

Structural Validity of the Interpersonal Behaviors Questionnaire in Greek University Sport-Students

Proios Ioannis

Department of Physical Education and Sport Science, Democritus University, Komotini, Greece

ARTICLE INFO

Keywords:

Interpersonal Behaviors, Confirmatory Factor Analysis, Internal Consistency, University Teachers, University Student-Athletes

ABSTRACT

The examination of the interpersonal behaviors of undergraduate student-athletes can contribute to the research on the perceptions of students for satisfaction and frustration of basic psychological behaviors by teachers in the context teaching classes. Aim of this study was to translate into Greek and investigate the factorial validity and internal consistency of the Interpersonal Behavior Questionnaire (IBQ; 24-item six factors). 252 full-time undergraduate student-athletes (125 males and 127 females) were used ranging in age 18 to 38 years. The results of CFA showed a good fit of the data to the model, while the multi-sample results indicated invariance for factor loadings and correlations between male and female samples. Internal consistency coefficients Cronbach alpha and interclass correlation were moderate significant. In conclusion, the IBQ-Gr version has valid and reliable psychometric properties and can be applied to examination of the perceptions interpersonal behaviors others into Greek population.

1. Introduction

The study period of young people at the university is a period of changes in their behavior. The reason for these changes is living in a new environment away from their family (Cleary, Walter, & Jackson, 2011), the need to make independent decisions about their lives, academic demands. These life changes can have an impact on the mental health and well-being of university students. In particular, for the university environment, research supports the existence of increased levels of mental distress among undergraduate students (Bewicka, Koutsopouloub, Miles, Slaad, & Barkhame, 2010). Macaskill (2013), and Mey and Yin (2015) have supported evidence of strain of mental health in university students. It is noted that mental health is viewed as a component of overall well-being (Lehtinen, Ozamiz, Underwood, & Weiss, 2005).

Researchers report a growing trend in mental health in higher education (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Kadison & Di Geronimo, 2004). The existence of psychological distress in university students has negative consequences on attendance, performance and completion of their studies (e.g., Antaramian, 2015; King, Meehan, Trim, & Chassin, 2006), as in the function of relationships (Kerr & Capaldi, 2011), in mental health and university dropout (Fergusson, Boden, & Horwood, 2007).

* Corresponding author's E-mail address: johnyproios@gmail.com

Cite this article as:

Ioannis, P. (2024). Structural Validity of the Interpersonal Behaviors Questionnaire in Greek University Sport-Students. *European Journal of Behavioral Sciences*, 7(2): 23-31. <https://doi.org/10.33422/ejbs.v7i2.1267>

© The Author(s). 2024 **Open Access.** This article is distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and redistribution in any medium, provided that the original author(s) and source are credited.



The well-being of students as a result of the quality of teaching and learning is a topic that has not particularly concerned researchers. This is perhaps due to the absence of an instrument for assessing teaching practices in higher education (Vermote, Aelterman, Beyers, Aper, Buysschaert, & Vansteenkiste, 2020). Research on the relationship between teaching style and psychological need frustration is also lacking (Bartholomew, Ntoumanis, Mouratidis, Katartzi, Thøgersen-Ntoumani, & Vlachopoulos, 2018). Furthermore, to a large extent, the role of teaching in meeting the psychological needs of students has been ignored (Amoura, Berjot, Gillet, Caruana, Cohen, & Finezet, 2015).

In the context of self-determination theory (SDT) the existence of three basic psychological needs, namely the autonomy, competence and relatedness are stated. Support and satisfaction of these three needs leads to the well-being of people in a social context, while frustration leads to an unpleasant situation (Ryan, 2009) as in the inhibition of personal and human development (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011a). It is noted that satisfaction and frustration are two independent concepts and they are not indicative of, for example high levels of satisfaction and low levels of frustration (Bartholomew, Ntoumanis, Ryan, Boch, & Thøgersen-Ntoumani, 2011b; Sheldon, 2011). Also, research has shown that people can exhibit supportive and thwarting interpersonal behaviors concurrently. (e.g., Chua, Wong, & Koestner, 2014; Vansteenkiste & Ryan, 2013). Research results have shown that need-supportive interpersonal behaviors by teachers and coaches contribute to positive outcomes (Rocchi, Pelletier, Cheung, Baxter, & Beaudry, 2017a).

