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Possible Selves in Adolescence: Development and validation of a Scale for their Assessment

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ABSTRACT

Possible selves (PSs) have a significant role in adolescents' development. For this reason, it is of great importance to have adequate measures to operationalize them. The aim of this work is to present the construction and validation of a scale to assess PSs at the end of high school in multiple domains. Participants were adolescents ($n = 320$) of both sexes (female = 51.3%) from high-schools in Buenos Aires City, Argentina (age, $M = 14.9$, $SD = 1.5$). The scale was developed based on a literature review and a previous qualitative study. Expert judges' assessment revealed that it has good content validity. The scale's structure was studied with exploratory factor analysis and a 5-factor structure with theoretical meaning was found. Spearman's correlations between current and future self-perceptions show evidence of convergent validity. Mann-Whitney U test shows that the scale can discriminate by sex and age. The scale shows adequate to very good internal consistency. These results show that the scale has adequate psychometric properties to assess PSs in Argentine adolescents. The advantages of this scale relative to existing measures of PSs are discussed. Scale development allows us to know more about how adolescents think they will be during a significant life transition such as the end of high school. This is particularly important for planning interventions that focus on motivation and behavior regulation.

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Adolescence; possible selves; scale; self-perception

Introduction

The development of abstract thinking allows youth to integrate different perspectives of the self: the past, the present and who they want or could be (Oyserman, 2001). In this scenario, possible selves (PSs) are developed. PSs are the self-knowledge of our potential and our future (Markus & Nurius, 1986). They are the multifaceted components of self-concept projected into the future (Oyserman & Fryberg, 2006). Not every goal or aspiration provides an individual with a possible self. It has to have a connection with one self being in that situation, living it from the inside, being an agent in that situation (Erikson, 2007). PSs can be hoped or feared states of the self and they can vary in their degree of realism. They can be more or less realistic and more or less achievable or avoidable (Markus & Nurius, 1986;

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Oyserman & Fryberg, 2006). The aim of this work is to present a scale to assess PSs at the end of high school in multiple domains.

PSs are of great importance for adolescents' development. On one hand, they provide a link between current self-concept and motivation (Markus & Nurius, 1986). Further, they can be a road map that links present and future and have a significant role in behavior regulation (Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Oyserman, Destin, & Novin, 2015). On the other hand, the construction of PSs functions as a cognitive process in which future images of the self are tested (Sica, 2009). In this sense, they are an expression of identity exploration (Cadely, Pittman, Kerpelman, & Adler-Baeder, 2011).

PSs' literature shows the link between this construct and adolescents' outcomes. PSs have influence on wellbeing (Oyserman & James, 2011), academic achievement and school engagement (e.g. Destin & Oyserman, 2010; Leondari, Gonida, & Gialamas, 2009; Oyserman, Brickman, & Rhodes, 2007). They are linked to risk behavior, like criminal behavior (Newberry & Duncan, 2001; Oyserman & Saltz, 1993), externalizing behavioral problems (Brewer, Gearing, Schwalbe, & Ibrahim, 2013), violent behavior (Pierce, Schmidt, & Stoddard, 2015), substance abuse (Aloise-Young, Hennigan, & Leong, 2001), and alcohol consumption (C. K. Lee et al., 2015). Also, the regulatory functions of PSs suggest potential implications for psychotherapy (Bak, 2015). These findings show the relevance of PSs in adolescence and the importance of having adequate measures to operationalize them.

Possible Selves' Operationalization

According to Packard and Conway's (2006) review of PSs' literature, there are four methods to explore PSs: structured survey and interview, narrative, visual, and drama. Structured surveys and interviews includes close-ended questionnaires and open-ended pencil-and-paper surveys. Narrative methods consist of open-ended face to face interviews, written narratives, semi-structured interviews and focus groups. Visual methods involve image-base and graphical methods like photos, drawings, or charts or graphs (e.g. pie graphs, story lines). In drama methods, researchers ask participants to act their PSs through role play or visualization.

Structured surveys and interviews are the most frequently used methods (Packard & Conway, 2006). Within this cluster, there are different formats to measure PSs: surveys and close-ended questionnaires for different domains, open-ended questionnaires, and specific domain scales.

Open-ended questionnaires are the most frequently used with young people (Oyserman & Fryberg, 2006). They are asked to write a list of their hoped, feared, and expected PSs. There are two versions of these questionnaires for adolescents and college students. The first one is a version of Oyserman and Markus's (1990a) instrument. It was modified in their following works and a final version was presented in 2004 (Oyserman, 2004). This questionnaire asks people to describe four PSs of each type (i.e. feared, hoped, expected) and the strategies to achieve them. The second questionnaire asks people to write all the hoped and feared PSs they can imagine. It also asks the probability to achieve them and the importance of each possible self (Cross & Markus, 1991).

Another format to assess PSs is closed-ended surveys in which a score for positive and negative PSs is obtained. These questionnaires were designed to be used with college

students following a scale developed by Markus and Nurius (1986) based on a qualitative study with this population.

To the best of our knowledge, there are few quantitative scales that measures PSs in adolescents. Most of them only measures specific domains like academic (Cadely et al., 2011; Lee, 2013), social (Anderman, Anderman, & Griesinger, 1999; Perry & Vance, 2007) or scientific (Beier, Miller, & Wang, 2012).

