The Appraisal of Self-Care Agency Scale – Revised (ASAS-R): adaptation and construct validity in the Brazilian context

Escala de Avaliação de Agenciamento de Autocuidados – Revisada (ASAS-R): adaptação e evidências de validade de construto para o contexto brasileiro

Escala de Valoración de la Agencia de Autocuidado – Revisada (ASAS-R): adaptación y evidencias de validez de su constructo en el contexto brasileño

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Abstract

This study presents the psychometric properties of the Brazilian version of the Appraisal of Self-Care Agency Scale – Revised (ASAS-R). The sample was made up of 627 subjects (69.8% women) aged between 18 and 88 years (mean = 38.3; SD = 13.26) from 17 Brazilian states. Exploratory factor analysis of part of the sample (n1 = 200) yielded a three-factor solution which showed adequate levels of reliability. Two confirmatory factor analyses of the other part of the sample (n2 = 427) tested both the exploratory and the original model. The analysis of convergent validity using the Subjective Happiness Scale, *the* Satisfaction with Life Scale, *and the* 36-item Short Form Health Survey Version 2 *(SF-36v2) demonstrated adequate levels of validity. A significant correlation was found between levels of self-care agency and age, level of education and income. The analysis of sample members with chronic disease (n = 134) showed that higher levels of self-care agency indicated lower levels of negative impact of the chronic illness in the individual's everyday life.*

Self Care; Validation Studies; Health Behavior; Scales

Resumo

Este estudo apresenta as propriedades psicométricas da versão brasileira da Escala de Avaliação de Agenciamento de Autocuidados – Revisada *(ASAS-R). Participaram 627 sujeitos (69,8 mulheres), com idades entre 18 e 88 anos (média = 38,3; DP = 13,26). Com uma primeira parte da amostra (n1 = 200), uma análise fatorial exploratória encontrou uma solução de três fatores com índices de confiabilidade adequados. Com uma segunda parte (n2 = 427), duas análises fatoriais confirmatórias testaram a solução exploratória e a solução original. A validade convergente foi avaliada utilizando-se a* Escala de Felicidade Subjetiva, *a* Escala de Satisfação com a Vida, *e o* 36-item Short Form Health Survey Version 2 *(SF-36v2). Todos os indicadores de validade se mostraram adequados. O nível de agenciamento de autocuidados apresentou correlações significativas com a idade, nível educacional e renda. Em uma parcela da amostra, composta por pacientes com doença crônica (n = 134), foi encontrado que quanto maior o nível de agenciamento de autocuidados menor o impacto negativo da doença crônica no cotidiano desses sujeitos.*

Autocuidado; Estudos de Validação; Comportamentos Saudáveis; Escalas

Introduction

Self-care agency can be defined as an individual's ability to continually evaluate health-related needs and perform self-care activities aimed at promoting and maintaining health and well-being [1]. Self-care agency actions (health-promoting behaviors) are developed during life and not only when health problems occur [2]. Thus, the objective of self-care agency is to promote health and well-being, as well as prevent and manage illness [3]. Several studies have demonstrated that self-care agency is an important construct in the development and maintenance of both health-promoting behaviors (e.g., healthy eating, being active and adequate sleep) and specific illness self-management abilities (e.g., taking medications correctly; proper medical care; and adherence to treatment) [3,4,5]. These personal acts lead to a considerable reduction in costs, both to individuals and government, since people become sick less often, recover from illness more quickly and also need less medical assistance [6].

Stearns et al. [7] carried out a four-year longitudinal study to evaluate cost savings to the U.S. Public Health Service associated with self-care actions performed by a representative sample of elderly people (N = 3,485) classified into the following categories: lifestyle practices (such as smoking, alcohol consumption, diet, sleep, exercise, and hobbies); adaptations to functional limitations (such as home environment modifications and use of equipment or devices to assist with mobility or other functional limitations); and medical self-care, such as monitoring urine, blood pressure or pulse, taking medicine correctly, etc.). The authors [7] demonstrated that, to a greater or a lesser extent, all three categories of self-care behaviors were significant predictors of reduced health care spending. Self-care agency therefore consists of a complex set of attitudes related to illness prevention and treatment that can be regarded as an important source of primary public health care [6].

