

## Analyses of the Self-monitoring Scale with the Problem Solving Inventory

Marcia Cristina Monteiro<sup>1</sup>

Adriana Benevides Soares<sup>2</sup>

<sup>1</sup>Universidade Salgado de Oliveira e Fundação de Apoio à Escola Técnica do Estado do Rio de Janeiro, Rio de Janeiro, Brasil

<sup>2</sup>Universidade Salgado de Oliveira e Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brasil

### Abstract

Self-monitoring regulates the expression of behavior, which can facilitate relationships in different contexts. The aim of this study was to confirm the factorial structure of the exploratory analysis of the Self-monitoring Scale (SMS) and investigate the effect of the independent variable Self-monitoring on the dependent variable Social Problem Solving. Participants were 400 university students of different degrees, both sexes, aged between 18 and 58 years ( $M=31.3$  and  $SD=9.4$ ) and with data collected on the spot. Confirmatory Factor Analysis found fit indexes that support the two-factor model, corroborated by the literature. The regression analysis demonstrated that Self-monitoring predicted the Resolution of Social Problems regarding the Problem Orientation (PO) factor, suggesting that students with a higher PO would be less aware of the context to regulate behavior. The study showed the functioning of the instruments that measure concepts that are still little explored in Higher Education studies. *Keywords:* Problem solving; Social interaction; University students.

### Análise da Escala de Automonitoria com o Inventário de Resolução de Problemas Sociais

#### Resumo

A automonitoria autorregula a expressão do comportamento, o que pode facilitar os relacionamentos em diferentes contextos. O objetivo do estudo foi confirmar a estrutura fatorial da análise exploratória da Escala de Automonitoria (EA) e investigar o efeito da variável independente Automonitoria na variável dependente Resolução de Problemas Sociais. Participaram 400 universitários, ambos os sexos, idade entre 18 e 58 anos ( $M = 31,3$  e  $DP = 9,4$ ) e os dados foram coletados *in loco*. A análise fatorial confirmatória encontrou índices de ajuste que sustentam o modelo de dois fatores, corroborado pela literatura. A análise de regressão apontou que a Automonitoria predisse a Resolução de Problemas Sociais quanto ao fator Orientação de Problema (OP), sugerindo que alunos com maior OP estariam menos atentos ao contexto para regular o comportamento. O estudo mostrou o funcionamento dos instrumentos que mensuram conceitos ainda pouco explorados nas pesquisas na Educação Superior. *Palavras-chave:* solução de problemas; interação social; estudantes universitários

### Análisis de la Escala de Autocontrol con el Inventario de Resolución de Problemas Sociales

#### Resumen

El autocontrol regula la expresión del comportamiento, lo que puede facilitar las relaciones en diferentes contextos. El objetivo del estudio fue confirmar la estructura factorial del análisis exploratorio de la Escala de Autocontrol (EA) e investigar el efecto de la variable independiente Autocontrol sobre la variable dependiente Resolución de Problemas Sociales. Participaron 400 estudiantes universitarios, de ambos sexos, con edades entre 18 y 58 años ( $M = 31,3$  y  $DS = 9,4$ ) y con datos recolectados en loco. El Análisis Factorial Confirmatorio encontró índices de ajuste que apoyan el modelo de dos factores, corroborado por la literatura. El análisis de regresión señaló que Autocontrol predijo la Resolución de Problemas Sociales con respecto al factor de Orientación al Problema (OP), sugiriendo que los estudiantes con mayor OP serían menos conscientes del contexto para regular la conducta. El estudio mostró el funcionamiento de instrumentos que miden conceptos aún poco explorados en la investigación en la Educación Superior.

*Palabras clave:* Resolución de problemas; Interacción social; Estudiantes universitarios.

The university combines teaching, research and extension projects, as well as contributes to the student's personal formation and professional development. It has also been challenged to promote, directly or indirectly, the formation of students as critical subjects, citizens capable of analyzing social problems, seeking solutions and taking responsibility (Panúncio-Pinto, & Colares, 2015). Upon entering university, students must be prepared to face the diversities of academia (Almeida, Araújo, & Martins, 2016; Matta, Lebrão, &

Helena, 2017; Valadas, Almeida, & Araújo, 2016), considering the multiplicity of aspects that involve the transition and adaptation to Higher Education. Many students face difficulties during this stage, especially those who go directly from high school to higher education (Almeida et al., 2016), who are characterized as young people seeking identity and autonomy translated into the professional choice (Buscacio & Soares, 2017).