Based on our review of the most important databases (e.g. Eric, Pubmed, PsychInfo, Scopus, EBSCO and PsycArticles) we can conclude that there is only one scale that assess PSs in multiple domains for adolescent populations (Stein, Roeser, & Markus, 1998). This scale is also based on Markus and Nurius' (1986) scale for college students. It consists of 37 statements and asks the adolescents if these statements describe them now and in the future. Also, its asks in a 5-point scale, how likely it is that each statement describes them in the future (i.e. *Not at all* to *Very much*). The scale is composed of seven subscales that explore PSs in different domains: deviant, conventional, popular, body-weight and shape, affective, job performance, and dependent. Psychometric properties have been studied only for three of the seven subscales mentioned above, showing adequate factorial and concurrent validity, and test-retest reliability at two-weeks. Internal consistency for the conventional domain is adequate ($\alpha = .77$). Nonetheless, internal consistency for deviant ($\alpha = .59$) and popular ($\alpha = .60$) domains is low. Furthermore, considering the conceptual content, conventional domain is very heterogeneous, the reference time is the future with no further specification, and items describe life situations instead of the self (e.g., "Have an interesting job", "Divorce"). There are other constructs referring to people's future perspectives and projections, like future time perspectives or life goals. For a scale to accurately measure PSs, it has to use descriptions of the self in future states instead of describing future states that involve the self but not describing it. It is important to note that the method chosen to assess PSs has implications on studies' findings and are determined by the metatheory of the self that it is espoused in the research (Packard & Conway, 2006). Currently, there is agreement in self-concept's multidimensionality. In this theoretical perspective, self-concept is not a single entity, but it is differentiated into multiple domains (e.g. Harter, 1999; Marsh & Hattie, 1996). Self-concept is a cognitive construction (Harter, 2008; Harter & Bukowski, 2012; Swann & Bosson, 2010) that is modified in time through developmental changes (Harter, 2008). In each stage of life, there are different domains of importance. During adolescence, a variety of self-representations are developed based on the increasing participation in multiple relational contexts (Harter & Bukowski, 2012).

PSs' definition posits that they are multifaceted components of the self-concept projected into the future (Oyserman & Fryberg, 2006). This is why it is important to assess PSs in the most important dimensions for adolescents (Harter & Bukowski, 2012). For this reason, we propose a multidimensional measure of PSs that taps the most relevant domains of self-concept that are projected into the future.

Moreover, PSs' measures differ in their reference time point (Oyserman & Fryberg, 2006). The questionnaires reviewed above refer to adulthood, the future or the next year. Adulthood and the future are very unspecific reference points and can have several interpretations for each adolescent. That is, the age or life event that defines that one is an adult can vary across individual adolescents. Also, the term future has different meanings for people. People differ in the extension in which they project into the future (Husman & Shell, 2008). This is why we consider that it is necessary to develop instruments that point out specific and well

defined reference points to ask for adolescents' PSs. The end of high school is a very significant life transition in which adolescent enters a new environment that is associated with the onset of adulthood (Malin, Reilly, Quinn, & Moran, 2014). For this reason, it is necessary to develop measures of adolescents' PSs in this life stage.

It is important to note that most instruments that assess PSs are from Anglo-Saxon countries. Social context is strongly linked with PSs' constitution. Symbols, models, and images from the media will provide representations of who adolescents might be in the future (Markus & Nurius, 1986). The individual's closest social environments (e.g. the family) also determine PSs. The expectative of significant others, what they think the adolescent should be (e.g. Kerpelman, Shoffner, & Ross-Griffin, 2002; Oyserman & Fryberg, 2006), the ideals that parents transfer to their children (Zentner & Renaud, 2007) and the model that parents give (Oyserman & James, 2011) have a strong relationship with the PSs teens develop. Moreover, PSs are jointly constructed between parents and children in their conversations about the future (Marshall, Young, Domene, & Zaidman-Zait, 2008). Physical environments also have influence on PSs development (Prince, 2014).

The possibility of forward-looking into the future for people in Anglo-Saxon contexts may be different from the forward-looking perceptions created in Latin American countries. Especially considering it involves an assessment of the possibility of stability and predictability of roles to perform in the future (Molina, Raimundi & Gimenez, 2017). This shows the importance of considering the idiosyncratic content of PSs of Latin American adolescents and developing an ecologically valid instrument for this context. For this reason, the aim of this work is to present the development and validation process of a scale which assess PSs for its use with adolescents from Argentina's urban areas.

Method

This research project has the approval of the Ethics Committee of the Faculty of Psychology at the University of Buenos Aires. We carried out the study in two stages. In the first stage, we developed the scale content based on self-concept and PSs' literature review, and expert judges' evaluation. In the second stage, we validated the scale and studied its psychometric properties.

Scale Construction Stage

First, we reviewed the literature on self-concept and PSs in adolescence. Based on this review, we defined the domains to assess with the scale. For this, we considered the domains assessed by different measures of self-concept (Alfaro-García & Santiago-Negrón, 2002; Harter, 2012; La Rosa & Díaz-Loving, 1991; Marsh, Parada, & Ayotte, 2004; Marsh, Relich, & Smith, 1981; Musitu Ochoa, García, & Gutiérrez, 1991; Piers, 1984) and the categories found in qualitative studies of PSs (Aloise-Young et al., 2001; Knox, Funk, Elliot, & Bush, 1998; McClelland, 2011; Oyserman & Markus's 1990a; Oyserman, 2004; Shepard & Marshall, 1999; Stein et al., 1998; Zhu & Tse, 2015). Stein et al. (1998) scale was specially considered, being the only measure assessing this construct in multiple domains for an adolescent population. Secondly, we considered results of a previous qualitative study in which Argentine adolescents were asked how they expect, hope and fear to be after finishing high-school (Molina et al., 2017). Tables 1 and 2 summaries the results of this review.

Table 1. Review of self-concept domains presented in the literature.

