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Measuring the General and Specific Domains of Self-Esteem: The Short-form of the State Self-Esteem Scale

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Abstract

Self-esteem is a crucial human nature feature for understanding the social dimensions of individuals' self-concept. One of its characteristics is peoples' malleability to adapt to social contexts, that is, the state self-esteem (SSE). Individuals express SES in three different factors: performance; social success; and physical appearance. Along with three studies, we present evidence of validity of the Short-Form of State Self-Esteem Scale (SSES-S) that measures contextual fluctuations in individuals' self-esteem. In Study 1 (N = 300), we found that the structure of the SSES-S was organized into three

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correlated factors that exhibited convergent-discriminant validity with measures of trait self-esteem and human values. In Study 2 (N = 281), confirmatory factor analysis indicated that a bifactor measurement model better fit the description of the factorial structure of the SSES-S, which also showed incremental validity concerning trait self-esteem for predicting one criterion. In Study 3 (N = 160), we experimentally manipulated contextual information about self-achievement and showed that the SSES-S is sensitive enough to detect transient fluctuations in self-esteem, especially in the achievement factor. We discussed the limitations and scope of the SSES-S, as its specific focus on measuring undergraduate students' state self-esteem and its implications distinguishing the general and particular domains of this construct.

Keywords
self-esteem scale, state self-esteem, self-concept, human values, experimental validity

Self-esteem has interested scholars since the earliest studies of psychology (e.g., James, 1890). Nowadays, it continues to be a pivotal construct for understanding individuals' self-concept and its relation with the expression of human nature in the contingencies of social life (Bleidorn et al., 2016). Researchers not only try to focus on perceiving self-esteem as an isolated construct, but also how it relates to other constructs, especially depression (Hilbert et al., 2019) and subjective well-being (Schwager et al., 2019). Definitions of self-esteem characterize it as a general attitude toward the self (Heatherton & Wyland, 2003). It is a global self-evaluation reflecting individuals' beliefs regarding themselves, that is, how worthy of respect they consider themselves to be (Rosenberg et al., 1995). Beyond the uni-factorial conception of self-esteem, there are some perspectives that interpret self-esteem as the sum of self-concepts from specific domains (e.g., self-esteem based on appearance; academic self-esteem; Marsh & Shavelson, 1985). Although the characteristics of these types of self-esteem are well documented, there is still little evidence about the problem of the relationship between each domain and global self-esteem.

The answers to this problem imply clarifying the organizing principles of self-esteem's internal structure, in addition to clarifying some aspects concerning its malleability and stability. For example, self-esteem has properties which characterize it as a trait (Rosenberg, 1965), but it has some features that allow it to be conceived as a state psychological construct (Wagner et al. 2015). Trait self-esteem refers to more stable and long-lasting self-evaluations, characterized by durability and resistance to environmental changes. State self-esteem, in turn, is defined as self-evaluations that vary more easily according to the social and temporal contexts in which real-life events occur (Leary & Baumeister, 2000). Momentary fluctuations in state self-esteem can be caused by contextual factors, such as feedbacks concerning a particular self-esteem domain (Park & Crocker, 2008).

Accordingly, state self-esteem is an essential construct for the understanding of self-concept, since it can represent both the start of its crystallization process as a trait as well as the opening of a process of change and personal vulnerability to a social context. For instance, Hutteman et al. (2015) showed experimentally that changes in state self-esteem influence changes in trait self-esteem in the period between late adolescence and early adulthood. They concluded that the environment plays an important role and triggers changes during the development of self-esteem. It occurs initially at the state level, which when becoming stable, also affects changes at the trait level. Studies regarding the structure of self-esteem and its malleability depend on the quality of the instruments used to measure this construct. Is global self-esteem and its factors sensitive to contextual and time variations that occur in individuals' lives? Here we present the results of a research program aiming to demonstrate empirical evidence of the construct and predictive validity of a state self-esteem measure that enables us to solve that question.

Measuring State Self-Esteem

Several instruments have been developed to measure self-esteem. Among the most utilized ones are Harter's Self-Perception Profile Series of Scales (Harter & Pike, 1984), Self-Liking and Self-Competence Questionnaires (Tafarodi & Swann, 1995), the Single-Item Self-Esteem Scale (Robins et al., 2001), and the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). Heatherton and Polivy (1991) developed the State Self-Esteem Scale (SSES) with the purpose of having an instrument that can measure short-term changes in self-esteem, meaning it would be sensitive to experimental manipulations that cause temporary alterations of self-esteem. The elaboration of the SSES' 20 items was based on the Janis-Field Feelings of Inadequacy Scale items (Janis & Field, 1959). The authors performed five studies to test the scale's validity and reliability in the Canadian context (Figure 1 presents the main possible factorial structure of the SSES). The results pointed to a three-factorial organization, defining self-esteem in three correlated factors (see Figure 1(a)): performance—7 items (e.g., "I feel confident about my abilities"), social success—7 items (e. g., "I worry about seeming like a fool"), and physical appearance—6 items (e.g., "I am satisfied with my body"). The authors considered that the scale could be used as a general state self-esteem score (see Figure 1(b)) or that the three factors could be utilized as subscales (see Figure 1(c)). Regarding convergent validity, the performance factor showed a strong and positive correlation with global trait self-esteem (measured with the RSE), but low and negative association with anxiety and depression, social desirability, hostility, and satisfaction with body image. Considering the social success factor, it was strongly and positively correlated with social trait self-esteem, although presenting weak negative relation with hostility and weak positive association with satisfaction with body image. Lastly, the physical appearance factor had a strong positive correlation with satisfaction with body image, strong negative association with propensity to diet, depression, and