In this way, the university presents itself as a space of challenges that are difficult to manage for

many students, such as new bonds, which may require strategies from the student to deal with classmates, professors and other workers in the academic space. Snyder and Gangestad (1986) stated that for decades Psychology has studied non-verbally expressed behaviors related to affective states and social interaction, whether for cooperation or competition or even in love relationships. Accordingly, they presented the concept of self-monitoring.

Self-monitoring refers to how people can exercise expressive control of their self-presentation in social interactions, self-regulating their behavior (Snyder & Gangestad, 1986). This control would be a facilitator, in the case of university students, considering the new relationships to be constructed. Fuglestad and Snyder (2010) highlighted that people who have high self-monitoring scores are clearly sensitive to the situational context, willing and able to modify the expression of their behavior to fit the situation or role.

Conversely, those with low self-monitoring scores are less responsive to the social context, typically being inflexible in their internal dispositions. According to Arslantas and Kurnaz, (2017), people with high self-monitoring see themselves as pragmatic, acting due to situational contingencies and according to the roles played, while those with low self-monitoring tend to be guided by dispositional aspects, being condescending in the face of adverse situations.

Therefore, according to Arslantas and Kurnaz, (2017), people with high self-monitoring scores are more likely to engage in new relationships than those with low scores, as they are able to use different behavioral processes to initiate their relationships. The authors add that people with high scores tend to use different strategies to interact with peers who are skilled in dealing with different situations, regardless of location and time. Conversely, those with low scores are motivated to relate to people who are more compatible with their way of acting in interpersonal relationships.

Self-monitoring can provide the student with initial contact with different groups. The development of self-monitoring skills would facilitate the student's adaptation process, as this mobilizes a great cognitive and emotional effort in order for the person to manage social performance, aiming at success in relationships with the group or with other people (Arslantas & Kurnaz, 2017). Efforts involve changes and adjustments of actions to the dynamics of situations, aiming for success in relationships and trying to achieve the goals intended with the interaction.

Situations of difficult transposition that are considered problems for many newcomers to Higher Education, such as dealing with new friends and a diversity of teachers and workers, can be understood through the social problem solving construct. The concept is defined as a cognitive and behavioral process in which the person identifies, discovers or elaborates effective or adaptive strategies to face social problems present in everyday life (D'Zurilla, Nezu, & Maydeu-Olivares, 2002; Sone et al., 2017).

The authors add that solving social problems is a learning process, but also a general coping strategy and a method of self-control. Accordingly, Social Problem Solving is a multidimensional construct consisting of two general and partially orthogonal factors: problem orientation (PO) and problem solving ability (PSA) (D'Zurilla et al., 2002; Sone et al., 2017). According to the theoretical model, the first refers to a metacognitive process constituted by relatively stable cognitive and emotional schemas that reflect beliefs and feelings about everyday problems as well as the ability to solve them, having the role of reducing stress and being a factor that facilitates the motivation for problem solving. The second component concerns the cognitive and behavioral activities through which the person tries to understand the problems and find effective solutions or ways to face them, increasing the competence to solve situations.

According to Soares, Mourão and Monteiro (2020), problem orientation and social problem solving abilities play a predictive role in the psychic vitality of undergraduates, since many students tend to have anxiety, depression and emotional disorders, considering the fact that many students are very young and are in the process of changing their own stage of life. Therefore, the choice of the construct was taken due to the conceptual detailing and the measurement instrument (Social Problem Solving Inventory-SPSI) elaborated by D'Zurilla et al. (2002). However, in national terms, the studies already published with the instrument are incipient and therefore there is no evidence of validity.

The distinction between people with high and low self-monitoring is possible through the Self-Monitoring Scale (SMS), originally consisting of 25 items ( $\alpha=.83$ ), later revised by the authors (Snyder & Gangestad, 1986), maintaining 18 items ( $\alpha=.70$ ). Over more than four decades of international studies, the scales have aroused the interest of researchers using them in different studies on topics related to behavior,

personality, development, as well as the scale's structure itself (Arslantas & Kurnaz, 2017; Wilmot, 2015).

In terms of research with the Self-Monitoring Scale, Monteiro and Soares (2017) implemented a study on the adaptation and validity evidence of the Self-Monitoring Scale for Brazilian Portuguese through Exploratory Factor Analysis (EFA), with a sample of 200 Higher Education students of public and private institutions. The result indicated the extraction of two factors and the exclusion of eight items from the original 18-item scale in English, suggesting that future studies could investigate the structure obtained and whether it presents significant changes in replication in different samples.

