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The 9-SRA Scale: A Simplified 9-Items Version of the SRA Scale to Assess Altruism

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Abstract: In a classic study, Rushton and colleagues presented a 20-item scale to assess the altruistic behavior of people: the Self-Report Altruism (SRA) scale. This article focuses on the development of a simplified 9-item scale—the 9-SRA scale—describing the entire refinement and validation procedure using exploratory and confirmatory factor analysis. The 9-SRA shows adequate reliability and validity and represents a more parsimonious instrument to assess altruism and for use in empirical studies focused on human and prosocial behavior. The article discusses the advantages and potential applications of the new scale.

Keywords: altruism; self-report altruism; SRA scale; altruistic behavior; altruistic personality; prosocial behavior; public television



Citation: Manzur, E.; Olavarrieta, S. The 9-SRA Scale: A Simplified 9-Items Version of the SRA Scale to Assess Altruism. *Sustainability* **2021**, *13*, 6999. <https://doi.org/10.3390/su13136999>

Academic Editor: Carlos Salavera

Received: 21 April 2021

Accepted: 17 June 2021

Published: 22 June 2021

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1. Introduction

Several studies have addressed the individual differences in altruistic behavior among different groups of subjects: age groups: adults [1–6], adolescents [7,8] and children [9–11]; different countries, such as Canada [1], China [7,12], Spain [13], Iran [14], India [15], Korea [3], Japan [16], Hong Kong [17]; and the effects of altruism on individual sustainable behaviors [18–20]. The belief that these individual differences may be measured directly using surveys led Rushton et al. [1] to develop the Self-Report Altruism scale or SRA scale. Many studies in different countries have used it [5,7,13–15,21,22] or have adapted it according to their needs [23,24].

The SRA scale is a popular scale [1], however, its 20-item composition makes it more difficult to apply it with other constructs in the same questionnaire, adding to fatigue and lower cooperation from survey respondents [25,26]. If one construct can be operationalized and measured using a more parsimonious scale, response bias and survey efficiency are increased, improving the measurement process and the validity of the results. Scales with fewer items allow researchers to include other constructs and study more relationships simultaneously [27,28]. However, reducing scale items does pose some challenges, in order to reduce effects in reliability and validity [25,29].

Since altruism has been used as a relevant independent variable for explaining sustainable or prosocial behavior [7,9,10,20,21,30], developing a simplified scale that is easier to use and administer will facilitate the inclusion and use of altruism in a larger number of studies in a more standard and valid manner. At the same time, this reduced SRA scale will enable more comparison of results.

Therefore, the purpose of this study is to develop a simplified version of the SRA scale that preserves the validity of the original scale developed by Rushton et al. [1] and can be validly and reliably used in human behavior studies as a relevant model variable. During the validation process, we provide empirical evidence of the potential use of the shorter 9-SRA scale to study prosocial behavior in the context of donations to public television networks.

2. Literature Review

2.1. Altruism

While there are many different definitions of altruism used across scientific disciplines [31], they do all share the etymological Latin origin which suggests the idea of “for others”, such as “a self-destructive behavior developed for the benefit of others”. Sociobiologists identify altruistic behaviors when the benefits for the actor are lower than the benefits for the counterpart or receiver [31]. Similarly, in economics, Margolis [32] suggests that “an altruistic behavior is defined by the fact that the subject may be better off if s(he) had chosen to ignore the effects of her his acts on others”. Chou [21] defines altruistic behavior as “an intentional and voluntary behavior that benefit others and which is not motivated by the expectations of external benefits compensations or to avoid external punishment”. Piliavin and Charng [31] comment that most authors agree that a true altruistic behavior (1) benefits other persons (different than the decision maker), (2) is performed voluntarily and intentionally, (3) has the benefit as its objective and, (4) must be performed without any expectation of external gains or compensations. Piliavin and Charng [31] conclude by defining altruism: “if an act seems motivated mainly by a consideration to the needs of others instead of ours, we call it altruism”. This focus on others may not always be positive. For example, Sun [33] argues that altruism may become pathological and even harmful for some individuals, particularly if it acts as an ego-defensive strategy.