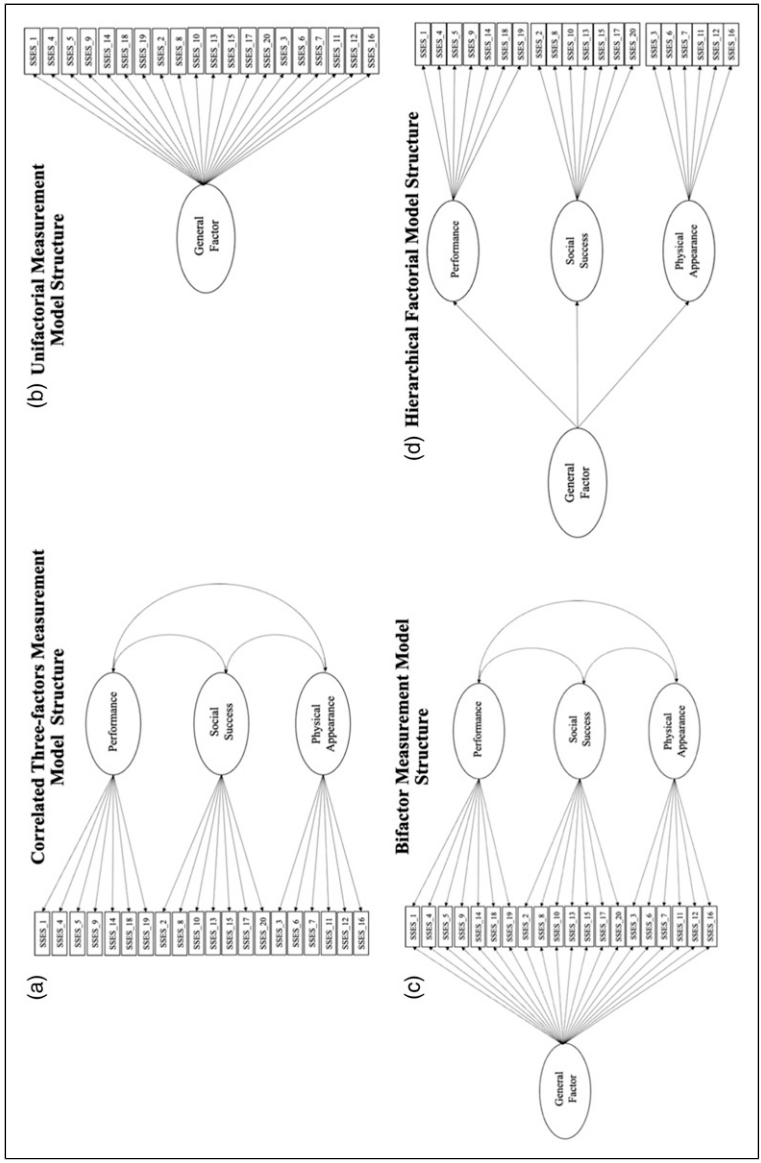

Figure 1. Hypothetical structural models of state self-esteem measured by SSES.

strong positive relation with global self-esteem (RSE), but it did not correlate with social desirability.

Bagozzi and Heatherton (1994) tested a set of models aiming to clarify the factorial organization of state self-esteem as measured by the SSES. Two empirical studies and confirmatory factor analysis demonstrated that the best-adjusted model to the data was one specifying a hierarchical organization with a general second-order self-esteem factor, and three first-order specific factors (Figure 1(d)). That is, although self-esteem is oriented by a general factor, it also has specific secondary factors. The authors' contribution broadened the discussion about the factorial structure of self-esteem, and thus helped overcome the drawback of considering it as a one-factorial psychological construct.

Still regarding factorial validity of the scale and its reliability, Aslam and Aftab (2014) showed, in Pakistan samples, the satisfactory internal consistency of the SSES ($\alpha = 0.80$), strong test-retest ($r = 0.96$), and Guttman's partial reliability coefficients (0.85). Furthermore, the total SSES score presented significant positive correlations with the RSE ($r = 0.49$) and negative correlation with the Anxiety and Depression Scale ($r = -0.51$) and the Suicidal Ideation Scale ($r = -0.29$), ensuring the scale's convergent validity. In another investigation, Chau et al. (2011) adapted the SSES to the Chinese context using a sample of 265 patients who had suffered a stroke (Mean age = 71.3, *SD* = 10.3). The results confirmed a correlated three-factorial state self-esteem structure (Figure 1(a)), besides showing significant negative correlations of specific factors with depression (varying between $r = 0.31$ and $r = 0.55$), and strong Cronbach's alpha internal consistency coefficients.

Concerning the predictive validity, Heatherton and Polivy (1991) demonstrated that academic failure affects only the performance factor. Individually, the state self-esteem was evaluated with 128 university students at the beginning of the semester and right after they received their grades. The authors observed a significant decline in the performance factor among students with bad grades, while significant differences were not perceived in the other factors.

Moreover, the SSES' sensitivity to experimental manipulations was also analyzed in a study using false feedbacks concerning performance of 79 female university students (Heatherton and Polivy (1991, Study 4). The results pointed to a significant effect of the experimental manipulation on the performance and social success factors, although not in the physical appearance one. Notably, the participants in the failure conditions had lower scores in the performance and social success factors than the participants in the control condition. In addition, Heatherton and Polivy (1991) also analyzed the SSES sensitivity to capture changes in individuals' self-esteem after psychotherapeutic interventions in a sample of 18 obese women. The results showed that the effects of the treatment were significant to both the total Explicit Self-Esteem score and each of the three specific factors.

Moreover, Linton and Marriott (1996) demonstrated the sensitivity of the SSES to measure context-dependent individual differences in self-esteem. They adapted the SSES to measure state self-esteem of students aged between 11 and 13 years from the USA. The students' self-esteem was measured before and after an intervention program

that promoted organizational and academic abilities. The results demonstrated that the performance factor was the one that had the most significant difference in means compared to the other factors (social and appearance). That is, there was an increase of self-esteem only in the performance factor after the intervention program.

Based on this empirical and theoretical evidence of context malleability of self-esteem, we describe a research program designed to measure individual differences in state self-esteem. Specifically, we examined the appropriateness of each item for assessing the specific factors of the SSES-S, compared the different factor structures identified in previous studies as most appropriate for describing self-esteem, and examined the convergent-discriminant validity and context sensitivity of the SSES-S for measuring self-esteem. We thus tested the hypothesis that the SSES-S measures state self-esteem through three factors: performance, social success, and physical appearance. We also analyzed the scale's predictive validity, by experimentally testing the sensitivity of each factor to capture changes in individuals' self-esteem caused by experimental manipulations of their performance in three distinct domains of their social lives.

Overview of Studies

This research aimed to examine the factor structure, convergent-discriminant validity, and experimental sensitivity of the SSES (Heatherton & Polivy, 1991) to evaluate individual differences in state self-esteem. Specifically, we analyzed if the factorial structure of the SSES-S to measure self-esteem is distributed in three factors (performance, social success, and physical appearance) and if those are sensitive to variations arising in experimentally manipulated social contexts. Study 1 and Study 2 utilized a non-experimental method and aimed at evaluating the factorial validity, reliability, convergent-discriminant, and incremental validity of the SSES-S. Study 3 used the experimental method and intended to demonstrate its predictive validity. In each study, all participants provided consent according to the Declaration of Helsinki and the American Psychological Association. The Research Ethics Committee of Federal University of Paraiba, Brazil, approved all procedures used in the studies. We have posted the publicly available data of all studies in the Open Science Framework (https://osf.io/g4ktr/?view_only=ffcb4eafa189457eacc1533595c79592). All studies used samples of university students selected from those who were willing to participate voluntarily in the studies.