		Subscales domain				
General area	Self-Perception Profile for Adolescents (Harter, 2012)	Piers-Harris self-concept scale (Piers, 1984)	Self-Concept Form A (Musitu Ochoa et al., 1991)	Self-Description Questionnaire II (Marsh et al., 2004)	Multidimensional Self-Concept Scale (La Rosa & Díaz-Loving, 1991)	Tennessee Self-Concept Scale Spanish version (Alfaro-García & Santiago-Negron, 2002)
Personal	Behavioral conduct	Anxiety Behavioral conduct	Emotional	Honesty /Trustworthiness Emotional Stability	Emotional Ethic	Moral-ethical self Personal self
Social	Romantic appeal	Popularity	Social	Opposite-Sex Relationships	Social	Familiar self
Occupational	Close friendship Social competence Scholastic competence	Intellectual status	Familiar School	Same-Sex Relationships	Occupational	Social self
Physical	Job competence		Job	Verbal		—
Global	Physical appearance Athletic competence Global self-esteem	Body image Well-being /satisfaction The sum of all domains	Physical The sum of all domains	Math General school Physical appearance Self-Esteem	Physical	Physical self
						Behavioral conduct Emotional Moral-ethical Social competence and friendship Romantic appeal Family relationships Scholastic competence Job competence Physical appearance Athletic competence General



Table 2. Review of possible selves domains presented in the literature.

		Possible selves domain							
General area	Knox et al. (1998)	Stein et al. (1998)	Shepard and Marshall (1999)	Aloise-Young et al. (2001)	Oyserman (2004)	McClelland (2011)	Zhu and Tse (2015)	Molina et al. (2017)	Summary
Personal	Psychological functioning Independence Self-oriented personal descriptors Other-oriented personal descriptors	Conventional Deviant Dependent	—	Intrapersonal selves ^a Substance abuse Crime	Personality traits Non-normative/ Risky Behaviors	Psychological health	Personality traits Alcohol and drugs Risky Behaviors	Ethical / moral Responsibility Energy / vitality Sociability General competences Self-confidence Autonomy Non-normative/ Risky Behaviors	Personality traits Non-normative /Risky Behaviors Emotional Autonomy
Social	Relationships/ interpersonal functioning Sexuality	Popular	Interpersonal relationships	Interpersonal	Interpersonal relationships	Interpersonal relationships Occupation	Interpersonal	Family and loved ones Peer relationships	Interpersonal relationships
Occupational	Occupation	Affective Job performance	Education	Jobs/ employment	School achievement and activities achievement-related	Occupation	School/ academic	Education/ academic	Job
	Education	Ideals	Education	School or extracurricular activities	Material /Lifestyles	Material /financial	Job/career	Occupation	education
	Hobbies/ interests	Lifestyle	Lifestyle	Material woods	Job	Education /academic	Material/ lifestyle	Job	Lifestyle/material goods
	Societal concerns/ religion Material/ financial descriptors	Meaningful work Occupational Possessions Leisure	Meaningful work Occupational Possessions Leisure				Lifestyle	Lifestyle	Leisure / extracurricular activities

Table 2. (Continued)

		Possible selves domain								
General area		Knox et al. (1998)	Stein et al. (1998)	Shepard and Marshall (1999)	Aloise-Young et al. (2001)	Oyserman (2004)	McClelland (2011)	Zhu and Tse (2015)	Molina et al. (2017)	Summary
Physical	Physical health		Body-weight and shape	Health	Health	Physical/Health-Related	General health	Health / physical	Physical appearance	Physical appearance
	External harm/victimization			Mortality			General appearance	Athletics	Athletics	Athletics
	Physical appearance			Safety				Health	Health	Health / physical
Global	Athletics								achievement	Health / physical safety
	General success /recognition				General		General success /failure	General	General failure /inferiority	Happiness
	General success								Dream and illusions	Success Goals

Once the domains were established, we proceeded to develop items. The items were developed by adapting items from the self-concept's scales, PSS's scale, the statements of the adolescents in the qualitative study (Molina et al., 2016), and the creation of new items.

Validation Procedure

In this stage, we validated the first version of the scale. School authorities were contacted. The purpose of the research was explained to them and permission was obtained for the study. Adolescents participated voluntarily and anonymously, with their parents' written consent. We explicitly informed both of them that their participation was anonymous, confidential, and voluntary. Researchers read the instructions out loud and explained them. The questionnaires were self-administered in group sessions.

Participants

We worked with a convenience sample. Participants were adolescents ($n = 320$) of both sexes (female = 51.3%) from private and Catholic high-schools from Buenos Aires City / Argentina (age, $M = 14.9$, $SD = 1.5$). The majority (63.6%) of adolescents were part of two parent homes. Over two-thirds (mother's = 66.7%, father's = 66.9%) of parents attended college. Most of the parents were regularly employed (mothers = 85.4%; fathers = 94.5%).

Measures

Sociodemographic Questionnaire. The questionnaire was developed ad hoc to obtain data on the sociodemographic characteristics of the adolescents and their families (age, educational level and employment of parents, and family composition).

Possible Selves Scale for Adolescents. This is the scale developed in the first stage of the present study. It assesses prospective self-perception in the following domains: job competence, intellectual ability, financial situation, free time, autonomy, behavioral conduct, ethics and morality, emotionality, physical appearance, physical ability, pair relationship, romantic appeal, and global self-assessment. It had 96 statements with a 5-point Likert scale (*Very likely* to *Very unlikely*).

