric performance reported in the original validation study (Tse et al., 2018) and support the reliability of the Portuguese APQ across multiple facets of autotelic functioning. Corrected item–total correlations were uniformly satisfactory, indicating that all items contribute meaningfully to their respective dimensions and that the scale functions consistently across its components.

Measurement Invariance and Educational Group Differences

An additional objective was to examine whether the APQ operates equivalently across individuals with and without higher education degrees. The results supported configural, threshold, metric, and scalar invariance, indicating that the factorial structure, item loadings, and intercepts are comparable across groups (Svetina et al., 2019). This level of invariance allows for meaningful group comparisons and strengthens the scale's applicability across educational contexts.

Known-groups analyses showed that participants with higher education scored significantly higher on Curiosity, Persistence, Engagement and Transformation of Challenges, and Attentional Control. Although effect sizes were small, this pattern is theoretically coherent. Educational trajectories typically place sustained demands on these metaskills. These include prolonged attentional focus, intrinsic engagement with complex material, persistence in the face of difficulty, and the ability to reinterpret challenges as opportunities for growth (Ullén et al., 2012). From a positive psychology perspective, these findings are consistent with developmental models suggesting that autotelic functioning is progressively shaped through repeated exposure to structured challenges and opportunities for self-regulated learning across the lifespan (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2014).

Convergent and divergent validity The convergent and divergent validity results provide empirical support for the theoretical foundations of autotelic personality. As anticipated, APQ subscales showed positive associations with key personality traits from the Big Five model, namely Conscientiousness, Emotional Stability, and Openness to Experience, while correlations with Extraversion and Agreeableness were weaker. This pattern replicates previous findings (Jonnson et al., 2014; Tse et al., 2018) and aligns closely with conceptual expectations. Conscientiousness and Emotional Stability capture self-regulatory capacities central to autotelic functioning, including sustained effort, attentional control, and emotional balance. Openness, in turn, reflects curiosity, intrinsic interest, and cognitive flexibility, which are core components of the autotelic orientation (Nakamura & Csikszentmihalyi, 2002). The modest associations with Extraversion and Agreeableness further support discriminant validity. They indi-

cate that the APQ is not merely a proxy for general social engagement or interpersonal warmth, but assesses a distinct motivational-attentional profile.

Nevertheless, these findings should be interpreted with some caution, given the relatively low internal consistency observed for some TIPI dimensions in the present sample. This pattern is not unexpected in very brief two-item Big Five measures, where Cronbach's alpha may be limited by scale brevity and the broad content coverage of each personality domain. Accordingly, the magnitude of the correlations between APQ subscales and TIPI dimensions may have been attenuated, particularly for those dimensions with lower reliability. Future studies should therefore replicate these associations using more comprehensive Big Five instruments. This would allow for a more precise examination of the personality correlates of autotelic functioning.

Correlations with the Dispositional Flow Scale–2 (DFS-2) were predominantly moderate and theoretically coherent across subscales. This is consistent with the view that autotelic traits are dispositional correlates of flow proneness. The strongest associations emerged with dimensions such as Challenge–Skill Balance, Sense of Control, Concentration, and Autotelic Experience. These dimensions represent structural features of flow that depend on the individual's capacity to regulate attention, remain intrinsically engaged, and interpret challenges as opportunities rather than threats (Csikszentmihalyi, 1990; Jackson & Eklund, 2002). These findings extend the empirical evidence that autotelic traits operate as psychological antecedents of flow states (Tse et al., 2021), consistent with both the metaskills model and the receptive–active orientation framework. The weak or non-significant associations with Altered Time Perception and Loss of Self-Consciousness mirror prior work showing that these experiential dimensions are less trait-like and more situationally driven (Jackson et al., 2008). This asymmetry further strengthens the scale's construct validity. It shows that APQ correlates more strongly with the structural and motivational prerequisites of flow than with its more phenomenological and context-dependent features.

The expected relationship between autotelic functioning and well-being was also supported. All APQ subscales correlated positively with emotional, social, and psychological well-being, reinforcing the notion that autotelic individuals experience greater vitality, purpose, and engagement in their daily lives (Asakawa, 2010; Rankin et al., 2019). Although moderate, these associations align with theoretical models suggesting that intrinsic motivation, attentional regulation, and the ability to transform everyday challenges into meaningful experiences contribute cumulatively to mental health and flourishing (Nakamura & Csikszentmihalyi, 2014; Tse et al., 2021).

Divergent validity was demonstrated through negative associations with depression, anxiety, and stress. The strongest effects emerged for depression and stress. This suggests that autotelic functioning may buffer against emotional dysregulation and motivational depletion, mechanisms known to underlie these symptom clusters (Keyes, 2005). The weaker associations with anxiety are theoretically plausible. Anxiety is often driven by physiological hyperarousal and threat anticipation, processes less directly linked to the motivational and attentional dimensions captured

by the APQ. The pattern of associations mirrors those previously reported in the literature (Tse et al., 2018; Osin et al., 2016), further supporting the construct's discriminant validity.

4.2 Limitations

This study presents limitations that are common in cross-sectional research relying exclusively on self-report measures. The use of a convenience sample, predominantly composed of women and individuals with higher educational attainment, constrains the generalizability of the findings to more heterogeneous populations. As is typical of cross-sectional designs, the data do not allow conclusions regarding temporal stability or causal mechanisms. Longitudinal studies are therefore needed to clarify developmental patterns and directional effects. Furthermore, self-report instruments are inherently susceptible to biases such as social desirability, self-perception distortions, and shared method variance. Future research would benefit from integrating behavioral indicators, informant reports, or ecological momentary assessment to reduce these limitations.

Future studies should also examine the temporal stability and longitudinal measurement invariance of the Portuguese APQ. This would allow researchers to determine whether the multidimensional structure observed in the present study remains stable over time and whether APQ scores can be meaningfully compared across repeated assessments, developmental stages, or intervention contexts.

5 Conclusion

This study provides strong evidence that the Portuguese version of the Autotelic Personality Questionnaire is a psychometrically robust instrument for assessing the multidimensional construct of autotelic personality. The scale demonstrated reliable subscales, a well-fitting seven-factor structure, full measurement invariance across educational groups, and theoretically coherent associations with personality traits, flow proneness, well-being, and psychological distress. Importantly, these findings refine the conceptualization of autotelic personality. They challenge the assumption of a unitary higher-order factor and support theoretical models that conceptualize autotelic functioning as a constellation of interrelated yet distinct motivational, attentional, and experiential dispositions.

From a positive psychology perspective, this multidimensional configuration is particularly relevant for understanding individual differences in sustained engagement, intrinsic motivation, and adaptive self-regulation. These are core processes underlying learning, personal development, and psychological well-being across the lifespan. The availability of a culturally validated measure of autotelic functioning therefore holds clear value for research and practice in educational and developmental contexts, where fostering optimal experience and long-term engagement constitutes a central objective.

Author Contributions M.J.F. and C.A.F. were responsible for the conceptualization and overall design of the study, data collection, data curation, and the writing of the original manuscript draft. C.S. and H.A. were responsible for the statistical analyses and contributed to the interpretation of the results. T.F. contributed to the conceptual development of the study and reviewed the manuscript. All authors contributed to manuscript revision and approved the final version of the manuscript.

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Data Availability The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Competing interests The authors declare no competing interests.

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