In Brazil, self-care agency is an important aspect of public health policies and is one of the underlying principles of the basic medical care and health promotion policies of the Brazilian Unified National Health System (SUS) [8,9,10]. Given the relevance of this construct to public health, valid and reliable assessment tools to evaluate an individuals' capacity to engage in self-care behaviors are essential.

Several self-care agency assessment tools can be found in the international literature, including the *Exercise of Self-care Agency* (ESCA) [11], the *Denyes Self-care Agency Instrument* (DSCAI) [12], the *Self-As-Carer Inventory* (SCI) [13], and the *Appraisal of Self-care Agency Scale* (ASAS) [14]. The most widely used of these tools are the ASAS and its reduced version the ASAS-R [2].

The ASAS [14,15] was developed based on Orem's widely used *Self-care Deficit Nursing Theory (SCDNT)*, which emphasizes patient responsibility for self-care behaviors, and aims to evaluate patient awareness of health needs and promotes self-care [16]. In its original version, the ASAS comprised 24 items responded in a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). According to the authors, the ASAS is a one-dimensional measure which provides a general and non-specific appraisal of self-care agency [14].

This tool has been used and validated in several countries, including The Netherlands [14,17], Norway [18], Switzerland [19], México [20] and Hong Kong [21]. Despite its widespread use, some authors have shown that the original version has a complex factor structure which may compromise the tool's construct validity. Sousa et al. [22], for example, evaluated the factor structure of the ASAS in a sample of American adults with diabetes mellitus (N = 141). Seven factors were retained using the eigenvalue > 1 factor retention criterion. However, after performing the scree-plot test the authors found that two factors were the most representative of the data set and, after forcing a two-factor solution, four items were excluded from further analysis due to unacceptable communality estimates. Similar problems were found by Manrique-Abril et al. [16] in a study of a sample of Colombian adults with chronic diseases (N = 201). After initially obtaining a nine-factor solution the authors forced a two-factor solution, as suggested by Sousa et al. [22], and found that six items did not load on any factor.

In light of these problems, a refinement study of the original 24-item ASAS was conducted with a general sample of American adults (N = 629) [2]. First, exploratory factor analysis was conducted with part of the sample (n = 240) and the authors found a three-factor solution that explained 51.3% of variance. However, only two items loaded on the third factor, suggesting inadequacies. Moreover, the item-total and/or inter-item correlations of four items loaded on factor 1 and three items on factor 2 were then excluded because they did not achieve minimum criteria of $r = 0.30$. The authors conducted further exploratory factor analysis of the 15 remaining items and obtained the following three-factor solution once again: factor I - having capacity for self-care (eigenvalue = 6.06, $\alpha = 0.86$); factor II – developing capacity for self-care (eigenvalue, 2.07, $\alpha = 0.83$; factor III); lacking capacity for self-care (eigenvalue = 1.14, $\alpha = 0.79$). Total explained variance was 61.7%. In

this revised model, each scale item had strong factor loadings ranging from 0.52 to 0.81.

Goodness-of-fit of the revised version (ASAS-R) was tested by comparing the results of a confirmatory factor analysis conducted with the other part of the sample (n = 389) with the goodness-of-fit indexes of the one-dimensional and three-factor structure of the original 24-item version (ASAS). The ASAS-R showed excellent fit [$\chi^2/d.f$ = 1.97, goodness of fit index (GFI) = 0.94, adjusted goodness of fit index (AGFI) = 0.92, comparative fit index (CFI) = 0.96, Tucker-Lewis index (TLI) = 0.95, root mean square error of approximation (RMSEA) = 0.05, root-mean square residual (RMR) = 0.05], while the one-dimensional and the three-factor versions of the original ASAS did not achieve acceptable fit [22].

So far, ASAS-R has been shown to be a reliable assessment tool. Given the importance of this construct and the need for a rapid self-care agency assessment tool, the aim of this study is to validate the 15-item ASAS-R for use in the Brazilian context.