Self-perception Profile for Adolescents (SPPA, Harter, 1988; Adaptation: Facio, Resett, Braude, & Benedetto, 2006). It assesses self-concept in seven specific domains: academic competence, social acceptance, athletic competence, physical appearance, behavioral conduct, romantic appeal and close friendship. It also contains a global self-worth subscale. Each subscale consists of five items with a 4-option scale. Adolescents are presented with two propositions that reflect two groups of adolescents with opposed self-perceptions. First, they have to select which kind of adolescent they are most like. Next, they have to decide how much they are like them (*Really true for me* or *Sort of true for me*). The original version has good content, construct and factorial validity, and internal consistency (Cronbach alpha from .75 to .93) (Harter, 2012). The adapted version has good factorial, construct, and criteria validity. Internal consistency is adequate (Cronbach alpha from .64 to .86) (Facio et al., 2006). In this sample, good internal consistency (Cronbach's alpha) was found: academic competence, $\alpha = .79$; social acceptance, $\alpha = .82$; athletic competence, $\alpha = .89$; physical

appearance, $\alpha = .91$; behavioral conduct, $\alpha = .82$; romantic appeal, $\alpha = .80$; close friendship, $\alpha = .79$; and global self-esteem, $\alpha = .83$.

Data Analyses. Statistical analysis was conducted using the Factor program (9.3.1 version) (Lorenzo-Seva & Ferrando, 2006) and the SPSS program version 21. First, we removed cases with more than 30% missing data. In the remaining cases we impute missing data by the method of linear trend at point. To insure data integrity, we evaluate reliability in loading data through random check of 30% of the questionnaires. Besides, we insured adolescent's commitment reminding them that their participation in the study was voluntary. We insured they didn't talk with each other. Also, we studied the presence of bizarre and inconsistent response patterns, which indicated that the questionnaires were answered at random (e.g., a whole page of responses on the same line).

We used corrected item-total correlations to study items homogeneity. To study subscales reliability, we used reliability estimates based on standardized factor scores (Baglin, 2014). This reliability coefficient is a more appropriate technique for variables with non-normal distribution. An Exploratory Factor Analysis (EFA) through Parallel Analysis (PA) was applied (Horn, 1965). We chose EFA because this was a first approach to these construct study. We wanted to identify the latent factors that underlie the manifested variables, as well as the patterns of relations between latent and manifest variables (Henson & Roberts, 2006; Lloret-Segura, Ferreres-Traver, Hernández-Baeza, & Tomás-Marco, 2014). Unweighted Least Squares (ULS) for determining the number of factors to retain was applied (Lorenzo-Seva, 1999). This method works on a polycoric matrix and is strongly recommended in an asymmetric distribution and with ordinal variables (Muthen & Kaplan, 1992). Promin (Lorenzo-Seva, 1999), a method for oblique factor rotation, was used as correlation among factors is expected. Matrix adequacy was assessed by K-M-O test and Bartlett sphericity test. The GFI was used to assess the adequacy of the factorial model. The criterion of loading chosen for retaining each item into each factor was greater than .30 (Hair, Anderson, Tatham, & Black, 2001). Following Lloret-Segura et al. (2014)'s criteria, we considered double loading when the difference between items is below .20. Percentage of variance for each factor and the total scale were calculated. We also ensured that the factors have a solid conceptual meaning and that, at least the major areas of self-concept and possible selves, were measured by this scale.

We performed a separate-EFA for studying PSs' global assessment scale. The reason for doing this is theoretical: this subscale represents a global self-perception while the other subscales are domain-specific self-perceptions. Although we expect specific and general domains to be correlated, they have different levels of generality and abstraction and their factorial structure must be studied by separate analysis (Harter, 1985).

Non parametric test were performed as the distribution of the scores was not normal (Kolmogorov-Smirnov's normality test is presented in the results section). To study convergent validity, we analyzed the relationship between actual self-concept and PSs with Spearman correlation. We do this since evidence shows that current self-perception is one of the most important sources of PSs (Erikson, 2007; e.g. McClelland, 2011; Sica, 2009) and positive PSs are related with positive current self-esteem (Knox et al., 1998; Oyserman et al., 2004).

Since several studies show differences in self-perceptions according to sex and age (see Oyserman & Fryberg, 2006 for a review) we studied scale discriminant capability by age and

sex. We used Mann-Whitney *U* Test to compare groups. We reported effect size with Pearson's *r* using Cohen's (1992) criteria for its interpretation (.10 = small, .30 = medium, .50 = large).

Results

Content Validity

We initially constructed 214 items that were evaluated by five expert judges in psychological assessment and adolescence. They were asked to assess the clarity of the instructions, the extent to which the items were representative of the constructs assessed, their syntactic and semantic adaptation, and if they could be understood by adolescents from urban areas of Argentina. Those items that were identified as very representative of the construct by most expert judges were selected. The changes suggested by judges were performed. Finally, 96 items were retained. The proposed initial domains are presented in Table 3.

Factorial Validity

The EFA resulted in five factors that together explained the 53.82% of the variance. The K-M-O and Barrett test showed the adequacy of the matrix (see Table 4).

In every factor, items showed adequate loadings (items with loadings lower than .30 were eliminated). No item had double loading. From the initial 96 items 53 items were deleted

Table 3. Initial structure for the construction of the possible selves scale.