According to Self-Determination Theory (SDT), teaching practices in undergraduate education, in order to serve the well-being of students, must play a supportive and not an undermining role in meeting students' psychological needs for autonomy, competence and relationships (Ryan & Deci 2017; Vansteenkiste, Ryan, & Soenens, 2020). It is noted that the relationship students-teachers is important because the successful implementation of the processes of the instructional and learning processes depends on both (Delos Reyes, & Torio, 2020). However, it is argued that need-supportive behaviors, in the context of applying a teaching style to courses at the university, show strong difficulties due to the limited interpersonal contact teacher-students (Altbach, Reisberg, & Rumbley, 2010; Cotton & Wilson, 2006).

According to Self-Determination Theory (SDT) the support of three basic psychological needs is necessary to achieve well-being in any learning environment (Ryan & Deci, 2000). In the framework of the same theory, it is argued that people can manifest six types of interpersonal behaviors (Rocchi et al., 2017a): (a) autonomy-supportive (AS) behaviors, which provide the possibility of choice, (b) autonomy-thwarting (AT) behaviors that violate freedom of choice and use conditional rewards, (c) competence-supportive (CS) behaviors that strengthen the belief of goal achieving, (d) Competence-thwarting (CT) behaviors that lead to doubt in completing activities, (e) relatedness-supportive (RS) behavior which contribute to showing interest in others, (f) relatedness-thwarting (RT) behaviors which reject behaviors of others.

To evaluate the six dimensions of interpersonal behaviors, as proposed by SDT, the Interpersonal Behaviors Questionnaire (IBQ) was developed in full-time undergraduate students, using a general stem ("The people in my life...") for the ability to explore relationships across multiple domains (Rocchi et al., 2017a). The psychometric structure of IBQ 24-item six-factor (four items per subscale) correlated model, supported in a series different studies without presenting any invariance related to gender. This instrument of IBQ has been translated and adapted in samples with sociology and linguistic characteristics as Spanish language in male athletes (Pulido, Sánchez-Oliva, Leo, Sánchez-Cano, & García-Calvo, 2018), and physical education students (Burgueño & Medina-Casabón, 2021),

Canadian language in a high school athletes' population (Camire, Rathwell, Turgeon, & Kendellen, 2019), Hungarian language in adults (Tóth-Király, Bőthe, Orosz, & Rigó, 2020), Italian language in middle school students (Buzzai, Filippello, Costa, Amato, & Sorrenti, 2021), Portuguese language in gym exercisers (Rodrigues, Pelletier, Neiva, Teixeira, Cid, & Monteiro, 2021), Romanian language in professional athletes (Alexe, Cirtita, Tohanean, Larion, Alexe, Dragos, & Burgueño, 2022), Lithuanian language in emerging adults (Vosylis & Erentaitė, 2022) and physical activities men (Sabaliauskas, Žilinskienė, Gerasimovičius, Gražulis, & Radžiūkynas, 2023), as well as Japanese language (Xiao & Toyama, 2019).

The significance in this research lies in the examination of the factor structure of six-factor correlated model of the IBQ in the Greek culture in undergraduate students physical education and sport. Moreover, an examination of the interpersonal behaviors of undergraduate student-athletes can contribute to the research on the perceptions of students for satisfaction and frustration of basic psychological behaviors by teachers in the context teaching classes on cathedra and ex-cathedra (practices learning sports). Higher education teachers are argued to support the psychological need for autonomy by providing freedom in the way of learning, the need for competence in learning the course material, and the need for a teacher-student relationship (Ryan & Deci 2017; Vansteenkiste et al., 2020). Based on the above, the purpose this study is to examine the factor structure of six-factor correlated model of the IBQ-Gr instrument and measurement invariance across gender and internal consistency in a Greek sample.

2. Method

2.1. Participants

In total 252 full-time undergraduate student-athletes (125 males and 127 females) were used. The average age of the sample was 19.93 years (SD = 2.33). All participants were students in the same Department Physical Education and Sport, namely 99 in the 1st year, 108 in the 2nd year and 45 in the 3rd year of their program.