Method

Participants

The sample consisted of 627 individuals (69.8% women) aged between 18 and 88 years (mean = 38.3; SD = 13.26) from 17 Brazilian states, of which 37.6% were married, 25.4% single, 14.5% cohabiting, 12.6% in a relationship or engaged, 7.8% divorced, 0.8% widowed, and 1.3% "other". These participants took part in a larger study entitled *Orientations to Happiness and Subjective Well-being and the Implications for Psychological Well-being and Health-related Self-care: Adaptation of Questionnaires and Psychosocial Investigations*, which evaluated personal and contextual factors related to positive psychological functioning.

The sample was developed using personalized invitations and snowball sampling [23]. Participants answered a web-based questionnaire and were required to give their consent to participate in the study by accepting the terms of the study on the first page.

Tools

- **The Appraisal of the Self-Care Agency Scale – Revised (ASAS-R)**

The ASAS-R is a 15-item measure that evaluates the level of self-care agency using a five-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). Under the original study the tool showed good fit and reliability with the following three-factor model: factor 1 – having capacity for self-care (items 1, 2, 3, 5, 6 and 10); factor 2 – developing capacity for self-care (items 7, 8, 9, 12 and 13); and factor 3 – lacking capacity for self-care (items 4, 11, 14 and 15).

The adaptation process of the original ASAS-R to Brazilian Portuguese included several steps [24,25]. First, the questionnaire was translated from English to Portuguese by two independent translators. The authors of the present study then transformed the two translated versions into one questionnaire which was evaluated by a target-group (N = 12) and a group of three researchers, psychologists and experts in psychometric evaluation which highlighted difficulties in understanding certain sentences. The questionnaire was adjusted accordingly and the modified version was then back-translated from Portuguese to English by a third independent translator. This version was then checked by the authors of the present study to assess the similarity between the back-translated Brazilian version and the original version and no discrepancies were found. Finally, the Brazilian version was evaluated by a second target-group (n = 8), which had no difficulties in understanding the items and this version was approved for use.

- **The Subjective Happiness Scale (SHS)**

The SHS is a four-item test that evaluates happiness from the respondent's own perspective [26]. This tool has presented excellent psychometric properties in several countries [27,28,29,30]. A validation study [26] found the SHS to be reliable, with alpha coefficients varying from 0.80 to 0.94 in 14 different samples (N = 2.732). The Brazilian version of the SHS was validated by Damásio et al. [31] and showed excellent fit (CFI = 1.00; TLI = 1.02; standardized root mean square residual (SRMR) = 0.006; RMSEA (90%CI) = 0.000 (0.000; 0.006)). In the present study the goodness-of-fit indexes of the SHS were CFI = 1.00; TLI = 1.00; RMSEA (90%CI) = 0.01 (0.000; 0.072); SRMR = 0.01.

- **The Satisfaction with Life Scale (SWLS)**

The Brazilian version of the SWLS was adapted and validated by Gouveia et al. [32]. The tool comprises five items designed to evaluate life satisfaction from the subject's perspective (e.g., in general, I am satisfied with my life). The validation study demonstrated that the scale showed adequate psychometric properties (Reliability index, α = 0.80; goodness-of-fit indexes (GFI = 0.99; non-normed fit index (NNFI) = 0.98; CFI = 0.99; RMSEA = 0.06; SRMR = 0.02). In the

present study the goodness-of-fit indexes of the SWLS were CFI = 1.00; TLI = 1.00; RMSEA = 0.01 (0.00-0.06); SRMR = 0.01.

- ● *The 36-item Short Form Health Survey Version 2* (SF-36v2)

The SF-36v2 is the most widely used tool for evaluating health-related quality of life and has been validated in more than 40 languages [33]. The factor structure of the SF-36v2 comprises eight scales: (1) physical functioning; (2) role limitations due to physical health; (3) bodily pain; (4) general health; (5) vitality; (6) social functioning; (7) role limitations due to emotional problems; and (8) mental health. These eight scales are condensed into two wider categories: the physical component summary, including the physical functioning, role limitations due to physical health, bodily pain, and general health; and the mental component summary, including the vitality, social functioning, role limitations due to emotional problems, and mental health [34]. In this study, the alpha reliability coefficient was acceptable (> 0.60) for all subscales.