Monteiro and Soares (2019) carried out a study with the aim of analyzing the dimensional structure of the Self-Monitoring Scale through network analysis. Participants were 500 higher education students from public and private institutions, of both genders and aged between 18 and 38 years. The analysis preserved the 18 items of the scale and maintained two factors, similar to the English model. The scale presents evidence of validity that allows its use in the Brazilian context.

From this perspective in terms of international research, Wilmot (2015) replicated a study on the latent structure of the Self-Monitoring Scale using contemporary taxonomic procedures. The author cites that in the original study, the data obtained from the taxonomic analysis (Snyder & Gangestad, 1986) showed that self-monitoring is a discretely distributed variable that allows people to be classified from high or low scores (dichotomous classification) and that it was expressed in the first general factor of the original scale (25 items). However, the replication of the study (Wilmot, 2015), which included the original sample of 1,918 university students and a replicating sample of 2,951 participants, indicated a two-dimensional model of self-monitoring and orthogonal factors (protective and acquisitive self-monitoring). Wilmot (2015) also argues that the indicators present in the original study were not sufficiently valid to confirm the categorical structure (singly distributed individual characteristics).

In a study by Wilmot (2015) different psychometric techniques were used, such as factor analysis, classic psychometric tests and Item Response Theory, with the aim of constructing and validating two scales called acquisitive and protective self-monitoring scales. The study presented evidence of validity for the scales (acquisitive - 6 items, and protective - 7 items), in addition to reliability and impartiality in terms of gender

and age, theoretical consistency with personality traits such as extraversion and neuroticism, and cognitive abilities such as verbal and spatial.

Concerning the Social Problem Solving Inventory, Zenteno et al. (2011) developed a study with the aim of seeking evidence of validity for the Social Problem Solving Inventory - Revised (SPSI-R), considering internal correlation criteria between the subscales and external criteria obtained from the difference in scores according to gender. The SPSI-R consists of 52 items and 5 subscales: Positive Problem Orientation (PPO), Negative Problem Orientation (NPO), Rational Problem Solving (RPS), Impulsive-Careless Problem Solving (ICPS) and Avoidant Problem Solving (APS). Participants were 265 Psychology students from a private and a public university in the city of Lima, Peru, 76.59% of whom were women. The results suggest consistent relationships between the subscales, scores and gender, in addition to appropriate psychometric properties, which can be replicated in a moderate way cross-culturally, confirming the theoretical model it represents. The authors added that in previous studies the instrument showed a correlation between the effectiveness of solving social problems and academic performance, and levels of anxiety. For researchers, the validation of the instrument makes it possible to investigate social problem solving in Latin America.

In the national scenario, the study by Padovani, Schelini and Williams (2009) involved the criterion validity and reliability of the Social Problem Solving Inventory-Revised Abbreviated Form (25 items). In the study, the sample consisted of 76 young people, 50% of whom were offenders from an institution for young people in conflict with the law and the remaining 50% students from a public school, with both samples being aged between 16 and 18 years. The authors concluded that the Inventory discriminated the two samples, showing the relevance of developing instruments for the population of young offenders.

In the study by Soares et al. (2020) the objective was to adapt and validate the Social Problem Solving Inventory and assess the relationship with the Modes of Coping Scale. Participants were 600 students, divided into two samples: one with 381 and the other with 219, of both sexes, ages and from different degree courses. The results showed a factorial structure of three dimensions, with 16 items for the Problem Solving Scale for the University Students and a positive association with the Modes of Coping Scale.

In the above, the use of the Self-Monitoring Scale and the Social Problem Solving Inventory made it possible to measure phenomena that can be properly investigated in the academic context. It is understood that the student who has high scores in the SMS will also have a greater ability to both identify and seek solutions to what they consider a problem in relationships in the university environment, contributing to the process of adaptation to the university. Therefore, the aim of the study was to confirm the factorial structure obtained in the exploratory analysis of the Self-Monitoring Scale (SMS) and to investigate the effect of the Self-Monitoring independent variable on the Social Problem Solving dependent variable.

