The effect of personal values on academic achievement

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Abstract:
Numerous studies have demonstrated the importance of individual and contextual variables in explaining academic performance. Among the individual variables, personal characteristics such as sociodemographic variables have been investigated. Regarding the contextual variables, the influences of parental and school styles have been studied. However, personal values could also contribute to understanding students' achievement. The present study aims to analyse the relationship between personal values and academic performance. To do so, we first adapted two scales that aimed to measure the meaning of life and intellectual humility by following a committee approach. The Spanish version was administered to 54 students to evaluate the psychometric properties of the scales. The results and information provided by the experts were used to create revised versions of the scales, which were administered to 154 students together with other instruments focused on evaluating academic performance. The correlations between personal values and academic performance were computed, and the academic performance of students with different scores in personal values was compared. Intellectual humility was related to cognitive skills, and differences were identified in the academic performance between participants with high and medium scores in personal values. The implications and the utility of the adapted versions of the instruments are discussed.

Keywords:
personal values; academic performance; meaning of life; intellectual humility.

Introduction

Importance of personal values in University

The improvement of the educational system to help students to acquire not only knowledge but also global competencies for their personal and professional lives has been a main goal worldwide in recent decades (Reimers, 2009). However, academic performance has been mainly assessed by using only cognitive tests, which could be limited in terms of the representation of student capacities and tendencies. Therefore, in recent decades, researchers have focused their efforts on studying academic excellence by developing more comprehensive academic performance prediction models, where the evaluation of non-cognitive variables is considered.

In terms of research on students' achievements, the analysis of the variables affecting students' academic performance has been one of the key elements for proposing and developing educational strategies and educational policies. In fact, diverse approaches have achieved positive results related to the improvement of students' academic performance. For instance, the educational system in Finland focused on promoting teachers' professionalism and a school climate based on equity, flexibility, and creativity. The results indicate that the impacts of these two variables on students' performance was higher than those of other countries implementing strategies based on demanding learning standards (Sahlberg, 2007). Other researchers and practitioners have focused on investigating the relationship between schools' resources and students' performance, although according to the systematic review and meta-analyses conducted by Hanushek (1997), the direction and the strength of the connection between the two variables is not clear.

In attempts to deeply explore the variables influencing academic achievement, many individual characteristics have been studied. For instance, previous studies have confirmed the influence of sociodemographic characteristics on students' achievement. Thiele et al. (2016) found better academic results on students from wealthy areas and from the mainstream group. Muijs (1997) pointed to parental socioeconomic status (SES) and academic self-concept as good predictors of academic achievement. Personality traits seem to also be related to achievement. In a study by Diseth (2003), positive correlations occurred between both neuroticism and openness and achievement, but negative correlations were found between performance and agreeableness. These are only a few examples of studies addressing the analysis of the predictors of academic performance among the extensive literature on the topic. However, the influences of personal values on students' achievements has not yet been extensively studied.

The concept of personal values may include multiple variables. Globally, personal values are defined as a relatively stable belief in a particular mode of behaviour or consciousness, which is personally and socially preferable to other modes of behaviour (Rokeach, 1968). Individual values are grouped, forming a value system, defined as a permanent and stable organization over time that serves as a criterion to resolve conflicts and guide decision-making when more than one value is involved (Feather, 1972). Values are grouped into systems at the individual and social levels, in which one value determines and is deter-

mined by another. This implies a special interest in how much human values are found written in individuals' behaviour (Schwartz, 2006).

Previous studies have shown the importance of personal values in university learning and training. For instance, Matthews et al. (2007) indicated that values such as self-direction, self-aggrandizement or benevolent change may be related to university students' approaches to learning. However, the influence in terms of educational results that certain values may result in is unknown (Chase, et al., 2013). In other words, personal values could represent ideas or beliefs that go beyond specific situations since they represent indicators or criteria for evaluating the behaviours accepted by the society around us, although the direct impacts on achievement are not confirmed.

Theoretical models about personal values

Several theoretical models have considered personal values as an explanatory element of giftedness. Within the different approaches to giftedness, it has been suggested that considering a person to be talented should be associated with a superiority in socially desired personal values; this has been suggested, for example, by the pentagonal implicit theory of giftedness, in which the value criterion is a fundamental pillar in the development of giftedness (Sternberg & Zhang, 1995). Albert and Runco's model also specified that intelligence and performance are insufficient elements to define talent. The influences of family expectations, values and attitudes have motivating effects on talent (Albert & Runco, 1986). The model emphasizes the importance of the context where the subject operates as a determinant, along with other personal factors, of giftedness, which is defined by numerous factors beyond intelligence and performance. Similarly, Csikszentmihalyi and Robinson's approach to the conception of giftedness also details the influence that social context and culture can have on the development of giftedness (Csikszentmihalyi & Robinson, 2015).