Data analysis

First, the sample was randomly divided into two groups. An exploratory factor analysis was performed with one part of the sample (n_1 = 200) using the principal axis factoring extraction method. The adequacy of the sample for this procedure was assessed using the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. Reliability was assessed using the alpha reliability coefficient.

Two confirmatory factor analyses were then conducted with the other part of the sample (n_2 = 427) using the robust maximum likelihood extraction method with corrections for nonnormality [35] in a polychoric correlation matrix [36]. The first analysis evaluated the goodness-of-fit of the obtained exploratory model, while the second tested the original model [3]. .

The following fit indexes were used: the robust chi-square degree of freedom ratio (s-bχ^2/*df*); the SRMR, the RMSEA, the CFI and the TLI, and the consistent Akaike information criterion (CAIC). According to guidelines, model fit is acceptable if the following index values are achieved: s-bχ^2/*df* less than 3; SRMR less than 0.08; RMSEA less than 0.08 (with a 90% confidence interval); CFI and TLI values greater than 0.90 (preferably greater than 0.95). With respect to the CAIC, lower values indicate better fit and greater parsimony [37,38].

Convergent validity was tested using the SHS, SWLS and the SF-36v2. Positive and low-to-moderate correlations were expected between the having capacity for self-care and developing capacity for self-care factors of the ASAS-R and all subscales of the SF-36v2 and with the SHS and the SWLS. Negative and low-to-moderate correlations were expected between the lacking capacity for self-care factor of the ASAS-R and all subscales of the SF-36v2 and with the SHS and the SWLS.

An analysis was conducted using Pearson's correlations with the variables having capacity for self-care, developing capacity for self-care, and lacking capacity for self-care and age, education level and income in order to evaluate the correlation between the ASAS-R factors and sociodemographic characteristics. A positive correlation was expected between having capacity for self-care and developing capacity for self-care and age, education level and income, while a negative correlation was expected with lacking capacity for self-care.

Student's t tests were conducted with the variable gender using the bootstrap resampling method with 99%CI for mean difference (ΔM). The bootstrap resampling method was used to provide higher reliability to the difference between means, correct the non-normal data distribution and control possible group size bias [39]. Prevalence of having capacity for self-care and developing capacity for self-care was expected to be greater among women, while prevalence of lacking capacity for self-care was expected to be higher among men.

Finally, part of the sample (n = 134) that reported suffering from at least one chronic disease were asked the extent to which the specific disease or diseases negatively impacted their lives (on a scale of zero to 10). A negative correlation was expected between negative impact levels and having capacity for self-care and developing capacity for self-care, while a positive correlation was expected with lacking capacity for self-care.

Results

Exploratory factor analysis

The exploratory factor analysis (KMO = 0.88; Bartlett's test of sphericity χ^2[105]1663.706, p < 0.001) yielded a three-factor solution, which accounted for 53.54% of the explained construct variance. All items loaded on the factor and factor loading was adequate (i.e., > 0.40, see Table 1).

The exploratory factor analysis yielded a similar factor structure to the one described by Sousa et al. [22]. The first factor, having capacity for self-care, was composed of six-items, of which five

Table 1

Exploratory factor analysis of the Brazilian version of the *Appraisal of Self-Care Agency Scale – Revised* (ASAS-R).

Items (short content)	Factor		
	Having capacity for self-care	Lacking capacity for self-care	Developing capacity for self-care
Item 1: To make adjustments to stay healthy	0.78 *	-0.11	-0.14
Item 3: To set new priorities to stay healthy	0.71 *	-0.07	-0.01
Item 2: To make the needed adjustments to stay healthy	0.60 *	0.01	0.01
Item 10:To evaluate the effectiveness of things to stay healthy	0.51 *	-0.05	0.26
Item 8: To have changed old habits to improve health	0.51 *	-0.01	0.19
Item 5: To look for better ways to take care of yourself.	0.45 *	-0.31	0.13
Item 14: Lack of time to take care of yourself	0.08	0.78 *	-0.11
Item 15: Inability of taking care of yourself	0.14	0.71 *	-0.02
Item 4: Lack of energy to care of yourself	-0.18	0.66 *	0.15
Item 11: Seldom take time to care for yourself	-0.13	0.54 *	-0.03
Item 6: Take time to care for yourself when necessary	0.23	-0.42 *	0.14
Item 12: Receive necessary information, when health is threatened	-0.08	-0.13	0.61 *
Item 7: Obtain information about side effects of a new medication	0.08	0.05	0.56 *
Item 9: Take measures to ensure safety of yourself and the family	0.24	0.11	0.44 *
Item 13: Seek help when unable to care for yourself	-0.02	-0.24	0.40 *
Eigenvalues (alpha reliability)	5.58 (0.84)	1.51 (0.78)	1.28 (0.81)
Explained variance		53.54%	