## Method

### *Participants*

The study included 400 university students, aged between 18 and 58 years ( $M=31.3$  and  $SD=9.4$ ), from higher education institutions (HEIs) of the state of Rio de Janeiro, both public and private, from several undergraduate courses and of both genders, with 41% ( $n=164$ ) being male. In terms of courses, there were 200 participants in the public HEIs, with the highest incidence being Psychology students with 20.5% ( $n=41$ ), followed students of Language, 16.5% ( $n=33$ ), Biology, 14.5% ( $n=29$ ), Pedagogy, 12% ( $n=24$ ), Engineering, 6.5% ( $n=13$ ), International Relations and History with 5.5% ( $n=11$ ) of students from each course, Philosophy 4% ( $n=8$ ), Geography and Biomedicine with 3.0% ( $n=6$ ) each, Physical Education, 2.5% ( $n=5$ ), Mathematics, 2.0% ( $n=4$ ), Law and Computer Science 1% ( $n=2$ ) each, and Social Work, Nutrition, Arts, Statistics and Anthropology with 0.5% ( $n=1$ ) from each course. Regarding the economic class, 30.0% (60) belonged to C2, 24.0% (48) to B2, 18.5% (37) C2, 11.5% (23) B18, 0.5% (17) D-E, and 7.5% (15) to class A. In the private HEIs, there were 200 participants, with 25.5% (51) students of the Nursing course, 25% (50) Pedagogy, 20% (40) Social Work, 17.5% (35) Administration, 4.5% (9) HR Management, 3% (6) Physical Education, 1.5% (3) Psychology, 1% (2) Information System and Pharmacy students from each course and 0.5% (1) student each from the Marketing and Law courses. Regarding the economic class, 43.5% (87) belonged to C2, 25.0% (50) to C1, 19.0% (38) B2, 10.0% (20) D-E, 1.5% (3) B1 and 1% (2) belonged to class A, according to the criteria of the Brazilian Association of Research Companies (2018).

### *Instruments*

Self-Monitoring Scale (Snyder & Gangestad, 1986; adapted by Monteiro and Soares, 2017). The original scale used consists of 18 items. The adapted scale consists of 10 items and two factors called: Factor 1 - Externalizing Reactions, which refer to the behaviors presented by the individual to handle the interactive demands of the environment, as they are often expressed openly ( $\alpha=.92$ ) and Factor 2 - Internalizing Reactions, which refer to behaviors expressed in order to manage the context's interactive demands, as they are predominantly presented in a covert manner ( $\alpha=.83$ ). The response to the items is of the dichotomous type (true or false).

Social Problem Solving Inventory (SPSI; D'Zurilla et al., 2002). This is a five-point Likert-like tagged-to-item inventory ranging from 0 (completely false for me) to 4 (completely true for me). The instrument is multidimensional and consists of 70 items, based on a prescriptive problem-solving model that characterizes the resolution of social problems as a complex process that involves cognitive, affective and behavioral aspects. The SPSI has two factors: Problem Orientation (PO 30 items with 24 inverted) ( $\alpha=.94$ ) and Problem Solving Abilities (PSA 40 items with 11 inverted) ( $\alpha=.92$ ).

### *Procedures*

The study was approved by the Ethics Committee of the University. The volunteers were informed about the purpose of the study, their anonymity and the confidentiality of the information, as well as the fact that participation was unpaid and could be terminated at any time. All the respondents signed the consent form and completed the Sociodemographic Questionnaire.

The collection had the collaboration of coordinators and undergraduate professors from different institutions chosen by convenience, which allowed the application of the study instruments in the classroom. The participants were previously invited to the classrooms. The instruments were delivered in the following order of application: consent form, Sociodemographic Questionnaire, Self-Monitoring Scale and Social Problem Solving Inventory.

### *Data analysis*

Missing values were assigned using the multiple imputation technique with the Expected Maximization (EM) algorithm (Little & Rubin, 2002), in view of their accuracy. A total of 1.33% of the data was imputed. Confirmatory Factor Analysis (CFA) of the

Self-Monitoring Scale (SMS) was performed using the Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimation method, implemented in a tetrachoric matrix, in order to respect the dichotomous nature of the variables, using the Mplus software (Muthén & Muthén, 2012). Pearson correlation and regression were performed to assess the range of variation in the Social Problem Solving variable resulting from the variation in the Self-monitoring variable.

**Results**

The results achieved presented a single-factor and a two-factor model, however, the first did not obtain satisfactory indices. Furthermore, the international literature indicates that the two-factor model is the most used. Therefore, this study sought to address the two-factor model of the SMS. The result showed that the fit indices for the SMS were adequate. In addition, the Chi-square value was significant ( $p < .01$ ), the other fit indices (RMSEA, CFI and TLI) supported the acceptability of the tested model, as can be seen in Table 1.