2.2. Altruism in Science

As stated by Fehr and Fischbacher [34], “experimental evidence indicates that human altruism is a powerful force and is unique in the animal world” (p. 785). This relevant insight has posed an important question for science: why are humans so different among animals in this respect? Two related questions are whether humans have different levels of altruism and whether altruism can be considered a trait. In order to obtain answers to these questions, altruistic behaviors have been studied in many fields and in interdisciplinary studies. Research from multiple scientific disciplines, including biology, psychology, economics, environmental sciences, sociology, consumer and organizational behavior, has addressed some aspects of these complex questions. Some studies have focused on altruism’s genetic or fundamental origins and evolution [34–40]. Other studies have concentrated on its conceptualization, measurement and assessment [1,7,11,12,15,23,24,41]. Other articles have advanced knowledge regarding underlying cognitive processes [42–44] and socio-emotional aspects [45,46]. While other studies have focused on its relationship with prosocial behaviors [18–20,47–49] or antisocial behaviors [5,50], and its interaction with environmental factors [51].

2.3. Altruism Conceptualization and Measurement: The Prevalence of the SRA Scale

Altruism has been a relevant construct in the study of human nature in multiple scientific disciplines, from biology to economics. As indicated earlier, science has acknowledged that human altruism can be considered a unique characteristic of our species [34]. A key discussion in the conceptualization of altruism has been whether it can be considered a trait, a personality trait, and therefore that individuals differ in terms of their “levels” of altruism in a relatively consistent manner [1]. After a thorough discussion and review of the generality vs. specificity literature of personality traits focused on altruism, Rushton and colleagues state that: “The foregoing review indicated there is a trait of altruism. That is, some people are consistently more generous, helping and kind than others. Furthermore, such people are readily perceived as more altruistic, as is demonstrated by several studies showing positive relationships between behavioral altruism and peers’ and teachers’ ratings of how altruistic a person seem” [1] (p. 296). Consistently, researchers in several disciplines have attempted to operationalize and measure altruism in order to assess human behavior variations firstly, and secondly, to understand its origins and consequences. As a high order and abstract construct, its measurement has been a major challenge for empirical research addressing or using altruism as a key construct. Two main approaches have been taken in

the social sciences: a behavioral experimental-based approach and self-report survey-based approach. Most of the tradition in economics and decision sciences have used games and experiments to assess altruism (see, for example, [34,52–54]).

In psychology, consumer behavior, and organizational behavior, survey-based measures have been widely used (see, for example, [43,46,55,56]). One of the most used scales to assess altruism is the Self-Report Altruism (SRA) scale developed by Rushton and colleagues ([1]; see Table 1). The scale was designed to be easily administered and to reflect consistent differences among individuals regarding the altruism concept through responses to specific statements regarding past behavior.

In their classic study, Rushton et al. obtained high internal consistency scores (alpha: 0,89) and positive correlations between this scale and social responsibility, empathy, organ donation, sensitive attitudes, and prosocial individual values, providing evidence for the reliability and validity of the SRA scale. Since this seminal paper, many studies have studied the SRA scale with other measures of altruism or prosocial behavior constructs.

Given its wide use, an important stream of articles have validated the measurement instrument in particular contexts—such as Aguilar-Pardo and colleagues in Colombia [43]; Chou [7] and Ma and Leung [12] in China; Chacón et al. in Spain [13]; Snedjani in Iran [14]; Khanna et al. [15] in India, Korea [3], Japan [16], and Hong Kong [17]—or for particular age groups: adults [1–6], adolescents [7,8] and children [9–11].

Table 1. SRA scale (Rushton et al., 1981).

No.	Item
1	I have helped push a stranger's car out of the snow.
2	I have given directions to a stranger.
3	I have made change for a stranger.
4	I have given money to a charity.
5	I have given money to a stranger who needed it (or asked me for it).
6	I have donated goods or clothes to a charity.
7	I have done volunteer work for a charity.
8	I have donated blood.
9	I have helped carry a stranger's belongings (books, parcels, etc.).
10	I have delayed an elevator and held the door open for a stranger.
11	I have allowed someone to go ahead of me in a queue (at a Xerox machine, in the supermarket).
12	I have given a stranger a lift in my car.
13	I have pointed out a clerk's error (in a bank, at the supermarket) in undercharging me for an item.
14	I have let a neighbor whom I didn't know very well borrow an item of some value to me.
15	I have bought "charity" Christmas cards deliberately because I knew it was a good cause.
16	I have helped a classmate whom I did not know very well with a homework assignment when my knowledge was greater than his or hers.
17	I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.
18	I have offered to help a person with a disability or elderly stranger across a street.
19	I have offered my seat to a stranger who was standing.
20	I have helped an acquaintance to move households.