* Factor loading > 0.40. The short content represents the idea of the items, not the items themselves.

were similar to those found by Sousa et al. [3]. Item 6 ("When needed, I manage to take time to care for myself"), which was expected to load on the having capacity for self-care factor, loaded negatively on the second factor (lacking capacity for self-care). On the other hand, item 8 ("I changed some of my old habits in the past in order to improve my health"), which was expected to load on the third factor (developing capacity for self-care), loaded on the first factor (having capacity for self-care). All remaining items from factor 2 (4, 11, 14 and 15) and from factor 3 (7, 9, 12 and 13) remained the same. The alpha reliability coefficient was acceptable for all subscales (Table 1).

Confirmatory factor analysis

The results of the confirmatory factor analysis showed excellent fit, suggesting the plausibility of both the original [3] and the exploratory model (Table 2).

The s-bχ^2/df and RMSEA (90%CI) index values were lower in the original model (Figure 1), while the CAIC values were higher in the exploratory model. Given the fact that the original model had already been validated in other countries (USA) [2] and showed higher values for two goodness-of-fit indexes, we opted to use the original factor structure in the subsequent analysis (Figure 1).

Convergent validity

Pearson's correlations were conducted using the ASAS-R, the SHS, the SWLS and the SF-36v2 to assess convergent validity. Table 3 shows that the three ASAS-R factors showed the expected correlations with the other variables.

The ASAS-R factors having capacity for self-care and developing capacity for self-care showed a positive correlation with subjective well-being indicators (satisfaction with life and subjective happiness) and mental and physical health (SF-36v2), while lacking capacity for self-care showed a negative correlation with these variables.

ASAS and sociodemographic variables

As expected, a positive association was found between having capacity for self-care and age ($r = 0.16$, p < 0.001), income ($r = 0.12$, p < 0.001) and education level ($r = 0.10$, p < 0.001). There was also a positive correlation between developing capacity for self-care and age ($r = 0.14$, p < 0.001), income ($r = 0.12$, p < 0.001) and education level ($r = 0.12$, p < 0.001). There was a nega-

Table 2

Goodness-of-fit indexes for two different models of the *Appraisal of Self-Care Agency Scale – Revised* (ASAS-R).

Models	Goodness-of-fit indices					
	s-bχ²/df	SRMR	RMSEA (90%CI)	CFI	TLI	CAIC
Exploratory model	2.33	0.007	0.006 (0.005; 0.008)	0.97	0.96	384.014
Original model	2.17	0.007	0.006 (0.005; 0.007)	0.97	0.96	398.365

CAIC: consistent Akaike information criterion; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual; TLI: Tucker-Lewis index; 90%CI: 90% confidence interval.