The two-factor analysis of SMS obtained adequate indices, although the Chi-square value ( $\chi^2 = 99.534$ ;  $df = 34$ ;  $\chi^2/df = 2.93$ ) was significant at  $p < .01$ , the other fit indices RMSEA = .069 (.054 - .085); CFI = .940; TLI = .921 supported the acceptability of the model. The standardized factor loadings ranged from .293 (item 7) to .903 (item 3), as shown in Figure 1.

Pearson's correlation showed that the Externalizing Reactions factor of Self-Monitoring presented significant and negative correlations with the Internalizing Reactions factor and with the Problem Solving Inventory factors: Problem Orientation and Problem Solving Abilities. Accordingly, higher levels of Externalizing Reactions equated to lower levels of other variables.

The Internalizing Reactions factor, in turn, only showed a significant correlation with the Externalizing Reactions factor. There was no significant correlation with either of the factors in the Problem Solving

Inventory. The Problem Solving Inventory factors correlated positively and significantly with each other. Therefore, higher levels of the Problem Orientation factor equated to higher levels of the Problem Solving Abilities factor.

The regression performed showed that, in relation to the Problem Orientation factor of the Social Problem Solving dependent variable, the Externalizing and Internalizing Reactions factors of the Self-monitoring independent variable predicted 8%. Regarding the Problem Solving Abilities factor, the set of independent variables predicted about 1%, with the externalizing reactions factor being the only factor that constituted a predictor.

**Discussion**

One of the aims of the study was to submit the Self-Monitoring Scale (SMS) to confirmatory factor

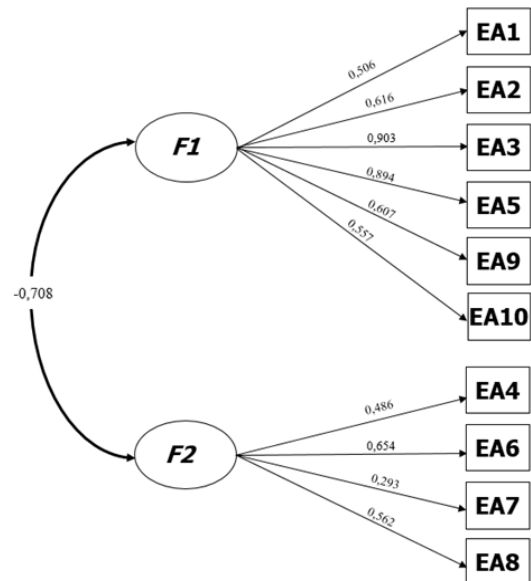


Figure 1. Factor loadings of the Self-Monitoring Scale.

Table 1.

Confirmatory factor analysis of the Self-Monitoring Scale (SMS) in the tested model

Model	Fit indices					
	$\chi^2$	df	$\chi^2/df$	RMSEA	CFI	TLI
Two-factor	99.534**	34	2.93	.069 (.054-.085)	.940	.921

Note. \*\*  $p < .001$

Table 2.  
*Analysis of Pearson's correlation between the variables*

	Mean	SD	1	2	3
1. Externalizing Reactions	1.67	0.28	-	-	-
2. Internalizing Reactions	1.57	0.30	-.39**	-	-
3. Problem Orientation	1.66	0.56	-.24**	-.06	-
4. Problem Solving Abilities	2.02	0.49	-.13**	.07	.25**

\*\*Correlation is significant at the .01 level (2 tailed).

Table 3.  
*Regression between Self-Monitoring (Externalizing Reactions and Internalizing Reactions) and Problem Solving Inventory (Problem Orientation)*

R <sup>2</sup> adjusted .08	F 17.76		p<.001
Independent variables	Beta	T	Sig
Externalizing Reactions	-0.30	-5.83	0.000
Internalizing Reactions	-0.18	-3.38	0.001
<i>Regression between Self-Monitoring (Externalizing Reactions and Internalizing Reactions) and Problem Solving Inventory (Problem Solving Ability)</i>			
R <sup>2</sup> adjusted .01	F 3.55		p<.05
Independent variables	Beta	T	Sig
Externalizing Reactions	-0.12	-2.27	0.024
Internalizing Reactions	0.02	0.40	0.688

analysis (CFA) and verify the dimensionality, assuming that the two-factor model had better indices, as shown in the international literature. The result of the SMS analysis showed acceptable fit indices for the two-dimensional model, corroborating the literature (Snyder & Gangestad, 1986).