2.2. Instrument

Interpersonal Behavior Questionnaire (IBQ). The IBQ (Rocchi et al., 2017a) is a self-report measure (English language) designed to assesses perceptions of interpersonal behaviors of others. This instrument consists 24-item and assesses six factors (four items per subscale): *autonomy-supportive* (e.g., "Support my decisions"), *autonomy-thwarting* (e.g., "Impose their opinions on me") *competence-supportive* (e.g., "Provide valuable feedback"), *competence-thwarting* (e.g., "Point out that I will likely fail"), *relatedness-supportive* (e.g., "Are interested in what I do") *relatedness-thwarting* (e.g., "Do not connect with me"). The questionnaire begins with the stem, "The people in my life..." Responses are provided on a 7-point scale ranging from (1) *strongly disagree* to (7) *strongly agree*. In the present study in the scale was preceded by the stem "My teachers . . ."

2.3. Procedures

Initially, standardized back-translation procedures were used to develop a Greek version of the IBQ using three independent bilingual translators (Brislin, 1986). The back-translation procedure was repeated iteratively until the original and back-translated English versions of the questionnaires were identical. Before the research being conducted, an institutional permission was granted. Undergraduate students in physical education and sport classes filled the questionnaires.

2.4. Data analyses

For the test of IBQ-Gr validity a six-factor correlated model was used. While, for the test the hypothesized factor structure of the IBQ-Gr several criteria were used. The traditional measure of fit for CFAs models is the χ^2 goodness-of-fit test (statistic) and degree of freedom (χ^2/df). Non-significant values suggest a good fit, since they indicate only a minor discrepancy between the observed and the estimated covariance matrix. The Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Incremental Fit Index (IFI) are indices that indicate reasonably good fit when values are greater than 0.90, while RMSEA is reasonable when values are close to 0.60 or below (Hu & Bentler, 1999).

The IBQ-Gr invariance was also examined, using multi-sample CFA, across gender (Putnick & Bornstein, 2016). Differences smaller than .010 and .015 in CFI and RMSEA values between each two progressively constrained models are indicative of the instrument's invariance (Putnick & Bornstein, 2016). In context achievement measurement invariance between male and female are expected to have same observed score (Thomas et al., 2014).

For the test of internal consistency reliability of the IBQ-Gr Cronbach's alpha and Intraclass correlation coefficients (ICC) were used. Coefficients alpha and ICC estimates of consistency and their 95% confidence intervals were calculated using SPSS statistical package version 22.0. Coefficients alpha are classified as excellent $> .90$, Good $> .80$, Acceptable $> .70$, Questionable $> .60$, Poor $> .05$, and Unacceptable $< .50$ (George & Mallery, 2003). The interrater reliability between four items of each factor was determined using the two-way mixed, absolute agreement, single rater for both filter settings. The strength of the ICC was classified as follows: Poor $< .50$, Moderate among $.50 - .75$, Good among $.75 - .90$ and Excellent $> .90$ (Koo & Li, 2016).

3. Results

3.1. Confirmatory Factor Analysis

Based on content validity the factorial structure of the IBQ-Gr was tested making use a confirmatory factor analysis (24-items six factor correlated model). The proposed factorial structure adequately fitted the data ($\chi^2 (237, N = 252) = 370.83, p < .001, \chi^2/df = 1.57, CFI = .938, TLI = .928, IFI = .939, RMSEA = .047 (90\% CI = .038 - .057)$ confirming the validity of the 24-item six-factor correlated model. The findings showed that all the indicators loaded significantly on their respective constructs, indicating that each suitably represented the factor theoretically intended with range .52 to .73. Finally, the range of inter-factor correlations was between .59 and .90, showing also moderate values among most factors. This finding consistent with previous research (e.g., Rocchi et al., 2017a; Rocchi et al., 2017).