Area	Domain	Definition	Number of items
Occupational	Job competence	To have skills to get a paying job and do it well, keep it and feel pleasure and interest for their work.	8
	Intellectual abilities	To have the required skills for learning and acquiring knowledge (e.g., intelligence, creativity, originality, organization).	8
	Free time	To have the ability to find leisure activities, enjoy them and take advantage of free time.	7
	Material and financial situation	To have the ability to get the material resources needed for subsistence.	7
Social	Peer relationships	To be accepted by their peers, getting along with them, and having enough friends.	8
	Romantic appeal and couple relationship	To be attractive to those who likes and will be able to go out them, will be fun and interesting on a date, or will have a partner.	7
Physical	Physical appearance	To be satisfied with their appearance and body, and feel attractive.	7
	Physical abilities	To have abilities for sports, outdoor games and physical activities.	7
Personal	Ethical and moral	To have ethical and moral values, living according to them, feeling that their behavior is ethical, and that they are trustable.	8
	Behavioral conduct	To be happy with their behavior, doing the right things and avoiding getting in trouble. These are behaviors related with living together with others. This domain taps behaviors while the ethical and moral domain taps values.	7
	Emotions	To have positive or negative emotions, to be calm and relaxed, having emotional stability, or feeling anxious and worried.	7
	Autonomy	To be independent from others.	7
General	Global self-assessment	To feel satisfied with them-selves, to be happy with the way they are carrying out their life, and to feel competent and happy for their achievements.	8

Table 4. Rotated loading matrix for specific possible selves domains.

Item	Factor				
	I	II	III	IV	V
3. Take my own decisions	.69^a	.15	-.04	-.26	-.03
6. Learn things easily	.52	-.01	.01	.06	-.07
13. Not very intelligent	.61	-.20	.07	.14	.05
17. Have difficulties to get and keep a job	.55	-.06	.23	.01	.06
19. Depend on others	.43	.14	.03	-.15	-.04
22. Able to get the things I need for living	.55	.08	.01	-.01	.04
23. Have difficulties in carrying out paid work	.46	.05	.23	.10	-.05
28. Independent in my activities	.52	.05	-.06	-.09	-.01
32. Someone who do not have basic material goods for living	.69	-.17	.06	.06	-.04
36. Have good ideas	.52	.05	.06	.14	.02
39. Proud of my performance in my work	.61	.02	.05	.03	.06
1. Able to have friends who tell may secrets	.12	.50	-.09	-.10	-.11
7. Able to date people I like	.10	.57	-.01	.15	-.04
10. Have lots of friends	-.04	.86	-.01	-.16	.12
15. Have difficulties to make friends	-.08	.80	.09	-.08	.14
18. Have difficulties to date people with who I feel attracted	-.10	.56	.04	.19	-.10
27. Know how to get along with people of my age	.08	.71	-.01	-.10	.01
31. Have difficulties to make a couple with someone I like	-.17	.62	.05	.14	-.08
35. Someone who has difficulties to have friends who can trust	-.18	.60	.10	-.05	.12
41. Know how to make people of my age want me	.21	.60	-.08	-.09	-.01
2. Get in troubles by the things I do	.02	-.04	.72	.06	-.03
14. Behave properly	.16	.02	.48	-.08	-.02
24. Not always do what is morally correct	-.04	-.09	.65	-.01	.10
33. Always do what is wright	.22	.01	.56	-.11	-.05
42. Do things I should not	-.1	.09	.72	.06	-.01
4. Not have a nice physical appearance	-.13	.16	.15	.54	-.11
11. A physically attractive person	.19	.08	-.16	.58	.04
20. Satisfied by my physical appearance	.09	.03	-.06	.76	.06
34. Wish my body would be different	.04	-.05	.06	.70	.04
40. Not happy with my physical appearance	.01	.05	-.06	.77	.01
8. Good in activities that require physical skill	-.02	.05	.02	.02	.79
16. Good at sports and physical activities	-.02	-.02	-.02	.05	.94
25. Clumsy in sports	-.12	.12	.08	.06	.82
30. As good in sports as other people of my age	-.01	-.07	-.06	.01	.83
37. Not able to learn new sports	.23	-.08	-.01	-.19	.61
Eigenvalues	9.40	3.17	2.46	2.12	1.68
% of Variance	26.86	9.06	7.04	6.06	4.80
Alpha	.87	.90	.80	.87	.94

Note. $n = 317$. $KMO = .85$, Test de Bartlett: $\chi^2 (317, 595) = 4395.3$ ($p < .001$). Total explained variance = 53.82%. Goodness of Fit Index (GFI) = 0.98. I = self-sufficiency. II = peer relationship. III = good behavior. IV = physical appearance. V = physical ability.

^aBolding indicates items' biggest loading.

due to double loading, low loading, or loading in a factor in which they did not have conceptual meaning.

Factor Description

Factor I. Self-sufficiency

It is composed of 11 items from the domains of autonomy (3 items), intellectual abilities (3 items), material and financial situation (2 items), and job competence (3 items). It measures if adolescents think they are going to be prepared to and has the intellectual abilities for having a job, being independent and being able to get the material issues they need for their subsistence after finishing high-school.

Factor II. Peer Relationships

It is composed of 9 items. Six items belong to the peer relationship domain and three items belong to the romantic attraction domain. This factor measures if adolescents think they will be able to have intimate friends, to make friends, to have a good relationship with people of their age and to be in couple or dating someone they like.

Factor III. Good Behavior

It is composed of five items, four from the behavioral conduct domain and one from the ethical-moral domain. This factor measures if adolescents think they will have a good behavior (see Table 3) and if they believe they will do what is morally correct.

Factor IV. Physical Appearance

It is composed of five items. This factor has the same content of the scale's first version (see Table 3).

Factor V. Physical Ability

It is composed of five items. All items belong to this domain. Its definition is presented in Table 3.

Items from the free time domain and emotional domain were removed since these items did not compose an independent factor and neither were associated with items from other domains in a meaningful theoretical and conceptual way. This is why these domains are not tapped by any factors. Items that describe specific moral behavior as being deceitful, selfish, irresponsible were also lost.

The EFA of the PSs' global assessment domain resulted in one factor that explained the 47.8% of the variance. The K-M-O and Barrett test showed the adequacy of the matrix (see Table 5). All of the items have adequate loadings (higher than .30). This factor is composed of eight items, all the original items of the PSs' global assessment. A more detailed description is presented in Table 3.