The results obtained in the exploratory analysis carried out by Monteiro and Soares (2017), revealed a structure with two factors called Externalizing and Internalizing Reactions, in line with the study by Wilmot (2015). The author disputes the unidimensionality of the scale, suggesting studies that aggregate results from a two-dimensional model. Furthermore, the results obtained are supported by the literature on the scale, showing that the two-factor structure is the most obtained and used in international studies (Arslantas & Kurnaz, 2017).

With regard to the aim of verifying the effect of Self-Monitoring on Social Problem Solving, the results revealed a negative relationship for Problem Solving Abilities and Problem Orientation with the Externalizing

Reactions of Self-Monitoring, characterizing that the expression and self-control of the interactions of the context do not imply the ability to discriminate what a problem is in everyday life (D'Zurilla et al. 2002; Monteiro & Soares, 2017).

The variance achieved showed low values presented by the regression model. It is known that the R-squared does not indicate whether a regression model is adequate, as it is possible to have a low R-squared value for a good model (Aron, Coups, & E. Aron, 2013), since there were significant correlations. Therefore, the data obtained indicate that Externalizing Reactions reflect the very concept of Self-Monitoring (Snyder & Gangestad, 1986), which defines individual differences in the ability to regulate the expression of behavior and public appearance, considering the external aspects to obtain performance-relevant cues. Internalizing Reactions reflect the non-development of Self-monitoring skills, as they do not imply monitoring or even controlling behavior to adapt to the situation presented (Monteiro & Soares, 2017; 2019).

The Problem Orientation and Problem Solving Ability factors are moderately correlated factors (D’Zurilla et al. 2002). Accordingly, the results achieved indicate that the factors of the Self-Monitoring Scale predicted the Problem Orientation factor. Beliefs, feelings and cognitive processes that identify problems and possible solutions are related to externalization and monitoring of context cues such as internal demands (Zenteno et al., 2011; Wilmot, 2015).

Therefore, according to the indices obtained, another hypothesis for the variance obtained by the proposed model may indicate that both the SMS and the SPSI are instruments with few studies in the national context. This fact highlights the need to introduce items aimed at the Brazilian reality, enabling psychometric studies that lead to the use of these instruments in the context of the country.

Presenting more problem orientation is associated with identifying and elaborating possible consequences brought about by the situations experienced and the possible effects of actions. Students who have greater Problem Orientation are more attentive or motivated to better handle difficult everyday situations, including possible inadequacies in interactions, collaborating with problem solving. This fact suggests that students feel more capable of competently managing possible adverse situations that may arise in everyday academic life.

Soares et al. (2020) and D’Zurilla and Sheedy (1992) stated that the main function of Problem Orientation is to cope more satisfactorily with the difficult situations of everyday life. The authors add that problem solving skills enable people, in this case, students, to identify and effectively elaborate possible solutions to problems, increasing levels of competence. The results obtained show that the SMS and SPSI measure concepts that are not correlated in a convergent way, presented in the indices obtained and in the literature that defines the constructs.

The student who is able to perceive what is considered a problem at the university and uses strategies to seek possible solutions, does not recognize the possibility of having to adapt to the context according to the clues perceived in the situations experienced, adapting to the circumstances. Finally, it is understood that Higher Education encompasses educational issues that are not restricted to the traditional teaching, research and extension trilogy. The university is a context for conducting learning processes and building knowledge with autonomy, aiming to contribute to the formation of critical subjects capable of dealing with the diversity

of academic and interpersonal situations, with everyday problems, with professional challenges and with responsibilities of the group to which they belong (Panúncio-Pinto & Colares, 2015).

Furthermore, training with quality is a challenge, even for Higher Education Institutions, mainly due to the new access policies. These policies enabled the inclusion of groups that until then were excluded from this type of education, bringing together different experiences of academic life (Andrade, Rhijn, & Coimbra, 2017). In this way, student diversity promotes reflections on pedagogical proposals and interventions that can support those who have more difficulty dealing with academic, administrative and interpersonal problems (Valadas et al., 2016).