Nevertheless, one of the most comprehensive models of giftedness is the actiotope model of giftedness, which focuses not only on personal attributes but also on the development of actions within a complex system (Ziegler, 2005; Ziegler & Stoeger, 2017; Ziegler et al., 2017). In this model, giftedness is considered an output of particularly effective actions. The model emphasizes the dynamic interaction of individuals with the environment. These actions are the consequence of three adaptations: biological adaptation, social adaptation and individual adaptation (Ziegler et al., 2013).

According to these models, personal values could play a role in understanding students' academic performance. In the actiotope model, they are considered an essential learning resource (Ziegler et al., 2019; Ziegler & Baker, 2013; Ziegler, Chandler et al., 2017). Among the personal values, the meaning of life and intellectual humility have been both defined and measured but not directly related to students' performance. The meaning of life refers to the belief that everyone has about the significance and the transcendence of their own life, which determine how people organize their experiences and how they plan the use of their energy (Steger & Frazier, 2005). Intellectual humility is a specific dimension of humility focused on the personal perception of intellectual strengths and

limitations and how they are handled (Davis et al., 2016). Both variables imply an individual evaluation of oneself and the development of strategies for pursuing personal goals, which might be related to academic achievement.

The present study aims to understand how personal values, specifically, the meaning of life and intellectual humility, are related to participants' characteristics and academic performance. To do so, we first adapted two Spanish scales originally created in English to measure the intended constructs (Study 1). Both scales were administered, and the psychometric properties were assessed. The results were used together with judgements from experts to implement changes in the scales, which led to a revised version. Then, a different group of participants responded to the two revised scales and some additional instruments focused on measuring cognitive and non-cognitive competencies (Study 2).

Method

Study 1: Adaptation and analysis of psychometric properties

Participants

A total of 54 participants in the last year of their bachelor's degrees (50 % women and 50 % men) responded to various instruments measuring personal values. The participants were asked to participate after completing a university pre-entrance assessment. Participation was voluntary, and they did not receive any compensation for their participation. Participants who agreed to participate in the study received a link to a web survey in which they took part after reading the information about the study and formally providing informed consent. Ethical approval for the research was obtained from the Universidad Loyola Andalucía Research Ethics Committee prior to the study.

Instruments

An assessment protocol was created to evaluate some personal values. The protocol included the following instruments:

The Spanish version of the Meaning of Life Questionnaire (MLQ-S)
The MLQ is a self-reported scale composed of ten items on the meaning of life that were answered using a seven-point Likert scale ranging from 1 (absolutely untrue) to 7 (absolutely true). The items measure two dimensions, the presence of meaning and search for meaning, and each dimension was composed of five items. The validation study of the original version reported adequate reliability of both subscales (Cronbach's alpha from .81 to .86 for presence of meaning and from .84 to .92 for search for meaning) and provided evidence of the validity supporting the internal structure of the scale and the expected relationships with other variables assessing well-being (Steger, Frazier, Oishi & Kaler, 2006). Details of the adaptation process and psychometric properties of the Spanish version administered to participants in Study 1 are described below.

The Spanish version of the Comprehensive Intellectual Humility Scale (CIHS-S)
The CIHS is a self-reported scale composed of 22 items evaluating four dimensions measuring intellectual humility: intellect and ego, openness to revising one's viewpoint,

respect for others' viewpoints, and lack of intellectual overconfidence. The items are statements that were assessed on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The validation studies conducted by the authors of the original scale did confirm the test-retest reliability of the scale and provided evidence of the validity supporting the utility of the scale for measuring the intended construct in both cases with multiple samples (Krumrei-Mancuso & Rouse, 2016). Details of the adaptation process and psychometric properties of the Spanish version administered to participants in Study 1 are described below.