2.4. Altruism Variations and Correlates

Previous studies suggest that subjects differ in terms of their altruistic behaviors and that it could be possible to predict these individual differences [1]. Some authors suggest that altruism is part of human nature and may be part of each person's genetic component [31]. Rushton et al. [5], in a well-known study with 573 pairs of identical twins, show that 50% of the individual differences in the SRA-scale results are hereditary. According to Rushton and colleagues [1], some persons are consistently more generous and altruistic than others.

In addition, several studies have shown a positive correlation between the way subjects perceive themselves and their real altruistic behavior [7,9,10,47,57–59]. For example, Chou [7] found a positive relationship between the SRA scale and the Child Altruism Inventory [12]. Khanna et al. [15] found a positive correlation between the SRA scale and the altruism scale developed by Rai and Singh [60].

2.5. Altruism, Prosocial Behavior and Sustainability

More specifically, several researchers have studied the link between altruism and prosocial behavior, finding positive associations between the SRA scale and extra-curricular voluntary activities in adolescents [21] and between altruism and blood donations [24]. Other authors, like He et al. [20], have considered the effect of altruism on receptiveness to waste sorting policies in Chinese households or the likelihood of business leaders to engage in more generous discourse in the context of the COVID-19 pandemic [19].

In a recent and very interesting article, Kobayashi and Chiba [61] show that sustainability in a dynamic economic model can only be achieved if the degree of intergenerational altruism is relatively high or if a new intergenerational belief system (valuing sustainability) emerges and grows over generations.

2.6. Concerns and Challenges for a Wider Use the Self-Report Altruism Scale

Three major concerns have been identified when using the SRA scale. Rushton and colleagues suggest that the SRA scale individual items might be too specific and may hinder the measurement of a broad based altruism scale. However, they argue that focusing on specific behaviors does reduce social desirability biases that are normally present when you measure prosocial traits. A second initial concern was related to its specificity in terms of the culture and country where the scale was developed (i.e., Canada). However, its wider use and validation in several western and eastern countries, with different cultures, religions, languages and economic development levels, erase most of these concerns. Overall, a general overarching altruistic factor has been found in those studies.

A more general concern is related to the extent, or number of items, included in the measurement of specific traits. Long measurement instruments prevent the use of such instruments or may challenge the application of long surveys to populations beyond student samples [62]. This need has triggered several efforts to develop efficient, shorter versions of popular personality measures (see, for example, [63–66]).

As stated in this brief revision of the literature, altruism is a relevant variable for explaining human behavior and particularly prosocial behavior and sustainability actions. Therefore, our research focuses on the following research questions: Is it possible to develop a shorter version of the SRA scale that preserves reliability and validity? Is this new, short SRA scale a good predictor of prosocial behavior, so it can be used in future studies using the altruism construct in this context?

In this sense, providing a shorter, more efficient and reliable version of the self-report altruism scale may contribute to multiple disciplines where this construct is used in their theoretical developments and in particular to future prosocial behavior and sustainability studies. We address this objective in the next sections.

3. Methods

There is relevant literature addressing the desirable procedures for developing a multi-item scale [25,27,28,67,68]. Overall they suggest a number of steps, including construct definition, item generation and purification, construct validity and reliability assessment through exploratory and confirmatory factor analysis, and nomological validity tests. We have adopted them here to help reduce the number of items of the existent scale, with the purpose of preserving its psychometric characteristics.

We performed three studies: (1) a scale simplification study, (2) a pre-test study, and (3) a final validation study in order to complete the different phases of simplification and the validation of the scale development. All analyses were performed using SPSS Statistics 25.

The scale simplification study involved the selection of 16 master's students with training in consumer behavior and with specific knowledge of the altruism construct. They were asked to group the original 20 SRA scale items and to rate the degree to which each item was representative of the altruism construct. This process allowed for the ranking of items in terms of the degree of their association with altruism (see Table 1, items in bold). The pretest study involved a sample of 152 student subjects from a large university, larger than the 5 subjects for each item recommendation [69]. A survey instrument with the reduced 12-item version (from study 1) of the self-report altruism scale was administered in person at schools using traditional paper and pencil instruments. Subjects needed to rate each item in the survey using a 1-never, 2-rarely, 3-sometimes, 4-frequently, and 5-always scale. Self-report data was then factor analyzed to assess dimensionality and reliability.