Study 1: Exploring the Factorial Structure of the SSES and its Convergent-Discriminant Validity

In this study, we explored the factorial structure of the SSES, its internal consistency and provided preliminary convergent-discriminant information of its validity to measure state self-esteem in the Brazilian context. After translating the items, we applied the scale to a sample of college students and conducted an exploratory factor analysis of the scale items. We examined the suitability of each scale item to measure

state self-esteem based on the hypothesis that the SSES' items describe a correlated three-factor structure (see Figure 1(a)): performance; physical appearance; social success. Importantly, we examined the convergent-discriminant validity of the SSES for measuring self-esteem by testing whether it correlates positively with another well-established measure of self-esteem that has been widely used in previous studies (i.e., convergent validity) and whether it has low correlations with other constructs that are not theoretically confounded with self-esteem, such as human values (i.e., discriminant validity). Specifically, we used the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) for convergent validity and the Portrait Values Questionnaire (PVQ-21; Schwartz, 2006) for discriminant validity.

Method

Participants. We previously determined the sample size according to the criteria proposed by Mundfrom et al. (2005), who recommend a minimum sample size of 150 participants. Thus, the sample of this study consisted of 300 university students from the Federal University of Paraiba, Brazil, aged 18–68 years (M = 21.93; SD = 4.54), predominantly men (54.7%), single (94%), and middle class (48.7%).

Measures. The participants answered the following scales in addition to a socio-demographic questionnaire:

State Self-Esteem Scale (Heatherton & Polivy, 1991). It is a self-reported instrument designed to be sensitive to contextual changes with the potential to alter self-esteem temporarily. We adapted the SSES items to the Brazilian context following the conventional procedures for adaptation of psychological instruments to other contexts (e.g., Borsa et al., 2012). Initially, a bilingual Brazilian expert translated the scale from English to Portuguese. Then, experts in self-esteem studies reviewed the initial translation. Finally, another bilingual translator performed a back-translation from Portuguese to English. No reformulation of item wordings was necessary. The SSES contains 20 items designed to evaluate three correlated factors: Performance (seven items: e.g., "I feel confident about my abilities"); Social (seven items: e.g., "I am worried about whether I am regarded as a success or failure."); and Physical Appearance (six items: e.g., "I feel satisfied with the way my body looks right now."). Participants indicated how much each item described them using a Likert scale ranging from 1 (does not describe me) to 5 (strongly describes me).

Rosenberg Self-Esteem Scale (RSE—Rosenberg, 1965). It is a one-factorial measure consisting of 10 statements related to a set of feelings of self-esteem and self-acceptance that assesses overall trait self-esteem (e.g., "On the whole, I am satisfied with myself."). Items are answered on a four-point scale ranging from strongly agree to strongly disagree. In the current study, we used Hutz (2000) adapted version to the Brazilian context. We preserved the one-dimensionality of the original scale with its psychometric characteristics being equivalent to those found by Rosenberg (1965), especially with a strong internal consistency coefficient (α = .92).

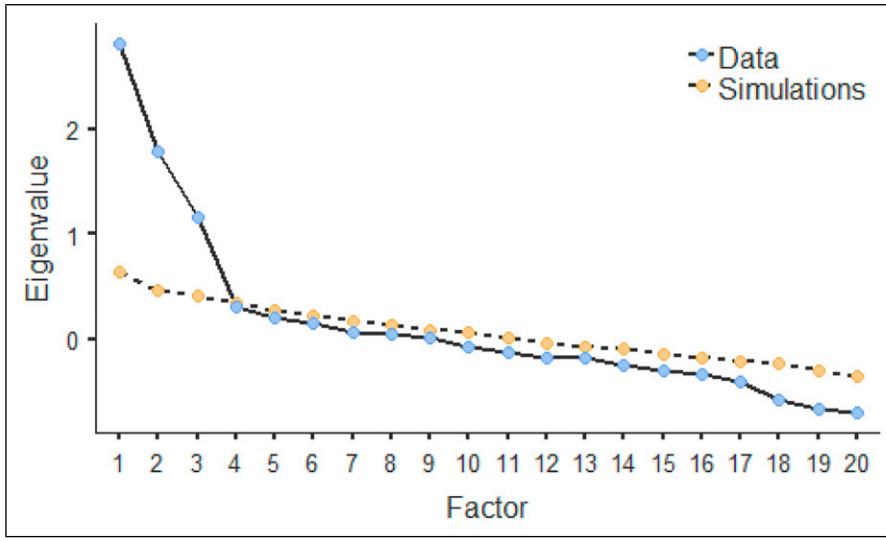

Figure 2. Scree plot of the factors' eigenvalues.

Portrait Values Questionnaire (PVQ-21; Schwartz et al., 2001). The PVQ-21 is based on Schwartz's theory of values (Schwartz, 2006). Schwartz et al. (2001) explained that basic individuals' values can be better assessed by asking about their identification with several statements that describe other people value (i.e., portrait value). Accordingly, respondents compare themselves to each portrait value and indicate how much it agrees with them. The items of the scale thus describe a person and the participant indicates how much this person is similar to him or her. This is a Likert-format scale (1 = doesn't look like me to 5 = looks a lot like me) composed of 21 items (e.g., " He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching") that measure four motivational value domains: conservation, self-transcendence, openness to change, and self-promotion. PVQ-21 showed very good Cronbach's alpha coefficients, ranging from .71 (Conservation) to .83 (Self-Promotion).

Procedures. Participants were approached in classrooms. After reading the Consent Form and agreeing to participate, they answered the questionnaires individually and spent an average of 15 minutes to conclude.

Data Analysis. We used Jamovi version 1.1.9.0. (The Jamovi Project 2019The jamovi project, 2019) running on R (R Development Core Team, 2008) to calculate descriptive statistics for sample characterization, and exploratory factor analysis by using the principal-axis factoring method and Pearson's correlation matrix. The analysis was completely exploratory, in which we considered suitable items with a minimum factor

Table 1. Factor loadings of the State Self-Esteem Scale's items.

Items	Social Success	Performance	Physical Appearance
01. I feel confident about my abilities		**0.796**	
03. I feel satisfied with the way my body looks right now			**0.932**
07. I am dissatisfied with my weight			**0.483**
08. I feel self-conscious	**0.776**		
09. I feel as smart as others		**0.534**	
12. I am pleased with my appearance right now			**0.488**
13. I am worried about what other people think of me	**0.857**		
14. I feel confident that I understand things		**0.797**	
16. I feel unattractive			**0.524**
17. I feel concerned about the impression I am making	**0.831**		
19. I feel like I am not doing well		**0.626**	
20. I am worried about looking foolish	**0.788**		
Eigenvalue	2.69	1.98	1.63
% Variance	22.4	16.5	13.6
Cronbach Alpha	$\alpha = 0.88$	$\alpha = 0.77$	$\alpha = 0.68$

loading of .35 to be considered as belonging to a factor, and the presence of factors with fewer than three items, and with eigenvalue less than 1.00. Complementary criteria for assessing factor robustness are discussed in the context of the results.