Additional items measuring self-criticism

A pool of additional items was included as part of the evaluation with the aim of covering additional dimensions that should be theoretically part of the intended constructs in Spanish students. Specifically, self-criticism, although partly included in the CIHS as part of the dimension on openness to revisiting one's viewpoint, was only measured as the ability to self-critic when receiving external output. However, self-knowledge about oneself and others and the ability to evaluate oneself were also considered relevant, especially for the academic context. For that reason, some additional items were included as part of the assessment protocol. First, we adapted three items from the Social Responsibility Scale (SRS, Ramos, Armentia, & de la Fuente, 2008). The SRS is a scale created to evaluate the changes in the social responsibility of students attending a course on the topic. Three items were selected specifically because they measured self-criticism and were adapted to capture general behaviours (instead of changes related to attending a training course as they were designed). Second, we created four ad hoc items focused on self-criticism indicators not covered by previous instruments.

Procedure

The MLQ and CIHS were adapted by following a committee approach, as Harkness and Schoua-Glusberg (1998) described. First, three independent translators generated a version of each scale. Then, the translation coordinator compared the three versions and identified any discrepancies. The discrepancies were discussed in a consensus meeting where the final version was agreed upon. To unify the instrument format and use the most common response scale, the committee members suggested using the same response scale for all the items. Therefore, a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was consistently adopted. Appendixes 1 and 2 include the original and adapted versions of the items in the MLQ and CIHS (MLQ-S and CIHS-S), respectively. Additional items measuring self-criticism were reviewed by two members of the research team. All the additional items included in the assessment protocol are listed in Appendix 3 (self-criticism items). Both the scales and the additional items were included in a web survey that was created using Qualtrics (https://www.qualtrics.com). The link to the survey was provided to participants who responded during a virtual session. After giving the instructions, the participants completed the task.

Concurrently, three experts on personal values were contacted, and they were asked to evaluate the adapted versions of the scales and items measuring self-criticism. The experts' task consisted of three phases:

1) evaluation of the theoretical definitions of the constructs, 2) evaluation of the adequacy of the items, and 3) formulation of suggestions for improving the items and scales. The information provided by experts was used to interpret the psychometric results obtained from participants' responses and to propose modifications to the instruments.

Analysis

The responses of participants were used to analyse the psychometric properties of the scale. First, reliability was assessed by computing Cronbach's alpha. Item-test correlations were computed to explore the properties of each item. Exploratory factor analysis (EFA) was conducted to evaluate the dimensionality of the instruments. Principal-axis factor analysis with oblique rotation (promax) was used to validate the original instruments. Data analysis was conducted using SPSS Statistics (version 26).

Study 2: Values and academic competencies

Participants

A total of 154 first-year university students (35 % women; 65 % men) responded to a booklet including the revised versions of the instruments from Study 1 and additional tests and questions measuring academic performance. The average age of the sample was 17.76 years (SD = 1.16). Participants were asked to voluntarily participate at the university. Participants who agreed to participate in the study received a link to a web survey in which they took part after reading the information about the study and formally providing informed consent. Ethical approval for the research was obtained from the Universidad Loyola Andalucía Research Ethics Committee prior to the study.

Instruments

Personal Values

The participants responded to the revised versions of the instruments obtained from Study 1: MLQ-S-R and CIHS-S-R.

Ability Battery BAT-7 (Arribas-Águila et al., 2013).

The BAT-7 is one of the most commonly used instruments for assessing cognitive abilities. The battery measures seven competencies: verbal ability (V), spatial ability (E), attention (A), reasoning (R), mathematical ability (N), mechanical aptitude (M) and spelling (O). These competencies are measured by seven subtests that have previously been shown to have adequate psychometric properties (Cronbach's alphas between .78 and .95; Sánchez-Sánchez & Arribas-Águila, 2014). According to the sample age (16 to 18 years old), the higher level version of the instrument (S) was used.

Previous performance: Grades achieved in high school (HSGPA) and grades obtained on the national University Entrance Examinations (UEE) were also collected.

Procedure and analysis

Data were collected through the web survey Qualtrics (https://www.qualtrics.com). The link to the survey was provided to participants who responded during a virtual session with videoconferencing through the Webex platform during which researchers were available for questions or technical

problems. SPSS Statistics (version 26) was used for the analyses. First, bivariate correlations between academic achievement scores and personal values were analysed. Then, we explored differences between participants by grouping them according to their scores on the MLQ-S-R and CIHS-S-R. To achieve this, a classification based on terciles was established by using the total and dimension scores on both scales. Participants were divided into three profiles: low, medium and high. Considering these groups, a bivariate ANOVA was conducted using Snedecor's F statistic and the Honestly Significant Difference (HSD), as recommended by Field (2009). A post hoc test was performed to compare the mean differences in the academic performance between participants with different profiles based on personal values.