Figure 1

Confirmatory factor analysis of the *Appraisal of Self-Care Agency Scale – Revised* (ASAS-R): factor structure, factor loadings, factor correlations, and error variance.
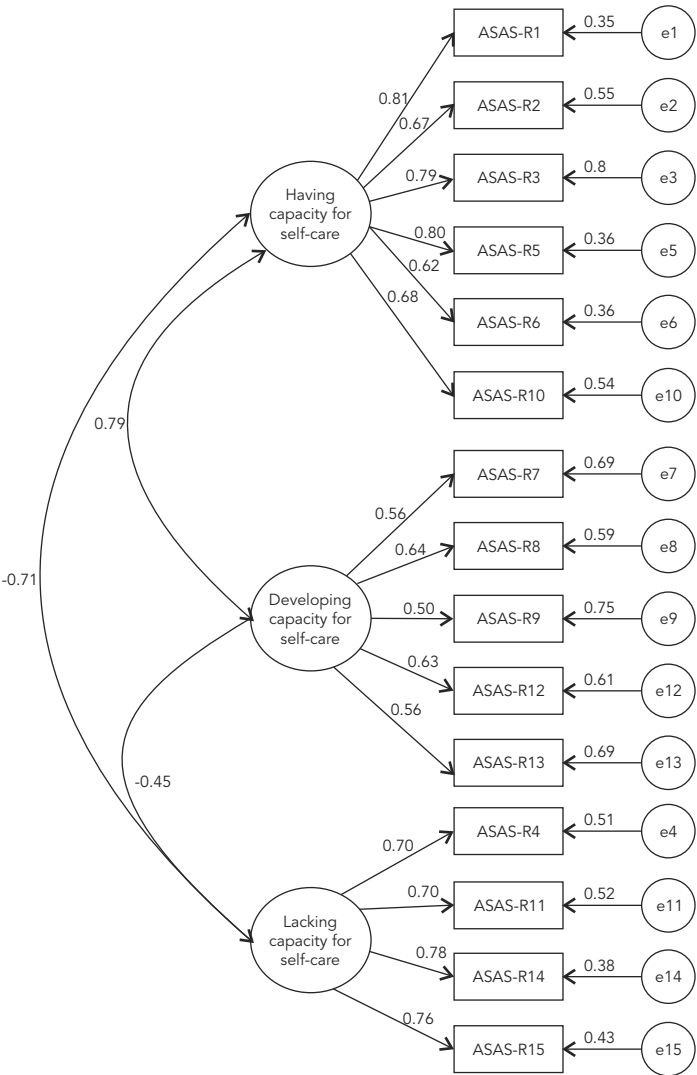
Table 3

Convergent validity of the *Appraisal of Self-Care Agency Scale – Revised* (ASAS-R) with the variables life satisfaction, subjective happiness, and physical and mental component summaries of the *36-item Short Form Health Survey* version 2 (SF-36v2).

ASAS-R	SWLS	SHS	SF-36v2							
				Mental component summary			Physical component summary			
	Life satisfaction	Subjective happiness	Vitality	Social functioning	Role functioning (emotional)	Mental health	Physical functioning	Role functioning (physical)	Bodily pain	General health
Having capacity for self-care	0.36 *	0.40 *	0.45 *	0.26 *	0.25 *	0.47 *	0.20 *	0.12 *	-0.13 *	0.35 *
Developing capacity for self-care	0.27 *	0.25 *	0.29 *	0.18 *	0.17 *	0.31 *	0.10 **	0.06	-0.06	0.19 *
Lacking capacity for self-care	-0.38 *	-0.39 *	-0.53 *	-0.34 *	-0.30 *	-0.52 *	-0.26 *	-0.21 *	0.29 *	-0.39 *

SHS: *Subjective Happiness Scale*; SWLS: *Satisfaction with Life Scale*.

* p < 0.01;

** p < 0.05.

tive correlation between lacking capacity for self-care and age (r = -0.20, p < 0.001), income (r = -0.19, p < 0.001), and education level (r = -0.13, p < 0.001). Contrary to the expected, no gender differences were found for the ASAS-R factor scores (Table 4).

Finally, Pearson's correlations were conducted to test the correlation between negative impact of chronic disease (n = 134) and the ASAS-R factors. Negative correlations between impact of chronic disease with having capacity for self-care and developing capacity for self-care were found (r = -0.38, and r = -0.29, p < 0.001, respectively), while lacking capacity for self-care showed a positive correlation with impact of chronic disease (r = 0.47, p < 0.001).

Discussion

The exploratory factor analysis performed in this study yielded a factor-solution which differed slightly from the factor solution found by the validation study carried out by Souza et al. [3]: item 6 loaded negatively on the factor lacking capacity for self-care instead of on having capacity for self-care, and item 8 loaded on having capacity for self-care instead of on developing capacity for self-care. The fact that the authors used an orthogonal rotation method (*varimax*) may explain these differences, since this method does not allow for correlation between factors [3,40]. Since there is significant correlation between the factors of the ASAS-R, an oblique factor rota-

tion which allows for correlation between factors would be more appropriate. However, given the item patterns and the similarities between factor measures, such differences do not compromise the theoretical foundation of the ASAS-R.