The third and final validation study involved collecting survey data by mail from a new sample of American citizens of a southern American state. The initial sample was provided by a public television station in two subsamples of 750 subjects each. One subsample included members and the other included prospects (non-members). Surveys were sent to all subjects using regular mail. A total of 206 returned questionnaires were usable for analysis and 85 were returned due to wrong addresses or information, resulting in a response rate of 14.5% (206/1415), which is reasonable for this type of data gathering procedure. We checked for nonresponse bias by comparing questionnaires returned early (first 25% of responses) versus late (last 25% of responses), finding non-significant differences. Late responders are assumed to be estimates of non-responders. This information was then used for fitting a measurement model using confirmatory factor analysis and to assess the nomological validity of the reduced 9-SRA scale, associating altruism to prosocial behavior (e.g., public good financing).

4. Results

4.1. Phase 1: Scale Simplification

In order to check and identify redundant questions [70], the 20-item SRA scale was assigned to 16 master's students with advanced knowledge of human behavior models and theories. The graduate students had to perform two tasks: (1) group similar items and (2) assess how well each item represented the altruistic behavior concept, according to a definition provided to them.

Then, the items that represented altruism the least in each of the defined items groups was eliminated for each of the master's students. We computed the cumulative elimination rates for each item (across all subjects), with a high coincidence between the subjects, thus suggesting the elimination of 8 items 1, 2, 10, 11, 12, 13, 15 and 16 (see Table 1, items in bold were kept for the pre-test study).

4.2. Phase 2: Pre-Test Study

The reduced 12-item version of the SRA scale was then pretested using a sample of 152 subjects, larger than the suggested rate of 5 subjects per analyzed item [70]. The validation process involved two main assessments.

As the first assessment, Hair et al. [71] recommend examining interitem correlations. Inspecting the item correlation matrix showed that 61% of the correlations were statistically significant at the 0.01 significance level. Additionally, the Bartlett Sphericity Test was significant (Chi-square = 407.919; df. = 66; $p < 0.0001$) and the KMO index was 0.766, higher than the suggested threshold value of 0.6 [72,73], indicating that the data could be factor analyzed [66,69].

Second, an exploratory factor component analysis was performed with the data corresponding to the 12 items, in order to identify the number of underlying factors or dimensions [47]. The extraction criteria were that factor eigenvalues should be larger than 1, and a cumulative explained variance of higher than 50% [74]. Based on these criteria, 3 factors were extracted, explaining 53.3% of the variance in the data.

No a priori assumption was made regarding factor (in)dependence, thus an oblique rotation procedure (oblimin) was selected [69,70,73,74] in order to obtain higher levels of fit to the data, compared to more restrictive orthogonal options. The purification criteria for the factor solution included the elimination of items loaded on more than one factor [75] and items with factor loadings lower than 0,50 (absolute value) [70,74,76]. Additionally, the item to total dimension correlation had to be 0.3 or higher [69]. Finally, two other criteria were used for the exploratory factor analysis: (1) factors with 1 or 2 items may be combined with other ones only if they are conceptually related, and (2) when combining factors, items could be eliminated if internal consistency (i.e., Cronbach's alpha) does not improve [74].

Factors 1 and 2 fulfill all these criteria and were retained without changes. Factor 3, however, has just one item (8). This particular item had a low item to total correlation, thus suggesting lack of internal consistency. Additionally, following previous criteria, we tried the combination of factor 3 with the other two factors (1 or 2) and internal consistency was also reduced. The low correlation of item 8 with the other items can be linked to its complex and conflicting content, since it refers to blood donation. Some people may not donate blood due to a high perceived risk [30,77] or due to personal values or religion, thus producing an unreliable item for measuring altruism in all subjects. For all these reasons, we dropped factor 3. After this purification process, a 9-item scale was obtained with a total alpha coefficient of 0.76 (see Table 2).

Table 2. Factor loadings of pretest simplified version of the SRA altruism scale.

Loadings for Each Factor				
Item	Helping People	Charity	Blood Giving	Item to Total Dimension Correlation
3	0.690	−0.048	0.289	0.633
4	−0.190	0.836	0.073	0.675
5 *	0.279	0.454	0.266	0.641
6	−0.029	0.591	−0.162	0.570
7	0.122	0.678	0.126	0.768
8 *	0.005	0.112	0.841	N/A
9	0.806	−0.153	0.243	0.715
14	0.652	0.111	0.078	0.684
17 *	0.440	0.252	−0.247	0.612
18	0.697	0.087	−0.320	0.729
19	0.594	0.135	−0.324	0.656
20	0.717	−0.096	−0.069	0.688
Explained variance	30.07%	12.90%	10.33%	
Cumulative Expl. Variance	30.07%	42.97%	53.30%	
Eigenvalue	3.608	1.548	1.239	
Eigenvalue (rotated)	3.420	2.141	1.242	
Decision	Retained	Retained	Excluded	

Note: * These items were dropped after the final validation study.