Results

Study 1: Psychometric properties of the adapted versions

Psychometric properties

Table 1 shows the psychometric properties of the MLQ-S and CIHS-S and the additional items used to measure self-criticism.

As Table 1 indicates, the MLQ showed adequate properties. The reliability of the presence of meaning subscale was .84, and item-test correlations reached values ranging from .56 to .80. In addition, the alpha did not increase when removing any of the items. The search for meaning subscale obtained a Cronbach's alpha value of .84. The items' properties also indicated adequate values, although removing item 2 would increase the reliability of the scale.

Regarding the CIHS, three dimensions reached adequate reliability indexes, but the lack of intellectual overconfidence dimension obtained a value lower than .7 (α = .66). Item 5 was the item with the poorest properties as the item-test correlation was medium (r = .26), and the alpha increased when removing it. The other three dimensions and the items composing them achieved adequate values. The internal consistency of the complete scale did not reach adequate values.

The self-criticism items worked adequately as a scale. The Cronbach's alpha confirmed the internal consistency of the scale (α = .71), and all the items exhibited good properties. Item 3 reached the lowest correlation with the total score, and removing it improved the stability of the scale.

Dimensionality

Table 2 shows the factor pattern when conducting the principal-axis analysis with promax rotation for the MLQ. The Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable (KMO = .758), and Bartlett's test of sphericity was significant (χ^2_{45} = 247.332, p = .000).

As Table 2 shows, the factor pattern of the MLQ fit the theoretical subscales. The solution with the two factors reaching eigenvalues higher than 1 explained a total of 63.31 % of the variance. The items' loadings reflected the theoretical distribution proposed for the original version of the scale.

The results for the CIHS showed that the sample was factorable (KMO = .703), and Bartlett's test of sphericity was significant (χ^2_{231} = 536.584, p = .000). Table 3 shows the factor pattern when conducting the principal-axis analysis with promax rotation.

Table 1 Psychometric properties of the MLQ-S and CIHS-S

Scale	Subscale	Items	Discrimination Index (Total Item-test correlation)	Alpha if removed
Meaning of Life	Presence of Meaning (α=.842)	1	.555	.834
		4	.641	.812
		5	.621	.818
		6	.799	.772
		9*	.649	.812
	Search for Meaning (α=.836)	2	.492	.839
		3	.626	.806
		7	.714	.780
		8	.663	.795
		10	.695	.786
Intellectual humility (α=.786)	Lack of Intellectual Overconfidence (*α=.664*)	1*	.445	.608
		2*	.560	.586
		3*	.347	.639
		4*	.499	.582
		5*	.257	.682
		12*	.359	.636
	Openness to Revising One's Viewpoint (α=.883)	6	.685	.870
		7	.766	.847
		8	.761	.848
		9	.744	.857
		10	.676	.868
	Respect for Others' Viewpoints (α=.861)	11	.713	.826
		13	.599	.848
		14	.699	.829
		15	.565	.853
		19	.673	.834
		20	.679	.834
	Independence of Intellect and Ego (α=.788)	16*	.523	.762
		17*	.650	.721
		18*	.704	.697
		21*	.524	.761
		22*	.433	.787
Self-criticism (α=.710)		1	.500	.658
		2	.368	.689
		3	.247	.724
		4	.278	.707
		5	.564	.642
		6	.569	.641
		7	.468	.666

*Reversed items.

Table 2 Factor pattern of principal-axis factor analysis of items of the MLQ-S

Scale	Subscale	Items	Item loading
Meaning of Life	Factor 1 (40.56 % of explained variance)	1	.633
		4	.682
		5	.680
		6	.869
		9*	.688
	Factor 2 (22.75 % of explained variance)	2	.534
		3	.664
		7	.809
		8	.827
		10	.759

*Reversed items

Table 3 Factor pattern of principal-axis factor analysis of items of the CIHS-S

Item	Factor						
	1	2	3	4	5	6	7
1				.970			
2				.748			
3						.556	
4						.914	.393
5							.482
6	.683						
7	.800						
8	.966						
9	.707						
10	.680						
11		.635					
12		.315				.327	.450
13		.658					.339
14		.810					
15		.542					
16			.533				
17			.911				
18			.707				
19		.699					
20		.742					
21					.743		
22					.862		

As Table 3 indicates, the original solution proposed seven factors explaining 75.34 % of the variance. The distribution of the items in the factors was similar to the theoretical structure proposed for the original version. Factor 1 explaining 27.1 % of the variance included items in the openness to revising one's viewpoint. Factor 3 explained 12.13 % of the variance and was represented by items measuring respect for others' viewpoints. However, items in both dimensions, the lack of intellectual overconfidence and the independence of intellect and ego, were divided into different factors: factors 3 and 5 for the former and factors 4, 6 and 7 for the latter.