3.2. Invariance Analyses

Measurement invariance was used to whether an IBQ-Gr is interpreted in the same way across different groups of individuals. The results of analyses shown that the baseline models for males and females are same and reflect a satisfactorily good fit to the data based on several fit indices ($\chi^2(474) = 678.83, \chi^2/df = 1.42, CFI = .911, TLI = .90, IFI = .914, RMSEA = .041 [90\% CI = .034-.048], \Delta\chi^2 = 30.19, \Delta df = 18, \Delta TLI = .002, \Delta IFI = .013$). This indicates that the metric of factor scores was invariant across gender. In other words, this finding allows us to assume that it exists configural invariance between the samples of males and females i.e., interpersonal behaviors were measured with the same items in both samples.

3.3. Reliability Analyses

Reliability based on Cronbach's alphas showed an acceptable internal consistency for autonomy-support ($\alpha = .76$), autonomy-thwarting ($\alpha = .72$), competence-supportive ($\alpha = .75$), competence-thwarting ($\alpha = .76$), relatedness-supportive ($\alpha = .72$) and relatedness-thwarting ($\alpha = .70$). Therefore, the reliability analysis showed acceptable values of Cronbach's alpha ($\alpha > .70$) for all constructs, as recommended by Kline (2016).

Regarding interrater reliability the intraclass correlation coefficients found to be moderates for the factors: autonomy-supportive .76 (95% CI: .70 - .80), autonomy-thwarting .72 (95% CI: .65 - .77), competence-supportive .75 (95% CI: .70 - .80), competence-thwarting .76 (95% CI: .70 - .80), relatedness-supportive .72 (95% CI: .66 - .78) and relatedness-thwarting .70 (95% CI: .63 - .76).

4. Discussion

The purpose of this study was to translate into Greek and examine the factorial validity of the IBQ-Gr using single-sample confirmatory factor analysis. In addition, in this study examined the factorial invariance of the IBQ-Gr using multi-sample factor analysis. Furthermore, we investigated the internal consistency using Cronbach's alpha and temporal stability by using intraclass correlation coefficients. Both intraclass correlation coefficient and Cronbach's alpha, which are one-to-one functions of each other, provide appropriate indexes of reliability (Kistner & Muller, 2004).

Assessing psychological skills requires the existence of appropriate constructs and appropriate instruments. Regarding the IBQ, recent studies have supported its factorial validity (e.g., Alexe et al., 2022; Sabaliauskas et al., 2023; Vosylis & Erentaitė, 2022). However, the generalizability of measurement requires control of populations of interest (Anastasi & Urbina, 1997; Schutz, 1994).

The results of the analyses in this study demonstrated that the IBQ-Gr presents acceptable factorial validity and internal consistency. This finding is supported by previous research (e.g., Camire et al., 2019; Rocchi, et al., 2017a), indicating an adequate fit to the data for the 24-item 6-factor correlated model. In addition, the fit indices for the Greek version of the IBQ are very similar to those reported for English version of the scale (Rocchi, et al., 2017a). However, it should be noted the finding of high values for the correlations among the three specific need-supportive behaviors from university teachers. This finding is reinforced by the results of a recent study on physical education teachers (Burgueno, & Medina-Casaubon, 2021). The fact of the conceptual identification of the constructs reveals the existence of difficulty by the students in recognizing the teachers' behaviors for supportive-autonomy, competence and relatedness, also in submitting relevant proposals to the teachers to support the three basic psychological needs of the students.

Regarding to multi-group analyses the results supported the measurement of invariance across gender in Greek version of the IBQ. These revealed a similar number of factors for males and females. Byrne (2016) reports that configural invariance is ensured when the number of factors should be similar for each group. Gender invariance of the IBQ supports by original validation study (Rocchi, et al., 2017a), but also others studies (e.g., Burgueno & Medina-Casaubon, 2021; Rodrigues et al., 2019; Toth-Kiraly et al., 2020). The evidence of the IBQ's measurement invariance, also, reinforce by invariant character across a different sample undergraduate student-athletes. This finding shows that undergraduate student-athletes males and females perceive their teachers' interpersonal behaviors the same. A similar finding was reported in a

recent study using secondary school students for their physical education teachers (Burgueno & Medina-Casaubon, 2021).