4.3. Phase 3: Final Validation Study

A new sample of 206 subjects was obtained in order to test the factor structure, dimensionality, reliability and validity of the scale [28]. The composition of the sample in the final study is provided in Table 3 (separated by members subsample and non-members subsample). The Cronbach's alpha coefficient, item to total correlations, and exploratory factor analysis provided a good preliminary assessment of the psychometric characteristics of the 9-SRA scale [63,68]. Although for further testing we used confirmatory factor analysis (CFA) [71,78,79].

4.3.1. Dimensionality, Reliability and Validity of the 9-SRA

CFA allows for the testing of different model specifications, and therefore provides stronger evidence for a new scale validity [28]. Then, five different models were specified: base model A and four alternative models that are explained here [69]:

- The base “zero-factor model” (Model A), with no common factor, only correlations between variables are specified;
- Single factor model (Model B), with all items loaded on the same single factor;
- Two-factor model (Model C), with two uncorrelated factors (independent or orthogonal)
- Two correlated factors model (Model D), with two factors with correlations allowed. This model also suggests the possibility of a second order model [28];
- Second order two factor model (Model E, see Figure 1), where a second order factor contains the whole altruism domain [70].

All models were estimated using the maximum likelihood method [74]. Fit indices for all models are presented in Table 4. Generally, a CFI higher than 0.90, and an AASR (average absolute standardized residuals) of 0.06 or less indicate a good fit [28]. Consistent with the exploratory factor analysis of the 2-factor models, Model D (Chi2/df: 2.13; CFI = 0.95; AASR = 0.56) and Model E (Chi2/df: 2.22; CFI = 0.95; AASR = 0.56) show better and acceptable fit levels. Model E has a slight better fit and represents altruism as a single unit, allowing a better conceptual representation and measurement of the concept by adding all the items’ scores [28]. Additionally, the hierarchical model is more consistent with the original proposal of Rushton et al. [1]. Therefore, Model E was retained as the model with the best statistical fit (see Figure 1) and the better representation of the structure of the construct, according to CFA assessment procedures. This test adds indicative evidence supporting the operationalization of altruism through the proposed 9-SRA scale.

Table 3. Final study sample description.

Characteristic	Members	Non-Members
Gender		
Male	50.90%	43.70%
Female	49.10%	56.30%
Age		
34 or less	4.30%	27.60%
35–44	14.70%	28.70%
45–54	28.40%	26.40%
55–64	12.90%	12.60%
65–74	23.30%	2.30%
75 or over	16.40%	2.30%
Marital Status		
Married	81.00%	64.00%
Single/Widowed/Divorced	19.00%	36.00%
Income		
Under \$45,000	8.80%	18.80%
\$45,000–\$89,999	0.20%	41.30%
\$90,000–\$134,999	24.80%	25.10%
\$135,000 or over	37.10%	15.10%
Religion		
Protestant	68.10%	60.90%
Jewish	6.00%	3.40%
Catholic	6.90%	8.00%
Other	6.90%	16.10%
None	12.10%	11.50%

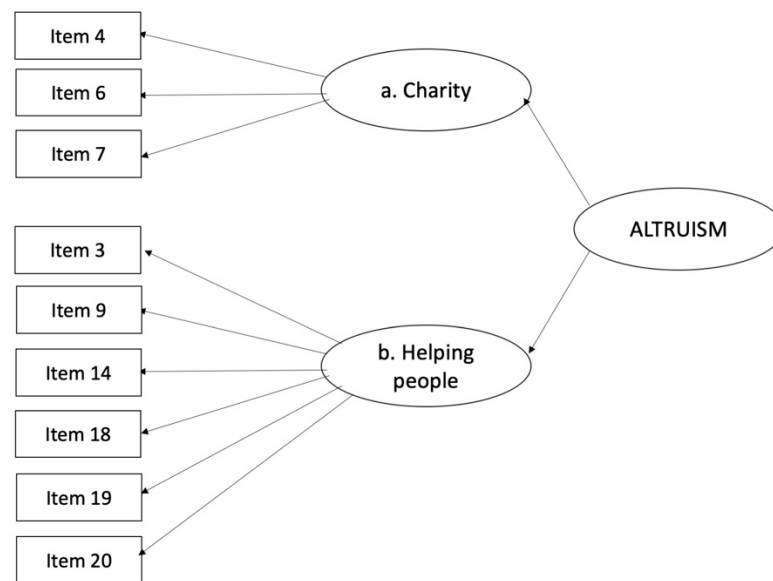


Figure 1. Second order model for the 9-SRA altruism scale (Model E).