The final result is a scale of 43 items that cover five factors for PSs' specific domains and a PSs' global assessment subscale. Twenty two of the items are positively worded and 21 are negatively worded and must be reverse coded. Scale can be obtained from the first author. Descriptive statistics for each domain are presented in Table 6.

Table 5. Unrotated loading matrix for possible selves' global self-assessment.

Item	Factor loading
5. Have much to be proud of	.70
9. Unhappy with the way I manage my life	.61
12. Have difficulties to get the things that I propose myself	.42
21. Disappointed with my self	.67
26. Wish to be different	.51
29. Good at the things I like	.56
38. Satisfied with my self	.80
43. Someone very happy for their achievements	.73
Eigenvalues	3.82
% of total explained Variance	47.8

Note. $n = 317$. $KMO = .84$, Bartlett test: $\chi^2(317, 28) = 648.7$ ($p < .001$). Goodness of Fit Index (GFI) = 0.99.

Table 6. Subscales' descriptives statistics.

Subscale	<i>Mdn</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Minimum	Maximum	KS
Self-sufficiency	4.09	4.07	0.49	-0.77	2.15	1.45	5.00	.08***
Peer relationships	4.00	3.96	0.61	-0.68	0.71	1.67	5.00	.09***
Good behavior	3.80	3.71	0.70	-0.49	0.23	1.40	5.00	.09***
Physical appearance	3.60	3.55	0.82	-0.47	0.13	1.20	5.00	.09***
Physical abilities	3.80	3.73	0.99	-0.65	-0.26	1.00	5.00	.11***
Global assessment	4.00	3.99	0.59	-0.74	1.30	1.13	5.00	.08***

Note. $n = 317$. KS = Kolmogorov-Smirnov's normality test.

*** $p < .001$.

Intra-Scale Correlations

We found positive low to medium intra-scale correlations (see Table 7). Most of them were statistically significant ($p < .05$) or very significant ($p < .01$). Thus, the scale assesses linked but independent variables.

Additionally, we found positive and significant correlations between PSs' specific domains and PSs' global assessment. They had medium to large effect sizes. The strongest associations were between PSs' global assessment and self-sufficiency ($r_s = .69, p < .001$), peer relationship ($r_s = .56, p < .001$) and physical appearance ($r_s = .53, p < .001$).

Convergent Validity

Correlations between current self-perceptions and PSs are presented in Table 8. The more homogeneous domains of PSs like physical ability ($r_s = .85, p < .001$), physical appearance ($r_s = .69, p < .001$), good behavior ($r_s = .59, p < .001$) and global assessment ($r_s = .59, p < .001$) had the highest correlations with current self-perceptions. Peer relationship PSs domain had a large correlation with current self-perception of social acceptance ($r_s = .60, p < .001$) and medium correlations with self-perception of close friendship ($r_s = .40, p < .001$) and romantic appeal ($r_s = .41, p < .001$). Self-sufficiency PSs had a medium correlation with academic competence current self-perception ($r_s = .46, p < .001$).

Discriminant Validity

Males showed higher scores in physical ability, physical appearance, and global self-assessment (see Table 9). Women showed higher scores in behavioral conduct. The younger

Table 7. Intra-scale correlations.

Domain	1	2	3	4	5	6
1.Self-sufficiency	.87	.46**	.32**	.37**	.29**	.69**
2.Peer relationships		.90	.13*	.40**	.39**	.56**
3.Good behavior			.80	.04	.14*	.33**
4.Physical appearance				.87	.38**	.53**
5.Physical ability					.94	.36**
6.Global assessment						.87

Note. $n = 317$. Reliability coefficients are presented in the diagonal.

* $p < 0.05$. ** $p < 0.01$.

**Table 8.** Spearman correlations between current self-perceptions and possible selves.

Possible selves' domains	Current self-perceptions' domains									
	Academic competence	Social acceptance	Close friendship	Romantic appeal	Athletic competence	Physical appearance	Behavioral conduct	Global self-esteem		
Self-sufficiency	.46**	.32**	.22**	.25**	.26**	.27**	.22**	.41**		
Peer relationships	.12*	.60**	.40**	.41**	.39**	.29**	.03	.36**		
Good behavior	.18**	.06	.05	-.09	.11	.04	.59**	.17**		
Physical appearance	.19**	.34**	.07	.40**	.40**	.69**	.06	.49**		
Physical abilities	.08	.43**	.14*	.21*	.85**	.35**	-.05	.27**		
Global assessment	.32**	.40**	.20**	.32**	.32**	.47**	.26**	.59**		

Note. $n = 300$.

* $p < 0.05$. ** $p < 0.01$.

Table 9. Differences in possible selves according to sex and age.

Domain	Sex					Age					
	Males (<i>n</i> = 153)		Females (<i>n</i> = 163)		<i>z</i>	<i>p</i>	<i>r</i>	< 15 years ^a (<i>n</i> = 194)		> 15 years ^b (<i>n</i> = 122)	
	Mean rank	Mean rank	Mean rank	Mean rank				Mean rank	Mean rank	<i>z</i>	<i>p</i>
Self-sufficiency	162.61	154.64	-0.78	.438	-.04	160.67	155.05	-0.53	.593	-.03	
Peer relationships	167.31	150.23	-1.66	.096	-.09	164.02	149.72	-1.36	.175	-.08	
Good behavior	145.64	170.57	-2.44	.015	-.14	162.42	152.27	-0.97	.334	-.05	
Physical appearance	188.03	130.79	-5.59	<.001	-.31	166.20	146.25	-1.90	.058	-.11	
Physical abilities	179.92	138.40	-4.05	<.001	-.23	168.24	143.01	-2.40	.017	-.13	
Global assessment	173.23	144.67	-2.78	.005	-.16	168.12	143.20	-2.37	.018	-.13	

p* < .05. *p* < .01.^a12 to 15 years old.^b16 to 18 years old.

adolescents (12 to 15 years old) reported higher scores in physical ability PSs and PSs' global assessment than the older adolescents (16 to 18 years old).