The results for the self-criticism scale showed that the sample was not factorable (KMO = .698), but the sphericity requirement was reached as Bartlett's test of sphericity was significant (χ^2_{21} = 71.196, p = .000). Table 4 shows the factor pattern when conducting the principal-axis analysis with promax rotation.

As Table 4 indicates, the original solution proposed two factors explaining 53.69 % of the variance. The distribution of the items in the factors did not respond to the theoretical criteria, and items' content did not seem to be grouped according to what they were measuring.

Modified version

Previous results indicated problematic elements in the adapted versions of the scales and in the items used for assessing self-criticism. Therefore, experts' judgements were reviewed and used to propose modifications to the items. Table 5 summarizes the main contributions of the experts.

As Table 5 shows, the experts indicated that the content of the items in the MLQ-S was redundant and suggested reducing it. Specifically, the experts proposed discarding three items. Although these items showed adequate psychometric properties, they were removed in order to obtain a more parsimonious version of the scale.

Experts also raised suggestions for the CIHS-S. First, they proposed reformulating some items in the lack of intellectual overconfidence subscale because of the complexity of their terms and expressions. Due to the low reliability found for that subscale, some modifications were implemented to simplify the items' structures. In addition, items 8 and 10 in the openness to revisiting one's viewpoint subscale were viewed as repetitive. The experts suggested removing these items and merging that dimension with the self-criticism scale. As both dimensions were intended to measure the same construct and self-criticism could be part

Table 4 Factor pattern of principal-axis factor analysis of items of the self-criticism scale

Scale	Subscale	Items	Item loading
Meaning of Life	Factor 1 (38.51 % of explained variance)	1	.639
		4	.335
		6	.888
		7	.511
	Factor 2 (15.17 % of explained variance)	2	.708
		3	.301
		5	.616

Table 5 Experts' suggestions about items and scales

Scale	Subscale	Items	Comments	Suggestion
Meaning of life	Search for Meaning	2	The content is ambiguous, and the indicator is already measured in item 7.	Remove the item
		3	The content is ambiguous. The term "always" is extreme, and the indicator is already measured in item 8.	
		10	The indicator is already measured in other items of the scale and the past continuous could be confusing.	Modify the item
Intellectual humility	Lack of Intellectual Overconfidence	3*	The item is difficult to understand because of the expressions "not very likely" and "incorrect idea". The formulation includes negations.	Modify the item
		5*	The item is difficult to understand because of the expressions "not very likely" and "influence my ideas". The formulation includes negations.	Modify the item
		12*	The item includes confusing expressions such as "rarely".	Modify the item
	Openness to Revising One's Viewpoint	8	The item repeats a concept evaluated in item 7.	Remove the item
		10	The item repeats a concept evaluated in item 10.	Remove the item

of the concept named intellectual humility, we created a new dimension composed of the three original items in the CIHS (items 6, 7 and 9) and the six items included to assess self-criticism. Although item 3 in the self-criticism scale did not achieve good psychometric properties, no suggestions were collected to modify it. Therefore, we retained the previous version as part of the final test. Appendixes 4 and 5 include the items included in the revised versions of the MLQ-S and CIHS-S, named MLQ-S-R and CIHS-S-R, respectively.

Study 2: Values and academic competencies

Psychometric properties

Both revised versions achieved adequate psychometric properties. The two dimensions of the MLQ-S-R obtained Cronbach's alphas higher than .7. Specifically, the presence of meaning dimension reached a value of .81, and the search for meaning dimension composed of two items of the original version (items 7 and 8 of MLQ-S) and one item with modifications (item 10 of MLQ-S) obtained a value of .71. Item-test correlation ranged from .44 to .69 in the first dimension and from .48 to .60 in the second dimension.