### Final Considerations

The aim of the study was to confirm the factor structure obtained in the exploratory analysis of the Self-Monitoring Scale (SMS) and to investigate evidence of convergent validity with the Social Problem Solving Inventory (SPSI). The study achieved results for the SMS that are in line with data obtained in international studies, which indicate a two-factor model. The effect of the SMS in relation to the SPSI was confirmed. Therefore, it is understood that students who have PO would be better able to manage the difficulties, being more efficient in the use of internal and external resources when faced with everyday academic situations. In other words, these are students who elaborate and seek solutions without having to resort to what Snyder and Gangestad (1986) called “chameleons”, that is, the ability to present themselves, adjusting behavior according to the situational clues obtained in the context (self-monitoring).

In terms of limitations, the study could have verified the relationship of the SMS and SPSI using not only samples of university students, but involving other cultural groups and from different regions of the country, as well as comparing the behavior of the instruments in students from public and private HEIs. Longitudinal prospective studies using other psychometric techniques could bridge the parameters found regarding the SMS and SPSI, in addition to enabling a deeper investigation of the scale’s dimensionality model for the Brazilian reality. The study also contributed by focusing on the performance of instruments that measure concepts little explored in the context of Brazilian university education.

## References

- Almeida, L. S., Araújo, A. M., & Martins, C. (2016). Transição e adaptação dos alunos do 1º ano: variáveis intervenientes e medidas de atuação [Transition and adaptation of 1st year students: intervening variables and measures of performance]. In L. S. Almeida & R. V. Castro (Orgs.), *Ser Estudante no Ensino Superior: O caso dos estudantes do 1º. Ano* (pp.146-160). Braga: Universidade do Minho. <http://repositorium.sdum.uminho.pt/handle/1822/42318>
- Andrade, C., Rhijn, T., & Coimbra, S. (2017). Gender Differences in School-Family Conflict and School-Family Enrichment in Nontraditional Portuguese Students. *The Journal of Continuing Higher Education*, 65,13–24. <https://doi.org/10.1080/07377363.2017.1272439>
- Aron, A., Coups, E. J., & Aron, E. (2013). *Statistics for Psychology*. New York: Pearson.
- Arslantas, S., & Kurnaz, A. (2017). The Effect of Using Self-Monitoring Strategies in Social Studies Course on Self-Monitoring, Self-Regulation and Academic Achievement. *International Journal of Research in Education and Science*, 3(2),1-13. <https://doi.org/10.21890/ijres.327905>
- Associação Brasileira de Empresas de Pesquisa (2018). *Crítério Brasil*. Recuperado em 02 maio, 2015, de <http://www.abep.org>
- Buscacio, R. C. Z., & Soares, A. B. (2017). Expectativas sobre o desenvolvimento da carreira em estudantes universitários [University students and their expectations about career development]. *Revista Brasileira de Orientação Profissional*, 18(1), 69-79. <https://doi.org/10.26707/1984-7270/2017v18n1p69>
- D’Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (2002). *Social Problem-Solving Inventory*. North Tonawanda: Multi-Health Systems. <https://doi.org/10.1037/t03719-000>
- D’Zurilla, T. J., & Sheedy, C. F. (1992). The Relation Between Social Problem-Solving Ability and Subsequent Level of Academic Competence in College Students. *Cognitive Therapy and Research*, 16(5), 589-599. <https://doi.org/10.1007/bf01175144>
- Fuglestad, P.T., & Snyder, M. (2010b). Status and the motivational foundations of self-monitoring. *Social & Personality Psychology Compass*, 4, 1031–1041. <https://doi.org/10.1111/j.1751-9004.2010.00311.x>
- Matta, C. M. B., Lebrão, S. M. G., & Heleno, M. G. V. (2017). Adaptação, rendimento, evasão e vivências acadêmicas no ensino superior: revisão da literatura. *Psicologia Escolar e Educacional*, 21(3), 583-591. <https://doi.org/10.1590/2175-353920170213111118>
- Little, R. J. A. & Rubin, D. B. (2002). *Statistical analysis with missing data*. New York: Wiley.
- Monteiro, M., & Soares, A. B. (2017). Adaptação e validação da escala de automonitoria para o português do Brasil [Adaptation and validation of the Self-monitoring Scale for Brazilian Portuguese]. *Avaliação Psicológica*, 16(2), 16-175. <https://doi.org/10.15689/ap.2017.1602.07>
- Monteiro, M., & Soares, A. B. (2019). Análise da estrutura dimensional da escala de automonitoria, *Psico*, 50(3), 2-10. <https://doi.org/10.15448/1980-8623.2019.3.28544>
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus: Statistical analysis with latent variables. User’s guide*. Los Angeles: Muthén & Muthén.
- Padovani, R. C., Schelini, P. W., & Williams, L. C. A. (2009). Inventário de resolução de problemas sociais - revisado: Evidências de validade e precisão [Social Problem-Solving Inventory-Revised: Validity and precision measures]. *Avaliação Psicológica*, 8(2), 267-276. [http://pepsic.bvsalud.org/scielo.php?script=sci\\_arttext&pid=S1677-04712009000200012](http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1677-04712009000200012)
- Panúncio-Pinto, M. P., & Colares, M. F. A. (2015). O estudante universitário: os desafios de uma educação integral [The college student: the challenges of a comprehensive education]. *Medicina (Ribeirão Preto)*, 48(3), 273-81. <https://doi.org/10.11606/issn.2176-7262.v48i3p273-281>
- Schreiber, J. B., Stage, F. K., King, J., Nora, A. & Barlow, E. A. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 324-337. <https://www.tandfonline.com/doi/abs/10.3200/JOER.99.6.323-338>
- Snyder, M., & Gangestad, S. (1986). On the Nature of Self-Monitoring: Matters of Assessment, Matters of Validity. *Journal of Personality and*