Results

Initially, we verified whether the correlation matrix could be factorized and found a Kaiser–Meyer–Olkin index (KMO) of .71 and Bartlett Sphericity Test = 1620 ($p <$ .001). Since the factorization of the data matrix was assured, we performed an exploratory factor analysis. The first factor retention criterion used was the analysis of the Scree Plot of eigenvalues, as proposed by Cattell and Vogelmann (1977). From the observation of points that differ in the graph, the number of factors is considered. This criterion pointed to the existence of three factors (Figure 2).

We also considered a more robust criterion, the parallel analysis method (Horn, 1965). This consists of the random estimation of a hypothetical set of variables on the base of a correlation matrix, with the same dimensionality (the same number of variables and the same number of subjects) as the observed dataset. The hypothetical matrix is factored hundreds or thousands of times (depending on the robustness adopted by the researcher), and the average eigenvalues obtained from this simulation is calculate. The eigenvalues of the actual data are compared to random eigenvalues and the number of factors in the observed data retained refers to those that have eigenvalues >1 compared to the random

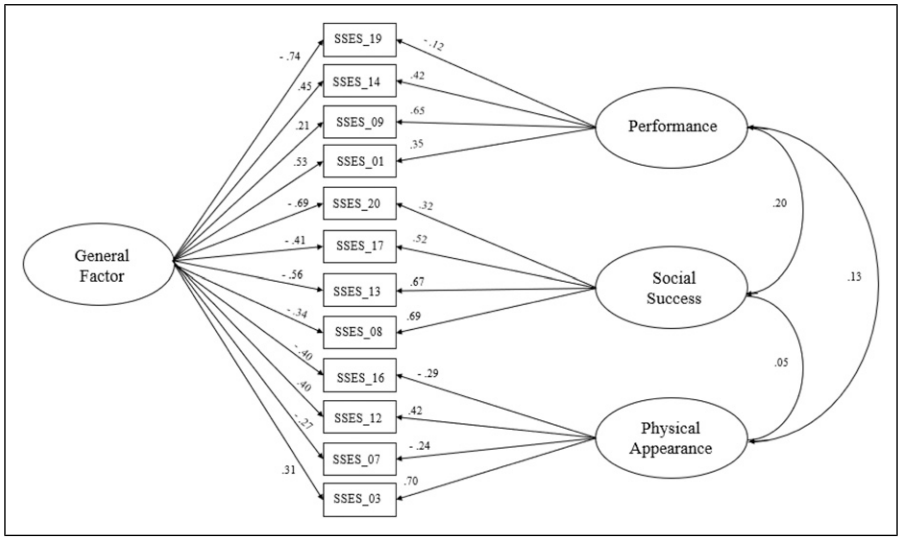

Figure 3. Estimated standard parameters in the confirmatory factorial analysis of SSES factorial structure.

Table 2. Bivariate correlations between the factors SSES-S, RSE, and Schwartz's Values Scale.

	Performance	Social Success	Physical Appearance	SSES-S Total Score
RSE	0.751***	0.334***	0.467***	0.505***
Self-transcendence	0.177**	0.075	0.009	0.026
Self-enhancement	0.200***	-0.307***	0.071	0.189**
Openness to change	0.412***	0.165**	0.168**	0.199**
Conservation	0.210***	-0.100	0.191**	0.248***

Note. RSE = Rosenberg Self-Esteem Scale; SSES-S = Short-Form of the State Self-Esteem Scale; ** $p < .01$; *** $p < .001$.

eigenvalues. According to this criterion, we found a robust three-factor solution in the SSES. Thus, we interpreted this three-factor solution and re-estimated the factor loadings by time, fixing three factors and establishing oblimin rotation because we predicted the factors to be correlated (see Table 1).

Each factor was composed of four items, corroborating the initial three-factor structure of the scale. Factor 1 concerned Performance and comprised items 1, 9, 14, and 19. Factor 2 referred to Social Success and loaded items 8, 13, 17, and 20. Factor 3 was Physical Appearance and aggregated items 3, 7, 12, and 16. Eight items were excluded because they had loadings below the specified minimum criterion of .35. The excluded items were: item 2 [I am concerned if I am seen as a success or failure]; item 4

[I am dissatisfied with my performance]; item 5 (I am having trouble understanding things I read); 6 (I feel that others respect and admire me); item 10 [I am unhappy with myself]; item 11 [I am fine with myself]; item 15 (I feel inferior to others at this time); item 18 (I have less academic skills than I should have). Therefore, the reduced version of the scale in the Brazilian context is composed of 12 items measuring three correlated state self-esteem factors.(Figure 3)

We assessed the convergent validity of the SSES-S by analyzing its correlation analysis with the RSE (Rosenberg, 1965). The results (Table 2) showed a strong, positive and significant correlation between the three factors of the State Self-Esteem Scale and RSE. In addition, we analyzed the discriminant validity of the SSES-S (Table 2) by observing its correlation with the four factors of PVQ-21 (Schwartz, 2006). We found only a moderate and positive correlation between openness to change values and performance self-esteem. The other correlations were very low, indicating that SSES-S and PVQ-21 factors evaluated different constructs.

Discussion

The results provided preliminary empirical evidence of the factorial, convergent and discriminant validity of the SSES-S version to measure state self-esteem. This version was composed of 12 items, evenly distributed among three factors. The difference in total items reported in this study compared to the full 20-item version (Heatherton & Polivy, 1991) has already been verified in previous adaptation studies (Chau et al., 2011) and maintained the original quality of estimates for each SSES-S measurement factor. Excluding eight original scale items was based on empirical criteria since they did not reach the minimum parameters to be considered adequate for one of the factors measured by the SSES-S, which may indicate its fragility in terms of content or its semantic inadequacy, at least for the sample studied. The excluded items belonged, in the initial version, to social and performance factors. Considering the scale was initially designed for the Canadian context more than 20 years ago, it can be assumed that cultural and temporal differences may have occurred in the items' meaning.

Finally, the results also showed that the three SSES-S factors are not confused with human value measures that are not strongly related to self-esteem. Evidence of discriminant validity contributes to ensure SSES-S construct validity because it is not confused with the measurement of another psychological construct. Of greater importance, and following psychometric evidence previously found (Heatherton & Polivy, 1991), the convergence of the three SSES-S factors with the total score self-esteem score measured by the RSE was confirmed. That is, both instruments share common characteristics that refer to the measurement of the self-esteem construct. We found a stronger association between the RSE and the performance factor of SSES-S. That is, the performance factor of SSES-S primarily reflects global self-esteem when applied to a sample of college students. This phenomenon is based on previous evidence obtained by Heatherton and Polivy (1991) and suggests an even more complex factorial structure. That is, SSES-S can be used to measure both global state self-esteem

and its manifestation of specific factors. This suggests the possibility of using the SSES-S to evaluate a bifactor self-esteem structure, an aspect that we addressed in Study 2.