Table 4. Goodness of fit indicators of alternative CFA models of the 9-SRA scale.

#	Models	χ^2	df	χ^2/df Ratio	CFI	AASR
A	Null	675.43	36	18.76	-	-
B	One Factor	125.53	27	4.65	0.86	0.094
C	2 Uncorrelated factors	71.97	27	2.67	0.93	0.120
D	2 Correlated factors	55.50	26	2.13	0.95	0.056
E	Hierarchical 2 factors	55.50	25	2.22	0.95	0.056

4.3.2. Reliability Assessment and Comparison to the Regular SRA Scale

If the reliability of a scale with a given number of items is known (r_0) the Spearman—Brown prophecy formula [26] can be used to estimate the required reliability if the number of items increases (or diminishes) K times (see Equation (1)). We can use this formula to compare the reliability of our new 9-SRA scale with the simulated reliability of previous studies using the SRA scale by Rushton et al. [1] in many countries.

$$r_k = \frac{k * r_0}{1 + (k - 1) * r_0} \quad (1)$$

Results using the previous formula are presented in Table 5. The reliability of the 9-SRA in this study (0.77) is very similar to the simulated reliability computed with the information of the original Rushton et al. [1] study, assuming that the scale is reduced to nine items, which is 0.78 (reduced from the original 0.89 with a 20-item scale).

Additionally, the 9-SRA scale reliability is higher than all the other simulated scores for additional replication studies, providing evidence that the 9-SRA scale may be used as a reliable substitute for the original SRA scale. Additionally, since the scale preserves the structure and a representative number of items from the original scale, content validity is embedded. Convergent validity is also shown by the fact that items converge and load into a higher order factor structure [69]. Nomological and predictive validity [80] require additional constructs to be measured in order to achieve an empirical assessment.

Table 5. Reliabilities of the proposed 9-SRA Scale and simulated reliability scores for reduced 9-item scale using data from previous studies.

Authors	Country	Number of Items	Cronbach's Alpha (r_0)	k Times	Simulated Cronbach's Alpha for 9 Items (r_k)
Rushton et al. (1981)	Canada	20	0.89	9/20	0.78
Khanna et al. (1993)	India	20	0.83	9/20	0.69
Chou (1996)	China	19	0.86	9/19	0.74
Rushton et al. (1996)	UK	20	0.85	9/20	0.72
Harris et al. (1996)	Canada	20	0.75	9/20	0.57
Maclean et al. (2004)	Canada	20	0.83	9/20	0.69
This article	USA	9	0.77	9/9	0.77

4.3.3. Predictive Validity Assessment: Altruism and the Provision of Public Goods

“Free riding” refers to the behavior of letting others pay or sacrifice for the provision of goods and benefits. For example, some people do not pay taxes or do not contribute to the cost of a public good like parks or public television [31]. We expect that altruistic individuals will be the most likely to give money to support a public television channel (PTV). In this study, we consider a dichotomic dependent variable (donor or PTV member, vs. free rider) using data from a sample of subjects in the state of Georgia, United States of America.

First, individuals were assigned to two groups based on their 9-SRA scores using the “Categorize” function of SPSS. The average score of Group 1 (lower altruism) was 23.48 ($n = 102$) and the average score of Group 2 (higher altruism) was 32.14 ($n = 104$), finding a significant difference ($p < 0.001$). Then we compared the PTV membership probability estimate (sample proportion) for both groups (see Table 6). Group 1 membership probability was 49.02% and the probability of Group 2 was 66.35% ($p < 0.001$). As predicted, more altruistic individuals (according to the 9-SRA) showed a higher probability of donating money and being a PTV supporter compared to the less altruistic ones (Chi-squared = 6.337, $df = 1$, p -value = 0.012). These results provide further evidence that the 9-SRA scale has predictive validity, significantly impacting donation behavior. Further studies may provide additional evidence by studying the relationship between the 9-SRA altruism scale and other prosocial behaviors.

Table 6. Predictive validity analysis of the 9-SRA Altruism Scale and donations to public television as a criterion variable.

Altruism Score	Status			Probability to Be a Member
	Member	Non Member	Total	
9 a 27	50	52	102	49.02%
28 a 45	69	35	104	66.35% *
Total	119	87	206	

* significant difference ($p < 0.001$).