In addition, the results of the analyses in this study showed very good internal consistency reliability by suitable values alpha for each of the six factors comprising the instrument. Similar results for Cronbach alpha are reported in the original study for validity and reliability of the IBQ (Rocchi et al., 2017a; Rocchi et al., 2017b; Rodrigues et al., 2019; Toth-Kiraly et al., 2020). Also, the current results showed appropriate values on the intraclass correlation coefficients for the six factors of the IBQ-Gr. This finding is reinforced from finding in recent study good ICC values (Burgueno & Medina-Casaubon, 2021). Kistner and Muller (2004) are supporting the preferring on calculations based on the intraclass correlation versus Cronbach's alpha.

The results of current study support the structural validity and reliability of IBQ in Greek population. However, like any study, the present one has some limitations. As a first limitation, the inability to generalize the results to the entire Greek population can be mentioned, because the study was limited to a limited social set of undergraduate students. A second limitation is the fact that the study focused only on a sample of undergraduate student-athletes, so the generalization of the results to the entire population of undergraduate students cannot be supported. A third limitation is the validation of the IBQ through self-report student and not by cross-referencing. The students' judgment of the interpersonal behavior of teachers may in some cases be biased, as for example a negative assessment of them by the teachers has preceded.

5. Conclusions

In conclusion, it can be stated that the IBQ-Gr is a valid instrument and suggests that the measure demonstrated measurement invariance, and internal consistency of the IBQ-Gr. Another conclusion is that the IBQ items were perceived similarly gender-related in new sample (undergraduate student-athletes) and that can be applied to examination of the perceptions interpersonal behaviors others into Greek population.

References

- Alexe, D. I., Buzoianu, C. C., Tohănean, D., Larion, A., Alexe, C., Paul, D., & Burgueño, R. (2022). Interpersonal behaviors questionnaire in sport: Psychometric analysis with Romanian professional athletes. *Perceptual and motor skills*, 130(1). <https://doi.org/10.1177/00315125221135669>
- Altbach, P. G., Reisberg, L., & Rumbley, L. E. (2010). *Trends in global higher education: Tracking an academic revolution*. Rotterdam: Sense. https://doi.org/10.1163/9789004406155_014
- Amoura, C., Berjot, S., Gillet, N., Caruana, S., Cohen, J., & Finez, L. (2015). Autonomy-supportive and controlling styles of teaching. *Swiss Journal of Psychology*, 74, 141–158. <https://doi.org/10.1024/1421-0185/a000156>
- Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed). London: Prentice-Hall International.
- Antaramian, S. (2015). Assessing psychological symptoms and well-being: application of a dual-factor mental health model to understand college student performance. *Journal of Psychoeducational Assessment*, 33, 419–429. <https://doi.org/10.1177/0734282914557727>