Study 2: Confirmatory Analysis of the SSES-S and its Incremental Validity

This study aimed at finding additional evidence of the SSES-S' factorial validity. Specifically, we evaluated the suitability of the scale's factorial structure by comparing its measurement model with alternative models. We specifically compared the adequacy of the three-factor model found in Study 1 with a bifactor structure. The original SSES version proposed that the scale items could be used both as a general score (i.e., a G-Factor) and as specific factors (i.e., S-Factors). However, as far as we know, this possibility has not yet been directly tested. In addition, we re-evaluated the internal consistency indicators and verified the incremental validity of the SSES-S relative to its ability to predict a criterion by controlling for the self-esteem trait measured by the RSE. We so conducted a study using a sample of university students who responded to the SSES-S, RSE and measures of life satisfaction, positive and negative affects. We estimated five factorial models to verify if the SSES-S is organized into three independent and correlated factors or if it has a bifactor structure organized in a total score (i.e., a G-Factor) and three specific factors (i.e., the S-Factors: performance; physical appearance; social success). Also, to provide additional information on the SSES-S construct validity, we analyzed its predictive association with other constructs theoretically related to self-esteem (i.e., evidence of incremental validity), such as life satisfaction, and positive negative affects.

Method

Participants. We defined the sample size in advance by specifying a predicted model with 51 df, desired statistical power of .90, and RMSEA of .05 in WebPower (Zhang & Yuan, 2018). According to these parameters, we needed a sample of at least 238 participants to have sufficient power to estimate the model parameters accurately. However, we applied the questionnaire to a slightly larger number of participants (N = 300) to ensure having a sufficiently large sample after eliminating responses with missing data and ineligible cases. Thus, we obtained a final sample of 281 undergraduates from the Federal University of Paraiba, Brazil, who were on average 24 years old (SD = 7.10), primarily women (82.6%), single (85.4%), who considered themselves middle class (51.6%).

Measures. In addition to a socio-demographic questionnaire and the 12-item version of the State Self-Esteem Scale (SSES-S) presented in Study 1, the participants answered questions involving the following measures:

Satisfaction with Life Scale (SWLS; Diener et al., 1985). We used the version adapted by Albuquerque and Tróccoli (2004), which consists of 15 items (e.g., I am

satisfied with my life; a = .90). The participants responded on a 5-point Likert scale (ranging from "strongly agree" to "strongly disagree").

Positive and Negative Affect Scale (PANAS; Watson et al., 1988). It consists of two subscales (Positive Affects a = .86; Negative Affects a = .89) that measure mood, organized into 20 items (e.g., "Nervous" and "Inspired"), which are answered on a five-point Likert scale (1 = "Nothing or very slightly" to 5 = "Extremely"). The participants indicated how much they experienced each particular emotion within a general period (e.g., generally in their life as a whole). We used the version adapted to the Portuguese language by Galinha et al. (2014).

Procedure and Data Analysis. The participants answered the questionnaires individually, but in collective situations in the classroom. We used the SPSS and AMOS statistical software for statistical analysis, descriptive, Pearson's r correlation, multiple regression and confirmatory factor analysis (CFA). We evaluated the goodness-of-fit to each tested factor model structure based on the following indices: ratio of chi-square to degrees of freedom ($\chi 2$/gl), CFI (Confirmatory Fit Index), GFI (Goodness-of-Fit Index), AGFI (Adjusted Goodness-of-Fit Index), AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), and RMSEA (Root Mean Square Error of Approximation). In addition, we estimated the scale's reliability by using the composite reliability (CR) and the average variance extracted (AVE).

Results

Table 3 presents the descriptive statistics and the correlation matrix for the SSES-S items. In general, all items are significantly correlated, in accordance with the initial conception of the SSES-S (Heatherton & Polivy, 1991), predicting that although items can be organized into three specific factors, they are related to each other and thus indicate the possibility a general state self-esteem factor.

We then performed CFA specifying the correlated three-factor measurement model of Study 1, representing performance, social success, and physical appearance. We compared the goodness-of-fit of this model with three alternative models (Table 4). First, we tested a two-factor model, since there is evidence that self-concept involves individual and social motives, defined from individuals' belonging to social groups (e.g., Tajfel & Turner, 1979). Therefore, we specified the items to load on the social self-esteem factor (items 8, 13, 17, and 20) and on the personal self-esteem factor (i.e., all other items that previously comprised performance and physical appearance factors). In turn, the one-factor model assumes state self-esteem as a one-dimensional factor. Additionally, we tested two bifactor models, which assume that the SSES-S comprises both a general self-esteem factor (i.e., G-Factor) and specific factors (i.e., S-Factors).

The results indicated that the bifactor model with one G-Factor and three S-Factors (Figure 2) fitted the data better than the other models. In addition, this model presented adequate reliability (General Factor: CR = 0.93; AVE = 0.97; Performance: CR = 0.98;

Table 3. Means, Standard Deviations, and Correlations among SSES-S items.

Items	*M*	*DP*	12	11	10	9	8	7	6	5	4	3	2
1. I feel confident about my abilities	3.54	1.16	− **.37**	− **.41**	− **.16**	− .15	**.36**	− **.24**	**.31**	**.34**	− .10	− **.11**	**.22**
3. I feel satisfied with the way my body looks right now	3.37	1.27	− **.17**	− **.26**	− .07	− **.31**	**.14**	− .14	**.42**	**.13**	− .04	− **.25**	—
7. I am dissatisfied with my weight	3.01	1.55	**.22**	**.17**	**.14**	**.23**	− .16	**.18**	− **.16**	− .04	**.13**	—	—
8. I feel self-conscious	3.07	1.43	**.42**	**.23**	**.51**	**.31**	− .04	**.65**	− **.14**	.02	—	—	—
9. I feel as smart as others	2.90	1.41	− .10	− **.21**	− .05	− .07	**.37**	− .05	**.13**	—	—	—	—
12. I am pleased with my appearance right now	3.69	1.14	− **.23**	− **.30**	− **.17**	− **.29**	**.21**	− **.17**	—	—	—	—	—
13. I am worried about what other people think of me	2.56	1.47	**.62**	**.37**	**.56**	**.26**	− **.19**	—	—	—	—	—	—
14. I feel confident that I understand things	3.50	1.06	− **.28**	− **.41**	− .10	− .09	—	—	—	—	—	—	—
16. I feel unattractive	2.66	1.37	**.22**	**.36**	**.29**	—	—	—	—	—	—	—	—
17. I feel concerned about the impression I am making	2.90	1.42	**.45**	**.26**	—	—	—	—	—	—	—	—	—
19. I feel like I'm not doing well	1.89	1.29	**.49**	—	—	—	—	—	—	—	—	—	—
20. I am worried about looking foolish	2.24	1.48	—	—	—	—	—	—	—	—	—	—	—

Note. The correlations in **bold** are statistically significant ($p < .05$).