Items Homogeneity

All of the items showed a corrected item-total correlation higher than .30. This indicates that they have an adequate homogeneity (Tornimbeni, Pérez, & Olaz, 2008).

Reliability

All subscales show good internal consistency. Reliability estimates are presented in Table 7.

Discussion

The aim of this study was to present the construction and validation of a scale to assess PSs in multiple domains. Findings showed that it is a valid and reliable scale for its use with adolescents of high school age from Argentina's urban areas.

First, the content validity was established. Expert judges' assessment indicated that the scale had a good item-construct adjustment. They also reported that it was appropriate for our culture and for the age group for which it was designed. Besides, items had an adequate homogeneity.

Second, the scale showed adequate factorial validity. We found a five factor structure with theoretical meaning. The physical appearance factor and the physical ability factor had the same content that was originally proposed. The good behavior factor is very similar to the domain proposed at the first stage. Although it has one item from the moral domain, it is conceptually related to the factor's general content. The peer relationships factor and the self-sufficiency factor include the content of different domains and that is why they have more items than the other domains. The peer relationships factor includes items about the ability to get peer acceptance, close friendship, and couple relationship. The self-sufficiency factor includes items referred to autonomy, intellectual abilities, job competence and the ability to achieve material goods. These domains can be differentiated from a logical perspective. Nonetheless, it makes sense that they are linked in adolescents' projection into the

future because one contributes to the other. Being independent is related to having a job and having a good financial situation. Intellectual skills contribute to performing a job properly. With these five factors, the general areas of the self-concept and possible selves are covered by the scale (see Tables 1, 2 and 3). Specifically, personal area is represented by good behavior, social area by peer relationships, physical by physical appearance and physical ability, and occupational by self-sufficiency.

Nonetheless, some domains present in the self's literature, were not captured by our scale. For example, a factor for assessing the emotional domain could not be retained. This may have been due to the heterogeneity of the emotions that the proposed domain contained: to be cheerful, irritable, being sad, angry, be someone quiet, to be someone nervous, or having a good mood. From a logical perspective, these emotional states are grouped in one conceptual category. However, for adolescents they are linked to other life domains. For example, being angry or irritable is related to having a bad behavior; being cheerful or having good mood is linked to pair relationships. Future investigations should continue studying this domain to better explore adolescent projection in this area. More precisely, they should find the statements that jointly tap this domain in a coherent and meaningful way for the adolescents. Similarly, the ethical and moral domain is included in behavioral conduct domain only by a general statement. Items that describe specific moral behavior (i.e. being reliable, respectful, caring, selfish, liar, irresponsible) did not group together but were associated with other factors. For this reason, they were eliminated. Eliminating these items resulted in a factorial structure that showed much more conceptual coherence.

Additional evidence for construct validity is addressed by the fact that constructs are partially related, showing that the scale assesses independent domains. Besides, current self-perception was positively related with PSs. This is consistent with the theoretical assumption that the conceptions of one's abilities and limitations in the present are linked to the conceptions about the future self. At the same time, the way in which people perceive themselves today is strongly related to what they believe can happen in the future (Erikson, 2007). Empirical studies show that adolescents with a positive self-concept are more likely to think they could achieve their hoped self (e.g. McClelland, 2011; Sica, 2009). Also, positive PSs are associated to a more positive self-esteem (Knox et al., 1998; Oyserman et al., 2004).

The relationship between current and future self-perceptions shows evidence of convergent validity. Moreover, correlations were higher in the same domain than in different domains. Homogeneous domains, like physical appearance, physical abilities, behavioral conduct, and global self-assessment presented the greatest associations with the current self-perception in the same domain. Other PSs' domains are more heterogeneous and presented smaller correlations with the current self-concept domains with related meaning.

Additionally, we found positive correlations between specific domains of PSs and PSs' global assessment. The strongest relationships were with the self-sufficiency domain, the peer relationships domain, and the physical appearance domains. Self-concept's study systematically show that the self-perception of physical appearance is the greatest predictor of global self-esteem (see Harter & Bukowski, 2012 for a review). This result was found as well with Argentine adolescents (Facio et al., 2006) and preadolescents (Molina, Raimundi, López, Cataldi, & Bugallo, 2011). Nonetheless, a qualitative study of expected, feared and hoped PSs in Argentine adolescents revealed that academic-occupational domain is the most frequently mentioned aspect by them (Molina et al., 2017). This finding was replicated in female and male adolescents (McClelland, 2011; Molina, Gimenez, & Esparza Baigorri,

2015). These results show that it is a very important and salient area for adolescents' PSs. It is possible that self-perception of physical appearance has the greatest importance for adolescents' current self but not for adolescents' future self. This is an interesting finding since it shows that our scale measures more than simply a reflection of the current self-concept in the future.

Our results showed that the scale can discriminate between sex and age. Regarding sex difference, girls showed a more positive perception of their future behavioral conduct. Meanwhile, the boys reported a more positive self-perception of future physical ability, physical appearance and global self-assessment than women. This is consistent with the results found with respect to the current self-perceptions. In North American samples, the same results were found for boys (Harter, 2012). In Argentina, in a study with children and preadolescents, girls showed a more positive perception of their behavior and boys of physical ability (Molina et al., 2011). Studies with Argentine adolescents showed that boys have a more positive self-perception of physical appearance, romantic appeal, social acceptance, athletic competence and global self-esteem (Facio et al., 2006).