- Bartholomew, K., Ntoumanis, N., Ryan, R., & Thøgersen-Ntoumani, C. (2011a). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, 33, 75–102. <https://doi.org/10.1123/jsep.33.1.75>
- Bartholomew, K., Ntoumanis, N., Ryan, R., Bosch, J., & Thøgersen-Ntoumani, C. (2011b). Self-determination theory and diminished functioning: the role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, 37, 1459–1473. <https://doi.org/10.1177/0146167211413125>
- Bartholomew, K. J., Ntoumanis, N., Mouratidis, A., Katartzi, E., Thøgersen-Ntoumani, C., & Vlachopoulos, S. (2018). Beware of your teaching style: A school-year long investigation of controlling teaching and student motivational experiences. *Learning and Instruction*, 53, 50–63. <https://doi.org/10.1016/j.learninstruc.2017.07.006>
- Bewick, B., Koutsopoulou, G., Miles, J., Slaa, E., & Barkham, M. (2010) Changes in undergraduate students' psychological well-being as they progress through university. *Studies in Higher Education*, 35(6), 633–645. <https://doi.org/10.1080/03075070903216643>
- Burgueno, R., & Medina-Casabon, J. (2021). Validity and reliability of the Interpersonal Behaviors Questionnaire in Physical Education with Spanish Secondary School Students. *Perceptual and Motor Skills*, 128(1), 522–545. <https://doi.org/10.1177/0031512520948286>
- Buzzai, C., Filippello, P., Costa, S., Amato, V., & Sorrenti, L. (2021). Problematic internet use and academic achievement: A focus on interpersonal behaviours and academic engagement. *Social Psychology of Education*, 24(1), 95–118. <https://doi.org/10.1007/s11218-020-09601-y>
- Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd ed.) New York: Routledge. <https://doi.org/10.4324/9781315757421>
- Camiré, M., Rathwell, S., Turgeon, S., & Kendellen, K. (2019). Coach–athlete relationships, basic psychological needs satisfaction and thwarting, and the teaching of life skills in Canadian high school sport. *International Journal of Sports Science & Coaching*, 14(5), 591–606. <https://doi.org/10.1177/1747954119869542>
- Chua, S. N., Wong, N., & Koestner, R. (2014). Autonomy and controlling support are two sides of the same coin. *Personality and Individual Differences*, 68, 48–52. <https://doi.org/10.1016/j.paid.2014.04.008>
- Cleary, M., Walter, G., & Jackson, D. (2011). Not always smooth sailing: mental health issues associated with the transition from high school to college. *Issues in Mental Health Nursing*, 32, 250–254. <https://doi.org/10.3109/01612840.2010.548906>
- Delos Reyes, R. D. G., & Torio, V. A. G. (2020). The relationship of expert teacher–learner rapport and learner autonomy in the CVIF-dynamic learning program. *Asia-Pacific Education Researcher*, 30, 471–481. <https://doi.org/10.1007/s40299-020-00532-y>
- Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36, 282–284. <https://doi.org/10.1038/nbt.4089>
- Fergusson, D. M., Boden, J. M., & Horwood, L. J. (2007). Recurrence of major depression in adolescence and early adulthood, and later mental health, educational and economic outcomes. *British Journal Psychiatry*, 191, 335–342. <https://doi.org/10.1192/bjp.bp.107.036079>

- George, D., & Mallery, P. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference*. 11.0 Update (4th ed.). Boston: Allyn & Bacon.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariances structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- Kadison, R., & DiGeronimo, T. F. (2004). *College of the overwhelmed: The campus mental health crisis and what to do about it*. San-Francisco, CA: Jossey-Bass.
- Kerr, D. C., & Capaldi, D. M. (2011). Young men's intimate partner violence and relationship functioning: long-term outcomes associated with suicide attempt and aggression in adolescence. *Psychological Medicine*, 41, 759-769. <https://doi.org/10.1017/S0033291710001182>
- King, K. M., Meehan, B. T., Trim, R. S., & Chassin, L. (2006). Marker or mediator? The effects of adolescent substance use on young adult educational attainment. *Addiction*, 101, 1730-1740. <https://doi.org/10.1111/j.1360-0443.2006.01507.x>
- Kistner, E. O., & Muller, K. E. (2004). Exact distributions of intraclass correlation and Cronbach's alpha with Gaussian data and general covariance. *Psychometrika*, 69(3), 459-474. <https://doi.org/10.1007/BF02295646>
- Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine*, 15(2), 155-63. <https://doi.org/10.1016/j.jcm.2016.02.012>
- Lehtinen, V., Ozamiz, A., Underwood, L., & Weiss, M. (2005). The intrinsic value of mental health. In H. Herrman, S. Saxena, & R. Moodie (Eds.), *Promoting mental health: Concepts, emerging evidence, practice* (pp. 46-58). Geneva, Switzerland: World Health Organization Press.
- Macaskill, A. (2013). The mental health of university students in the United Kingdom. *British Journal of Guidance & Counselling*, 41, 426-441. <https://doi.org/10.1080/03069885.2012.743110>
- Mey, S. C., & Yin, C. J. (2015). Mental health and wellbeing of the undergraduate students in a research university: a Malaysian experience. *Social Indicators Research*, 122, 539-551. <https://doi.org/10.1007/s11205-014-0704-9>
- Pulido, J. J., Sánchez-Oliva, D., Leo, M. F., Sánchez-Cano, J., & García-Calvo, T. (2018). Development and validation of Coaches' Interpersonal Style Questionnaire. *Measurement in Physical Education and Exercise Science*, 22(1), 25-37. <https://doi.org/10.1080/1091367X.2017.1369982>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41, 71-90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Rocchi, M., Pelletier, L., Cheung, S., Baxter, D., & Beaudry, S. (2017a). Assessing need-supportive and need-thwarting interpersonal behaviours: The Interpersonal Behaviours Questionnaire (IBQ). *Personality and Individual Differences*, 104, 423-433. <https://doi.org/10.1016/j.paid.2016.08.034>
- Rocchi, M., Pelletier, L., & Desmarais, P. (2017b). The validity of the interpersonal behaviors questionnaire (IBQ) in sport. *Measurement in Physical Education and Exercise Science*, 21(1), 15-25. <https://doi.org/10.1080/1091367X.2016.1242488>