Table 4. Goodness-of-fit indices for the comparison of the SSES-S measurement model hypotheses.

	X^2	X^2/gl	CFI	GFI	AGFI	AIC	BIC	RMSEA
Three-factors model	145.328***	2.85	.89	.92	.87	199.328	297.563	.08
Two-factors model	184.947***	3.49	.85	.89	.84	234.947	325.906	.09
Uni-factorial model	331.163***	6.13	.68	.79	.70	379.163	466.483	.13
Three-factors with bifactor model	**60.809*** **	**1.56**	**.97**	**.96**	**.93**	**138.809**	**280.705**	**.04**
Two-factors with bifactor model	100.804***	2.45	.93	.94	.84	174.804	309.423	.07

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

Table 5. Unstandardized regression coefficients representing the predictive effect of the three SSES-S factors and the RSE total score on the life satisfaction, positive and negative affect scales.

	Life Satisfaction	Positive Affections	Negative Affections
Constant	.37	.37	5.20
Performance	.08	.25**	− .19**
Social success	.07	.04	− .17***
Physical Appearance	.29***	.06	.01
RSE	1.18***	.62***	− .56***
Model information	R^2 = .33 F (4,275) = 33.64***	R^2 = .29 F (4,275) = 28.61***	R^2 = .34 F (4,275) = 34.95***

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

AVE = 0.97; Social Success: CR = 0.98; AVE = 0.93; Physical Appearance: CR = 0.76; AVE = 0.89).

We also analyzed the incremental validity of the SSES-S by estimating a regression model in which the three factors of state self-esteem predicted life satisfaction and positive/negative affects, controlling for the trait self-esteem measured with the RSE. The results showed that only the physical appearance factor predicts life satisfaction greater than the RSE; only performance predicted positive affects; and the social success and performance factors predicted negative affects. The total trait self-esteem score explained all components of well-being (Table 5).

Discussion

According to the CFA results, the bifactor model specifying a general self-esteem factor (G-Factor) and three correlated specific factors (S-Factors) was the most appropriate to represent the factorial structure of state self-esteem measured by the SSES-S. This

factorial structure corroborates the previous hypotheses of the scale's authors (Heatherton & Polivy, 1991), although it has not yet been empirically demonstrated. Our results have now confirmed the hypothesis that state self-esteem can be assessed from both a total score (i.e., the G-Factor) and specific factors (i.e., the S-Factors). This study thus represents a step forward in illuminating the factorial structure of state self-esteem by demonstrating the empirical viability of the SSES-S' bifactor structure.

In addition, the results showed evidence of incremental validity of the SSES-S, since specific factors predicted life satisfaction and positive and negative affects even when controlling for the trait self-esteem as measured by the RSE. The RSE was chosen as the measure for the present study because it is one of the most commonly used measures of self-esteem (Donnellan et al., 2015). Social success related more to the inhibition of negative affections, while self-esteem based on performance was associated with positive affects, showing that for university students, perceiving themselves as having good performance strongly relates to positive feelings (Upadyaya & Salmela-Aro, 2013). The factor of self-esteem of physical appearance was more associated with life satisfaction, which reveals that in order to be satisfied, people need above all to feel good about their physical appearance.

To obtain evidence to ensure the SSES-S' factorial and incremental validity, we sought to assess its criterion validity, specifically the predictive validity, since the scale was designed to assess oscillations in state-level self-esteem. Therefore, we conducted an experimental study to test whether the factors of self-esteem are sensitive to detect oscillations caused by contextual alterations due to experimental manipulation.

Study 3: Evidence of SSES-S Predictive Validity

In this study, we experimentally assessed a particular type of predictive validity characterized by the fact that the scores of a scale are sensitive to a criterion that is predicted to be a causal antecedent of the construct that the scale intended to measure (Nunnally & Bernstein, 1994). Accordingly, we used a random-group experiment to manipulate social situations that can affect individuals' self-esteem. We specifically analyzed which scale factors are sensitive to temporary oscillations caused by social context changes that can cause negative impacts on individuals' self-esteem. For this proposal, we confronted participants with situations of social life that usually negatively affect self-esteem (Park & Crocker, 2008). It has been shown that the manipulation of self-esteem impact-enhancing situations is difficult to operationalize because individuals, as a form of defense, always try to deny that they have been affected (Bernstein et al., 2013). For this reason, it was necessary to use a procedure to minimize this self-protective effect.

We thus used the identification paradigm, in which participants are instructed to think about of a person close to them and to respond according to what this person thinks. In this sense, we asked the participants to think of their best friend and to respond to the SSES-S with answers they thought their best friend would give (self-esteem measure in T1). We then manipulated this best friend's failure into one of three

factors that promote state self-esteem (performance vs. physical appearance vs. social success vs. control). We specifically presented the participants with an evaluative situation that, depending on the experimental condition, described their best friend as failing in one of these three factors of the SSES-S. Finally, we asked the participants to respond to the SSES-S with the answers they thought their best friend would give after he\she had failed (self-esteem measure in T2). Our main prediction was that if the SSES-S is sensitive to the immediate contextual situation, the expression of self-esteem should be lower in T2 than in T1. On the other hand, self-esteem should not be affected in the controlling condition, since in this condition there was no social comparison process in which the participants' best friend failed. Specifically, we expected that when reading negative feedback on academic achievement, the performance factor would be affected; that when reading negative feedback on social success, the social success factor of self-esteem would be affected; and the same would be true for the physical appearance factor, that is, that scores for this factor would be affected by negative feedback on physical appearance.

Method

Participants. We defined the sample size beforehand using WebPower (Zhang & Yuan, 2018) by taking into account a median effect size [(d = 0.50, Cohen, 1988; standard parameters of α = .05 and power = .80 (Erdfelder et al., 1996)]. Thus, we obtained a sample of 172 undergraduates from the Federal University of Paraiba, Brazil, with an average age of 23.8 years (SD = 3.19), mostly women (82.6%). The participants were randomly distributed in one of four experimental conditions according to an experimental design with 2 (Time: T1 vs. T2) X 4 (Factors of Social Life: Control vs. Performance vs. Physical Appearance vs. Social Success) repeated measures with a between-subject factor in the last one.