Confirmatory factor analysis was conducted to evaluate the pertinence of the exploratory factor structure and compare it with the original model. The results provided evidence of the plausibility of both factor solutions, once again suggesting that minor changes in the factor structure of the questionnaire do not compromise the construct. However, this result also suggests that the ASAS-R factor structure may be somewhat instable for the Brazilian population and further studies with other samples, such as patients, are recommended to assess factor adequacy.

With regard to convergent validity, correlation with well-being indicators (e.g., life satisfaction, subjective happiness, vitality, and mental health) tended to be stronger than with physical health indicators. The reasons for these differences are not clear. It is possible that health-related self-care has a greater influence on well-being than physical health in nonpatient samples, but why this may happen is unclear. Further studies using different approaches, such as longitudinal design, are necessary to clarify the mechanisms underlying these associations.

Several hypotheses can be formulated to explain the associations between the ASAS-R factors and well-being variables (life satisfaction, subjective happiness, mental health and vitality). First, people in a more positive mood state

Table 4

Student's t tests and differences between means (ΔM) of the *Appraisal of Self-Care Agency Scale – Revised* (ASAS-R) factors and gender.

	ASAS-R		t-value	p-value
	Mean (SD)	ΔM (99%CI)		
Having capacity for self-care				
Male	23.22 (3.85)	-0.08 (-0.98; 0.82)	-0.24	0.41
Female	23.14 (3.59)			
Developing capacity for self-care				
Male	19.74 (2.93)	0.37 (-0.28; 1.06)	1.47	0.49
Female	20.12 (2.78)			
Lacking capacity for self-care				
Male	10.78 (10.78)	0.19 (-0.66; 1.06)	0.58	0.26
Female	10.97 (10.97)			

SD: standard deviation; 99%CI: 99% confidence interval.

are more proactive [41,42] and may be more motivated to perform health-related self-care actions (or health-promoting behaviors). Another possible explanation lies in the fact that people who have greater well-being have a more positive outlook on life as a whole [43] and may be more positive in their perceptions of their self-care capacity. This hypothesis is based on the findings of extensive empirical literature that suggest that positive mood states lead people to have a more positive outlook on life, conditions and possibilities [43,44,45].

Based on the above assumptions, it can be argued that well-being variables are predictors for health-related self-care. However, it is also possible that health-related self-care is also a predictor of subjective and psychological well-being and it may therefore be argued that, since health-related self-care encompasses the physical and psychological components of health, people with greater self-care agency capacities tend to cultivate behaviors that positively impact both physical and mental health. Another possibility in relation to self-care agency and well-being is the response expectancy theory [46], which suggests that people engage in health-related behaviors due to what they expect the result of that selected behavior will be [47]. According to the self-determination [48], self-concordance [49], and control theories [50], engagement in positive valued goal-oriented activities tends to have a positive impact on well-being [47].

With respect to the ASAS-R factors and variables of the physical component of the SF-36v2, no significant correlation was found between developing capacity for self-care and role function-

ing (which evaluates the effect of physical problems on job function) and bodily pain, while a positive correlation was found between the same variables and capacity for self-care.

The correlation coefficient values of having capacity for self-care were consistently higher than those of developing capacity for self-care for all variables, indicating, as expected, that this factor seems to be play a more important role in physical and mental health than developing capacity for self-care. It is important to note that the analysis yielded a negative correlation between the factor lacking capacity for self-care and all variables, corroborating findings in the literature that this factor is directly associated with a poor perception of health [51]. Interventions aimed at strengthening capacity for self-care and reducing lack of self-care would promote a boost in the participant's health perceptions.