5. Discussion

This article focuses on the development of a simplified 9-item scale version of the classic Self-Report Altruism scale. The different studies presented in this article show support for this new 9-item version of the original 20-item SRA scale [1] (see Appendix A).

5.1. Research Implications: Applications and Benefits of Using the 9-SRA Scale

This new instrument will help researchers to study altruism and its effects in more studies, facilitating responses and reducing both nonresponse and response biases.

In a similar way to our validation study, which shows a positive effect of self-reported altruism measured by the 9-SRA on the memberships and monetary donations to a Public TV station in the US, further studies may use the 9-SRA scale to study other types of relevant donations like time (in voluntary organizations), organs (in public policy and public health studies), money (e.g., in non for profit organizations research), or gift giving (in consumer behavior).

Our validation study is just one example of the many uses the shorter 9-item version of the SRA scale may have in different disciplines and research endeavors. Research in psychology, decision sciences, management, consumer behavior, public policy, economics and other disciplines can benefit from its use in a wide variety of areas: organizational citizenship behavior, the production and consumption of public goods, free-riding behavior, vaccination proneness, donations, smoking, drinking, obesity, bullying, and antisocial behaviors. Particularly relevant is the potential application of the 9-SRA scale to understand sustainable behaviors by the general public, consumers, managers and policy makers. For example, research on sustainable consumer behavior and green marketing can make use of this scale as an antecedent, correlate or moderator of attitudes towards green consumption or sustainable behavior intentions [81,82].

In a similar fashion, those researchers interested in uncovering the antecedents of altruism (i.e., personality traits [16] or conditions [83]), or its relationship with other individual psychological or sociobiological traits, may add this scale to their toolbox in order to make the total instrument shorter, which may be helpful given the complexity of measuring those related psychological constructs.

In addition, the recent emergence of behavioral economics and the questioning of pure rational human behavior assumptions in economics, finance, and human decision making suggests that considering altruism [84,85] may be very relevant for a better understanding and modelling of agents' behavior. Thus, using the 9-SRA scale can add important insights regarding human decision making and choice. Since most of this research involves experiments and games, including an altruism measure in those studies may be useful for controlling for a priori differences in experimental subjects, and for a more balanced assignment to experimental groups, thus improving overall research design.

At the same time, reducing the questionnaire generates less fatigue and boredom among respondents, thus reducing response bias in general. For these reasons we believe that the 9-SRA may help reduce social desirability issues in altruism research and increase the validity and generalizability of altruism studies results.

5.2. Managerial Implications: Potential Uses of the 9-SRA Scale

Consistent with the use of the new 9-SRA scale in future research studies in different fields, we can expect potential managerial applications of the scale for more practical uses. For example, the 9-SRA scale may be used in organizations for different purposes. It can be used in human resource management practice for complementing recruitment and selection information, or for people development and training. In addition, it can be used in leadership programs and internal assessments for employee development. Organizations involved in change management, new sustainability, and corporate social responsibility strategies may also use the instrument to assess altruism levels across employees, leaders, and board members. Other organizations, like NGOs, foundations, health institutions or public goods providers may use the 9-SRA scale to screen prospects and to focus marketing or sales efforts towards those market segments which are more altruistic and prone to giving or collaborating. Educational institutions can also use this instrument to help students in their self assessment and for training and development processes aimed towards specific soft skills or for the study of values and human behavior.

The rise of the sharing economy, where buyers and sellers share resources and time to fulfill needs in a collaborative fashion, may be another area of application for this measurement instrument. Sharing platforms like Airbnb or Uber may use the 9-SRA scale to better understand both suppliers (property owners, car drivers) and users, to cluster them, and to generate effective strategies to gather the right mix of collaborators and users for representing the values of the company and brand.

Public policy consultants, public opinion researchers, and politicians and government officials may also use the 9-SRA scale to study societal values and trends, for the purpose of better designing regulations and policies.

5.3. Limitations and Challenges of Using the 9 SRA Scale

The results presented in this study provide evidence regarding the reliability and validity of the shorter 9-SRA scale. Despite these indicative results regarding the validity of this shorter version of the Self-Report Altruism scale, social desirability and sampling issues should be taken into account by researchers using this proposed scale.

First, although we have made all attempts to reduce response biases and errors, our study presents limitations that researchers need to consider. The presented results come from a particular sample of US citizens from an individual state of that country. In particular, the sample is based on a list of members and prospective members of a public television network. Therefore, although the final study used a non-student adult sample, and psychological traits like altruism may be considered a stable trait across populations, results should be considered more indicative than representative, and further use and validation with other samples and in other contexts will increase the generalizability of the results in this study.