*Social Psychology*, 51(1), 125-139. <https://doi.org/10.1037/0022-3514.51.1.125>

0(0), 1-14. <https://doi.org/10.1080/00313831.2016.1188146>

Soares, A. B., Mourão, L., & Monteiro, M. C. (2020). Adaptação e validação do inventário de resolução de problemas sociais para estudantes do ensino superior. *Educação: Teoria e Prática*, 30(63), 1-19. <http://dx.doi.org/10.18675/1981-8106>

Zenteno, A. D., Tam, C. B., Orozco, D. P. G., Zárate, C. D., Suárez, A. A., Rozas, B. C., & Soto, C.M. (2011). Evidencias de validez del Inventario de Resolución de Problemas Sociales – Revisado [Evidence of validity of the Social Problems Resolution Inventory – Revised]. *Fractal: Revista de Psicología*, 23(2), 439-440. [https://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1984-02922011000200015](https://www.scielo.br/scielo.php?script=sci_arttext&pid=S1984-02922011000200015)

Sone, T., Kawachi, Y., Abe, C., Otomo, Y., Sung, Y., & Ogawa, S. (2017). Attitude and practice of physical activity and social problem-solving ability among university students. *Environmental Health and Preventive Medicine*, 22(18), 2-8. <https://doi.org/10.1186/s12199-017-0625-8>

Wilmot, M. P. (2015). A contemporary taxometric analysis of the latent structure of self-monitoring. *Psychological Assessment*, 27(2), 353–364. <https://doi.org/10.1037/pas0000030>

Valadas, S. T., Almeida, L. S., & Araújo, A.M. (2016). The mediating effects of approaches to learning on the academic success of first-year college students. *Scandinavian Journal of Educational Research*,

Recebido em: 19/11/2020  
Reformulado em: 08/03/2021  
Aprovado em: 11/08/2021

About the authors:

**Marcia Cristina Monteiro** is an Educational Advisor at the *Fundação de Apoio à Escola Técnica do Rio de Janeiro* (FAETEC), Rio de Janeiro, Brazil; Clinical Psychologist and Psychopedagogue in Learning Development, Rio de Janeiro, Brazil; PhD and Post-Doctorate in Social Psychology (UNIVERSO) and MSc in Social Psychology and Personality (UERJ).  
*E-mail*: marcialauriapsi@outlook.com  
ORCID: <https://orcid.org/0000-0003-2892-1808>

**Adriana Benevides Soares** is a Full Professor of the Graduate Program in Psychology at the *Universidade Salgado de Oliveira*, Niterói, Rio de Janeiro, Brazil and the Graduate Program in Social Psychology of the *Universidade do Estado do Rio de Janeiro*, Rio de Janeiro, Brazil; CNPq Productivity Scholarship and Scientist of *Nosso Estado* FAPERJ. PhD in Psychology (University of Paris XI) and Post-Doctorate in Psychology (UFSCar and USF).  
ORCID: <https://orcid.org/0000-0001-8057-6824>  
*E-mail*: adribenevides@gmail.com

Contact:

Marcia Cristina Monteiro  
Rua Marechal Deodoro, 217 - Bloco A - Centro  
Niterói-RJ, Brasil  
CEP: 24030-060