- Rodrigues, F., Pelletier, L., Neiva, H. P., Teixeira, D. S., Cid, L., & Monteiro, D. (2021). Initial validation of the Portuguese version of the Interpersonal Behavior Questionnaire (IBQ & IBQ-Self) in the context of exercise: Measurement invariance and latent mean differences. *Current Psychology*, 40, 4040–4051. <https://doi.org/10.1007/s12144-019-00374-y>
- Ryan, R. (2009). *Self-determination theory and wellbeing*. WeD Research Review, 1(June).
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publications. <https://doi.org/10.1521/978.14625/28806>
- Sabaliauskas, S., Žilinskienė, N., Gerasimovičius, R., Gražulis, D., & Radžiūkytas, D. (2023). Adaptation, psychometric properties and factor structure of the Lithuanian interpersonal behaviours questionnaire (IBQ) in sport. *Cogent Education*, 10(1), 2175507. <https://doi.org/10.1080/2331186X.2023.2175507>
- Schutz, H. G. (1994). Appropriateness as a measure of the cognitive-contextual aspects of food acceptance. In H.J.H. MacFi & Thomson, D.M.H. (Eds) *Measurement of food preferences* (pp. 25-50). Springer, Boston, MA. https://doi.org/10.1007/978-1-4615-2171-6_2
- Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two process model. *Psychological Review*, 118(4), 552–569. <https://doi.org/10.1037/a0024758>
- Thomas, T., Singh, L., Gaffar, K., Thakur, D., Jackman, G.A., Thomas, M., Gajraj, R., Allen, C., & Tooma, K. (2014). Measurement invariance of the UTAUT constructs in the Caribbean. *International Journal of Education and Development using ICT*, 10(4) 102-127. <https://www.learntechlib.org/p/150707/>
- Tóth-Király, I., Bőthe, B., Orosz, G., & Rigó, A. (2020). On the importance of balanced need fulfillment: A person-centered perspective. *Journal of Happiness Studies*, 21, 1923–1944. <https://doi.org/10.1007/s10902-018-0066-0>
- Vansteenkiste, M., & Ryan, R.M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, 23(3), 263. <https://doi.org/10.1037/a0032359>
- Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic Psychological Need Theory: Trends, critical themes, and future directions. *Motivation and Emotion*, 44, 1-31. <https://doi.org/10.1007/s11031-019-09818-1>
- Vermote, B., Aelterman, N., Beyers, W., Aper, L., Buysschaert, F., & Vansteenkiste, M. (2020). The role of teachers' motivation and mindsets in predicting a (de) motivating teaching style in higher education: a circumplex approach. *Motivation and Emotion*, 44, 270–294. <https://doi.org/10.1007/s11031-020-09827-5>
- Vosylis, R., & Erentaitė, R. (2022). Interpersonal Behaviors Questionnaire (IBQ) applied to parenting of emerging adults: dimensional structure and criterion validity. *BMC Psychology*, 10(285), 1-11. <https://doi.org/10.1186/s40359-022-00983-6>
- Xiao, Y., & Toyama, M. (2019). Development of the Japanese version of Interpersonal Behaviours Questionnaire-self and examination of its validity. *Tsukuba Psychological Research*, 57, 21-28. <https://doi.org/10.1037/t78703-000>