Procedures. We conducted the study online using the Qualtrics platform through social networks. Initially, the participants responded to the state self-esteem scale (T1). We adapted the instructions so that the participant should answer "as if it was his or her best friend answering." Then, they read an abstract of an article supposedly published in a prestigious scientific journal of psychology. We manipulated the content of the abstract to correspond to experimental conditions (control vs. social success vs. physical appearance vs. performance). The abstract reported the profile that a person should have to be considered valuable. In the social success condition, the text addressed the profile of a socially loved person. In the physical appearance condition, the text described the profile of an attractive person. In the performance condition, the text specified the profile of a student with excellent performance. After reading the abstract, the participants answered a set of questions ostensibly testing whether their best friend met the characteristics required to be a considered a valued person. Then the participants received false feedback concerning the test result, which concluded that their best friend performed below average on the required criteria. In the control condition, the abstract

described a highly regarded library with no mention to participants' best friend. In the performance condition, participants read negative feedback about their best friend's performance of the best friend. In the social success condition, the participants read negative feedback about the best friend's social success. In the physical appearance condition, participants read negative feedback about the best friend's physical appearance. After reading the feedback, self-esteem was measured again using the SSES-S (T2). Finally, all participants were informed about the research project and the reasons for using the false feedback.

Data Analysis. We used the SPSS version 21 statistical software to calculate analysis of variance (ANOVA) with repeated measures. According to a 2 (time: T1 vs. T2) x 3 (factors of self-esteem: performance vs. physical appearance vs. social success) x 4 (experimental conditions: control vs. performance vs. physical appearance vs. social success) factorial design, with the first two factors being within-subject, and the last a between-subject factor.

Results

The results showed a significant effect of the factors of self-esteem [F (2, 168) = 23. 176, p = .00, η2p = .12], indicating the participants considered the target person to base his\her self-esteem more on performance than on social success (b = .47, SE = .09, p = .00, 95CI: .29; .64, d = .51) and physical appearance (b = .47, SE = .07, p = .00 .95CI: .34; .60, d = .60), with no significant difference between social success and appearance (b = .00, SE = .08, p = .92, 95CI:.-. 17; .15, d = .01). Of greater importance was the three-way interaction between time, state self-esteem, and experimental condition [F (3,164) = 2,217, p = .04, η2p = .04]. Decomposition of this effect indicated a significant decrease in performance self-esteem between T1 and T2 in the experimental condition of performance (see Table 6), [b = −.26, SE = .09, p = .00 95 Cl: −.42; - .08, d = .33]. In the other experimental conditions, especially control conditions, there were no significant changes in the factors of self-esteem measured by the SSES-S.

Discussion

The results of this study showed experimental evidence of changes in state self-esteem assessed with a test-post-test repeated measures experimental design. This means that self-esteem measured by the SSES-S is sensitive to manipulated contextual changes. However, we predicted that each scale's factors would be sensitive to experimental manipulations depending on its corresponding specific domain, but not on the others. However, this prediction was confirmed only in the performance factor. The failure to obtain changes in the other factors of the SSES-S can be due to the specificity of the sample. In fact, the participants came from a very competitive academic context typical in the life of university students. Accordingly, the SSES-S was sensitive to this particular situation when it was affected in the specific domain of academic failure,

Table 6. Means and standard deviations of the state self-esteem factors by conditions.

Experimental Conditions Experimentais	Factors of the SSES-S							
	Social		Appearance		Performance		Total	
	T1	T2	T1	T2	T1	T2	T1	T2
Control	3.06 (1.13)	2.92 (1.26)	2.98 (.74)	3.05 (.86)	3.34 (.91)	3.40 (.78)	3.12 (.49)	3.12 (.61)
Social	3.11 (1.12)	3.14 (1.25)	3.30 (.85)	3.23 (.85)	2.97 (1.15)	2.96 (1.29)	3.38 (.70)	3.33 (.79)
Appearance	3.07 (.87)	3.14 (.95)	3.13 (1.04)	2.98 (.89)	2.82 (.76)	2.82 (.70)	3.34 (.71)	3.29 (.70)
Performance	3.72 (.71)	3.62 (.83)	3.80 (.70)	3.75 (.80)	**3.38*** (.91)**	**3.13*** (.89)**	3.06 (.71)	2.97 (.76)
Total	2.98 (1.15)	2.96 (1.29)	2.82 (.75)	2.82 (.70)	3.38 (.90)	3.12 (.89)	3.22 (.67)	3.17 (.73)

Note. *** = The difference between means was significant ($p < .05$).

which is consistent with previous studies showing that self-esteem is anchored in specific domains that are contingent on the self (Maroiu et al., 2016; Park & Crocker, 2008). In summary, the results demonstrated here are consistent with previous findings (e.g., Linton & Marriott, 1996) confirming the sensitivity of the performance factor to experimental manipulations that specifically affect this sphere of self-esteem.

General Discussion

In the three studies, we analyzed the factor structure, the convergent-discriminant and predictive validity of the SSES-S. In the first study, we showed that the 12 items short-version of the State Self-Esteem Scale (SSES-S) measures three correlated factors of state self-esteem (performance; social success; physical appearance), besides demonstrating strong evidence for its convergent-discriminant validity. Additionally, Study 2 demonstrated that the SSES-S measures a bifactorial structure, formed by a G-Factor and three specific factors, which accurately predict life satisfaction, the expression of positive and negative affect, after controlling for the general trait self-esteem as measured by the RSE. Finally, Study 3 went further by showing experimental evidence of the SSES-S' sensitivity in capturing contextual variations in state self-esteem. In short, the results are consistent enough to support both the construct and predictive validities of the SSES-S to measure state self-esteem. This is important contribution to researchers and professionals interested in evaluating state self-esteem and needing a valid and reliable instrument.

Indeed, the SSES-S adequately evaluated the state self-esteem through its total score (i.e., a G-Factor) and its specific factors (i.e., The S-Factors: performance, social success and physical appearance). Thus, the factorial structure theoretically proposed in the original version (Heatherton & Polivy, 1991), and the version later corroborated in other studies (e.g., Bagozzi & Heatherton, 1994), was also confirmed in the reduced version presented here. The arrangement of items in three specific factors, as well as in a total score, has been suggested in past studies (Chau et al., 2011), but only now has this hypothesis been confirmed. We went further when demonstrating the presence of a bifactorial structure in state self-esteem measured by the SSES-S, which reveals the plasticity of self-esteem in its multifaceted expressions. Moreover, the primary purpose of the scale was corroborated, meaning it is sensitive to temporary oscillations in self-esteem caused by contextual contingencies, as we demonstrated in Study 3.