With respect to sociodemographic variables, a significant correlation was found between the three ASAS-R factors and age, income and education level. Similar results have been presented in the literature [1,2,3]. The present study showed that the level of having capacity for self-care and developing capacity for self care was higher in older people, whereas the level of lacking capacity for self-care was lower. This may be due to the specificities of this age group (i.e., because there is a need to perform more self-care actions since diseases tend to emerge with greater frequency in older adults and the elderly). Furthermore, the elderly are likely to be more aware of the benefits of health-related behaviors than younger people. The same correlation was found with individuals with a higher education level and income. People

with a higher education level are likely to have a greater awareness of the benefits of self-care and have greater access to information on self-care [52]. For example, empirical studies provide evidence that individuals with a lower level of education are more likely to smoke, be obese and be physically inactive than individuals with higher levels of education [53,54]. It is also important to note that people with higher levels of education and income are generally older and therefore the relationship between these variables may be tangential.

No gender differences in self-care agency were found by this study. This result is in contrast to the findings in the literature which suggest that men and women tend to engage in different health-promoting behaviors [54,55]. It is possible that gender differences were not found because the ASAS-R only assesses level of self-care capacity and not specific behaviors.

With respect to the members of the sample that reported at least one chronic disease (n = 134), as expected, the impact of the disease or diseases was lower in individuals having capacity for self-care and developing capacity for self-care. In turn, a positive correlation was found between lacking capacity for self-care and impact of chronic disease, indicating that the perception of the impact of chronic disease was greater in individuals with weaker self-care capacity. These results corroborate findings of a large body of research and highlight the importance of self-care behaviors in people suffering from chronic diseases [56,57,58].

This study has several limitations. Participants were selected using convenience sampling and the majority of respondents were women, meaning that the sample was not representative of the Brazilian population. Furthermore, results interpretation was limited due to the transversal study design and it was therefore not possible to identify the mechanisms underlying the associations between ASAS-R factors and physical and mental health. In this respect, longitudinal studies could provide a deeper understanding of these associations. The fact that the study did not include patients in the samples is also a significant limitation of this study. Although some members of the sample reported that they suffered from at least one chronic disease, the diversity of diseases mentioned was excessively wide and specific group comparisons were not possible. Specific research using samples of patients (e.g., patients with diabetes or renal disease, or stroke survivors) could contribute to the advancement of knowledge of health-related self-care in Brazil.

Conclusions

The ASAS-R had excellent psychometric properties. Exploratory and confirmatory factor analysis yielded a three-factor solution which was similar to that of the original version. Furthermore, the test for convergent validity yielded the expected correlation coefficients for all three factors of the ASAS-R. These findings strongly indicate that the ASAS-R is an efficient tool to evaluate levels of health-related self-care capacity in the Brazilian population. This article makes a number of important contributions to this research area. As mentioned in the beginning of this paper, self-care agency is one of the underlying principles of basic medical care and health promotion policies of the SUS. The accurate assessment of this construct provides essential information for the development and implementation of public policies aimed at improving self-care behaviors both in the general population and patients. To the best of our knowledge, the ASAS-R is the first scale to evaluate health-promoting behaviors in the Brazilian population. It is expected that future research will corroborate the findings of this study and widen knowledge of self-care agency.

Resumen

Este estudio presenta las propiedades psicométricas de la versión brasileña de la Escala de Valoración de la Agencia de Autocuidado – Revisada *(ASAS-R). Un total de 627 sujetos (69,8% mujeres) con edades entre 18 y 88 años (media = 38,3, SD = 13,26) participaron en el estudio. En una primera parte de la muestra (n1 = 200), mediante un análisis factorial exploratorio, se encontró una solución de tres factores con niveles apropiados de fiabilidad. En una segunda parte de la muestra (n2 = 427), dos análisis factoriales confirmatorios probaron la solución exploratoria y la solución original. La validez convergente se evaluó por medio de la* Escala de Felicidad Subjetiva, *la* Escala de Satisfacción con la Vida, *y el cuestionario de* 36-ítems Short Form Health Survey Version 2 *(SF-36v2). Todos los indicadores de validez fueron adecuados. El nivel de la agencia de autocuidado se correlacionó positivamente con la edad, el nivel educativo y la renta. En una parte de la muestra, compuesta por pacientes con enfermedad crónica (n = 134), se mostró que cuanto mayor es el nivel de la agencia de autocuidado, menor es el impacto de las enfermedades en sus vidas.*

Autocuidado; Estudios de Validación; Conductas Saludables; Escalas

Contributors

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