Second, social desirability bias remains a major concern when measuring behaviors or traits that may be considered “good” by societal standards [86,87]. Thus, any approach to measuring altruism should take this social desirability bias into account when defining overall research procedures. Many strategies have been designed in order to reduce this social desirability bias in surveys [87]. This may involve controlling for desirability bias or designing procedures to reduce such bias [88]. Assessing social desirability in respondents may be addressed by including a general question or a scale to measure subjects’ social desirability proneness. Since this option may make the questionnaire longer and more complex, Nederhof [88] suggests different methods to prevent and reduce such bias. Some simpler options include the selection of neutral interviewers or survey administrators and using a self-administration procedure. In this regard, a shorter SRA scale may help diminish the social desirability bias. First, shorter questionnaires are easier for self-administration and may increase the perception of confidentiality [89], and second, they may reduce awareness of desired social behaviors. With longer questionnaires, subjects are asked many times whether they will behave in a particular manner, thus being cued and becoming more aware of such behaviors. Then, they may be more likely to think that these behaviors are “good”, “desirable” or “expected” and they may be more likely to respond trying to please the researcher or society.

Finally, the study is based on a mailed, self-administered questionnaire. While this administration procedure may help reduce social desirability biases, it also reduces response rates. In this case, we gathered 14.5%, which is quiet high for this type of study, and we also found no evidence of nonresponse bias. However, we acknowledge that further testing or additional samples will contribute to more conclusive results.

6. Conclusions

Altruism—an intentional and voluntary behavior that benefits others without considering personal benefits/costs—is a very relevant construct to understand human nature and behavior. Altruism is considered a particularly human characteristic that differentiates us from other species [34]. As suggested in the literature, altruism has been used as a focal and relevant concept in multiple disciplines (psychology, decision sciences, economics,

consumer behavior, marketing, management, public policy, etc.) to understand and explain human behavior. In particular, altruism has been very relevant to study prosocial behavior [11,18,87]. Following established measurement procedures and a three-phase research design, we were able to provide relevant evidence suggesting that a shorter 9-SRA scale may be used to assess altruism in study subjects (see Appendix A).

This new 9-SRA measurement instrument to assess altruism can benefit research aiming to better understand its origins, relationships and consequences. Examples of the potential research applications of this scale might be studies regarding donor behavior, time giving and social contributions, sharing, and other prosocial behaviors. In addition, research streams in behavioral economics, public policy, general management and corporate governance and leadership, can benefit from the use of this scale. As indicated, a shorter instrument may help reduce nonresponse bias, fatigue, and social desirability issues.

This new and shorter instrument will allow researchers to include the altruism construct in more studies, facilitating responses, reducing both response and nonresponse biases, and increasing our understanding of the construct when studying human behavior. From a managerial point of view, this instrument can also be used in different potential usage situations, including recruitment and selection processes in human resource management, leadership assessment and training, and prospect screening and user segmentation. In addition, public opinion researchers, public policy consultants and government officials may also use the 9-SRA scale to assess societal values and trends, for the purpose of regulation and policy formulation. As suggested in the limitations section, these further studies in different disciplines, examining relationships with different variables and/or in different contexts and samples, will contribute to providing stronger evidence regarding the generalizability and stability of the proposed scale.

Author Contributions: Authors contribute equally to the paper. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study due to existing norms. In particular, this research involved benign intervention and the collection of information from adult subjects through voluntary anonymous written responses.

Informed Consent Statement: Subjects consent was waived due to the nature of the survey administration procedure. The questionnaire was sent by mail and subjects needed to send it back using a prepaid envelope. Those subjects not wanting to participate in the study did not answer it and did not send the filled questionnaire back.

Data Availability Statement: Data is available upon request from the authors due to privacy rights.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

This appendix contains the final version of the 9-SRA Scale of Self Report Altruism.

Authors	Never 1	Rarely 3	Sometimes 3	Frequently 4	Always 5
I have given money to a charity					
I have donated goods or clothes to a charity					
I have done volunteer work for a charity					
I have helped carry a stranger's belongings.					

I have made change for someone I did not know
I have helped an acquaintance to move houses
I have let a neighbor I did not know well borrow an item of some value to me
I have offered to help a disabled or elderly stranger across a street
I have offered my seat to a stranger who was standing.

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