An abbreviated version of the SSES presented some advantages in the current study, primarily because results provided its validity to measure the construct more accurately and its usability and practicality in large-scale studies that use multiple instruments to measure many constructs. The SSES-S proved to be sufficiently reliable, since it presented satisfactory internal consistency coefficients to both specific and general factors. Its strong consistency was demonstrated using different parameters, such as Cronbach's alpha, composite reliability and average variance extracted. Moreover, Cronbach's alpha coefficients concerning the SSES-S are stronger than of the original

version (Heatherton & Polivy, 1991). Finally, the pattern of correlations we observed between the SSES-S and the measures of other constructs are sufficiently consistent to attest to its convergent-discriminant validity. Together, besides offering evidence of the SSES-S' construct validity and reliability, we also found experimental evidence for the scale's predictive validity.

Theoretical Implications

Understanding self-esteem as a uni-factorial construct has been predominant in the literature (Rosenberg, 1965). However, there is evidence that individuals respond differently according to each domain of their social lives (Heatherton & Polivy, 1991). For instance, a person's self-concept can be damaged after receiving negative feedback concerning success, and react distinctively, presenting little or no alteration when receiving negative feedback regarding physical appearance. These differences suggest that state self-esteem is more complex than what one might expect from a one-factorial construct. It also reveals there are some gaps to be filled by researchers seeking to understand and explain this phenomenon. This paper has important implications for the debate about the dimensionality of self-esteem because it demonstrates how dynamic and flexible its expression can be.

In general, our findings are consistent with the idea that self-esteem can be expressed both in a one-factorial and in a multi-factorial way. This conception is coherent with the proposal of Heatherton and Polivy (1991), according to whom the SSES-S is adequate to measure state self-esteem while using a total score, as well as its different specific factors. Those authors considered that a general factor of self-esteem underlies the correlations between specific factors of self-esteem (performance, social success, and physical appearance), which is in line with the idea that individual differences in general self-esteem also can be expressed in correlated specific factors. This may indicate that stronger individuals' global self-esteem is affected by contextual contingencies, so that each self-esteem facet can also be affected in a systematic way. This vision of self-esteem expression presupposes a hierarchical factorial structure, with three first-order factors loading on a general second-order factor, so that the evaluation of self-esteem should be performed at the general factor level, or the level of its subdomains, but not at both levels. This paper contributes to this debate by showing that a bifactor structure fits the data better. In conformity with this structure, it is possible to identify a G-Factor that does not correlate with self-esteem's subdomains, which opens new possibilities for measuring state self-esteem that allow investigating the effect of contextual contingencies on both levels simultaneously (G-Factor and S-Factors). This possibility is particularly useful not only for measuring individual differences in self-esteem when testing theories concerning the impacts of contingency factors in specific domains of self-concept, but it also opens new research avenues regarding the malleability of self-esteem's factorial structure.

Studying self-esteem often allows scholars to understand how individuals evaluate themselves and the impact of this on other aspects of their social lives. For instance,

Morf (2006) argued that "Personality … reflects internal states that are contextualized in (and manifested in interaction with) the social environment as people regulate contents of the self in pursuit of their desired identities" (p. 1552). Therefore, we assume that, apart from considering the importance of social environment in the state self-esteem construct, individuals attach their self-concepts to one of the three factors (performance, social success or physical appearance), suggesting there are distinct self-esteem contingencies of each individual (Park & Crocker, 2008). Thus, some people give more importance to their performance, while others value their physical appearance more and others build the meaning of their lives around the success of their socio-affective relations. Evidence of these ideas has already been highlighted in previous studies, when, for instance, only one factor of the SSES-S was sensitive to an experimental manipulation, with this sensitivity being consistent with the contextual domain that underpin individuals' self-esteem (Heatherton & Polivy, 1991). Here we present a reduced and more pragmatic version of the SSES-S, which can be used as a valid and precise measure of three critical factors that organize individual self-concept.

Our results also provide new insight into the study of well-being. Indeed, self-esteem is a central construct for the understanding individuals' well-being and life satisfaction (Anusic & Schimmack, 2016; Du et al., 2017; Tian, 2014). Research on the influence of specific domains of self-esteem on well-being and quality of life will benefit from the application of the SSES-S. Certainly, our research can contribute to the study of self-esteem in specific domains of social life, providing a more insightful analysis of the role of each self-esteem factor according to the target population's characteristics, considering individual differences in the anchorage of a specific domain in detriment to another.

Limitations and Future Directions

There were some limitations to this study. First, our samples are not representative of the population. They are convenience samples of university students, not randomly selected from the general Brazilian population, which could ultimately lead to an overrepresentation of women and single people. However, it was important to use samples of university students, firstly because the original scale was based on this type of sample, and secondly because it is a very appropriate target population to test hypotheses about the sensitivity of the SSES in measuring variations in the dimensions of self-esteem addressed by the scale, by experimentally varying only the contextual situations that could produce these variations. In addition, future studies with more diverse samples are needed to expand the scope of the SSES-S. It is important to include clinical samples with participants who have different levels of depression symptoms. Studying the self-esteem of these target groups is particularly relevant to the evaluation of the sensitivity of the SSES-S' factors. For example, testing individuals to whom physical appearance is more important than other self-esteem factors (e.g., fashion models, athletes, people who frequent gyms, etc.), as well as similar groups in which the factor of social success has importance in detriment to the other ones (e.g.,

individuals like public figures, digital influencers, etc.) can shed new light on the centrality of self-esteem as an organizing principle of people's lives in society.

Another limitation of our work is the context we used to evaluate the influence of experimental manipulation of self-esteem factors. We suggest that future studies test the SSES-S' sensitivity to momentary variations in self-esteem while taking into account both negative and positive feedbacks. Examples are at schools, when receiving low (vs. high) grades, or in clinical situations, when an increase in self-esteem is obtained through therapeutic interventions. This work does not provide enough information to set cut-off points for low, medium, or high self-esteem, making it impossible to make diagnostic decisions. However, this limitation opens new possibilities for exploring the role those specific domains of self-esteem play in psychological assessment and clinical diagnosis.

An open question concerns possible interactions between state and trait self-esteem. The SSES-S may be useful for future research programs investigating whether trait self-esteem influences a person's self-esteem in different contextual situations. It would be interesting to examine whether individuals with low (compared to high) trait self-esteem can adjust depending on the immediate social situation as measured by SESS-S.

Despite these limitations, our results are strong enough to demonstrate the construct validity of the SSES-S, which we propose to measure state self-esteem, in both correlational and experimental studies. The SSES-S is a good choice for studying both the general and specific domains of self-esteem.

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Informed Consent

All participants provided consent according to the Declaration of Helsinki and the American Psychological Association.

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