The study of sex differences in PSs was conducted primarily with qualitative methods. Studies with Argentine adolescents showed no differences in the prevalence of the domains in which teenagers project themselves into the future (Molina et al., 2015). This and other studies reveal that the most prevalent category for both sexes is the occupational (McClelland, 2011; Molina et al., 2015).

The inconsistencies in gender differences between current and future self-perception shows the importance of the methods used in research and its role for the obtained findings. Male and females may not differ in the life domains in which they project themselves into the future but they do differ in the valence of their future selves. Male's self-perceptions generally have a more positive valence than women's.

Age differences show that young adolescents have a more positive future self-perception of physical ability and global self-assessment than the older ones. This is consistent with other findings that show that late adolescents perceived significantly lower likelihood for their hoped PSs than early- and mid-adolescents (Zhu & Tse, 2016). Adolescents experience great physical and psychological changes during this life stage. For this reason, it is expected that their ability to view and anticipate their future increases from early to late adolescence. As they realize reality's constraints and difficulties, they may doubt the likelihood of their dreams coming true (Zhu & Tse, 2016). Also, it is possible that older adolescents have a more adjusted view of themselves at the end of high-school that reflects their expected PSs. Younger adolescents' projection of themselves at the end of high-school is more distant and may reflect their hoped and ideal selves.

The scale showed adequate to very good internal consistency. Thus, we conclude that it is reliable for its use with adolescents from Argentina's urban areas.

This scale presents some advantages with respect to the scale developed by Stein et al. (1998) (the only multidimensional scale for adolescents that assesses PSs). First, the domains assessed by the scale are based on literature review and on a qualitative empirical study performed with Argentine adolescents. Second, these domains have a greater conceptual coherence, especially in comparison with the conventional domain proposed by Stein et al. (1998). This domain is quite heterogeneous and conceptually imprecise. Third, our scale proposes a precise and relevant reference point: the end of high-school. Fourth, we include a domain that assesses the overall perception of the PSs. The items were developed specially

for this purpose. That is, they were items that describe self-assessment in general instead of the sum of items from different domains. Finally, the internal consistency coefficients obtained are superior to those reported for the scale referred.

However, this study has some limitations. We worked with a non-probabilistic sample. For this reason, it will be necessary to continue studying the validity and reliability of the scale with adolescents in other contexts of Argentina because it is a country with a vast territory and a great cultural diversity. Also, the scale was applied to adolescents from private schools, that is, with particular demographic characteristics. Therefore, it is necessary to study its functioning with other groups such as adolescents attending public and secular schools, or in areas of psychosocial emergency, or adolescents who are not attending school. Another important thing to consider is the sample size. A sample of 300 cases is considered good or, at least, adequate. Nonetheless, the sample size interact with many other factors and a larger sample would improve the precision and stability of AFE (See Lloret-Segura et al., 2014 for a review). Therefore, future studies should increase the sample size. On the other side, cross-validation studies are needed to show the replicability of the factorial structure presented in this paper. Also, it is important to note that we worked with a training sample and that in future studies it is necessary to validate the scale with a testing sample. Besides, in this study we use EFA. This kind of analysis is appropriate for theory construction and the study of a factorial structure that is not well-known. The structure presented in this article must be replicated in future studies and with other samples. Moreover, confirmation of this structure by confirmatory factor analysis is essential to complete scale validation (Henson & Roberts, 2006; Lloret-Segura et al., 2014).

It is important to consider the method that underlines the scale. This method allows us to explore PSs in multiple domains. However, it does not let us know the adolescents' spontaneous answers. Qualitative methods allow knowing what the most salient PSs are for adolescents. They also provide information about accessibility and availability of PSs (Norman & Aron, 2003) and the balance between the desired and undesired states of future self (Oyserman & Markus, 1990b). However, adolescents' spontaneous answers sometimes refer to other constructs that overlap with PSs. For example, when adolescents refer as a hoped possible self "to finish college" they are referring to a vital goal, which may or may not involve PSs. That means, they may not involve the image of themselves in this scenario, being agents in that situation (Erikson, 2007). Moreover, the spontaneous answer of adolescents generally does not reveal the projection made of themselves in the future in all the relevant life domains at this stage.

The advantages and limitations of existing methods for assessing such a complex construct points out the need of using mixed methods in PSs' research. In this way, it could be performed an assessment, consistent with the main models of self-concept, investigating its most relevant domains. Also the incorporation of other methods (e.g. semi-structured interviews, open-ended questionnaires, narrative or graphical methods) would bring information about subjects' spontaneous answer and of structural aspects of PSs (e.g. salience, availability, or balance) (Packard & Conway, 2006).

Beyond these limitations it is useful to have a tool to determine how adolescents think they will be into a significant life transition such as the end of high school. This is particularly true given the importance of PSs for their motivational efficiency and behavioral regulation (Oyserman & James, 2009), its impact on the well-being (Oyserman & James, 2011), and its usefulness for psychotherapy (Back, 2015). From our results, we conclude that the

scale shows adequate homogeneity in their items, good reliability, and factorial, convergent, discriminant and content validity. This means that the scale developed is valid and reliable for its use with adolescents from Buenos Aires and can be use with Argentine adolescents from urban areas. Further, we believe that it is potentially useful for other Spanish speaking countries. Moreover, since PSs is a universal construct and the domains measure by our scale are coherent with the ones presented in qualitative studies, this new instrument would be of interest for non-Spanish speaking countries.

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