In the CIHS-S-R, the psychometric properties reflected an improvement in the internal consistency. The global Cronbach's alpha was .93, with four subscales obtaining

higher values than in the previous version. Changes in the lack of intellectual overconfidence subscale made those items work better, exhibiting correlations with total scores ranging from .49 to .66 and a Cronbach's alpha of the subscale of .82. The two dimensions without modifications also increased previous alphas with current values of .88 and .81 for respect for others' viewpoints and independence of intellect and ego, respectively. The last dimension merging items from the previous openness to revising one's viewpoint and self-criticism items reached a Cronbach's alpha of .89. Item-test correlations ranged from .36 to .73. To better reflect the content of the dimension, we renamed it the dimension openness to revising one's self-knowledge.

In terms of dimensionality, the MLQ-S-R achieved the expected factors, although item 10 received high loadings in both factors (.59 in the presence of meaning and .56 in the search for meaning). The items of the CIHS-S-R did fit the theoretical structure of the original in terms of items achieving the highest loading on the expected factor, although the factor loadings of most the items were high for all the factors pointing to a unidimensional structure explaining 38.86 % of the variance or a two-dimensional solution accounting for 50.88 % of the variance. A two-factor solution would split items into two parts: A) items from the lack of intellectual overconfidence and independence of intellect and ego dimensions, and B) items from respect for others' viewpoints and openness to revising self-knowledge. Examining the content of the items, part A would include items focused on the strength of one's own arguments, and part B would be more related to the ability to value and consider external opinions and to self-knowledge. In order to retain the theoretical subscales of the CIHS, we considered the original structure with four dimensions treated as subscales for the following analysis.

Personal values and academic performance

The correlations between personal values and cognitive skills are shown in Table 6.

As Table 6 indicates, negative correlations were found between the CIHS-S-R and BAT-7 total scores ($r = -.19$, $p = .03$) and between the CIHS-S-R total score and the cognitive dimension of attention ($r = -.19$, $p = .03$). Considering the four dimensions of the CIHS-S-R, only the openness to revising self-knowledge dimension achieved significant results ($r = -.19$, $p = .03$). Verbal ability also had a negative and significant correlation with that dimension ($r = -.17$, $p = .05$). No other significant correlations were found between personal values and academic performance, cognitive abilities or previous achievement obtained in high school and on the UEE, although the correlations between dimensions of personal values were as expected.

To deeply explore the relationships between personal values and academic performance, students' profiles were investigated. Participants were divided into three groups in each dimension of the MLQ-R-S and CIHS-S-R scales. Tables 7 and 8 show the results from the ANOVA conducted to compare the means of the participants with low, medium and high scores on each of the dimensions and subscales.

Table 6 Correlations between personal values and academic performance

	Variable	*n*	*M*	*SD*	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1.	MLQ-S-R1 [1]	148	17.14	3.86	1						
2.	MLQ-S-R2 [2]	148	9.97	2.65	.42**	1					
3.	CIHS-S-R (Total score) [3]	147	-3.59	7.23	.24**	.35**	1				
4.	CIHS-S-R (Lack) [4]	148	2.32	4.50	.12	-.01	-.55**	1			
5.	CIHS-S-R (Respect) [5]	147	11.24	2.21	.41**	.36**	.47**	.37**	1		
6.	CIHS-S-R (Ego) [6]	148	22.85	4.50	.35**	.31**	.45**	.38**	.55**	1	
7.	CIHS-S-R (Openness) [7]	148	17.34	4.13	.15	-.00	-.37**	.64**	.87**	.50**	1
8.	Verbal ability	137	21.82	4.10	-.08	.05	-.12	-.06	-.11	.02	-.17*
9.	Spatial ability	137	18.54	5.28	.00	.129	-.14	.09	-.04	.03	-.09
10.	Attention	137	38.01	1.71	-.01	.00	-.19*	.09	-.09	.07	-.09
11.	Reasoning	137	19.79	4.33	-.01	.02	-.10	.09	-.01	.02	-.08
12.	Mathematical ability	137	16.95	5.01	-.08	.11	-.07	.00	-.09	-.08	-.14
13.	Mechanical aptitude	137	18.42	3.74	-.07	.06	-.07	.05	-.02	.00	-.06
14.	Spelling	137	22.05	5.09	-.05	.10	-.10	.010	-.03	.02	-.143
15.	BAT-7 Total Score	137	356.52	81.05	-.08	.12	-.19*	.054	-.10	.01	-.19*
16.	HSGPA	128	7.95	1.04	-.01	.08	-.10	-.01	.00	.14	-.08
17.	UEE	128	7.67	1.07	.00	.13	-.07	.05	.05	.12	.00

*p<.05. **p<.01

MLQ-S-R: Meaning of Life Questionnaire. MLQ-S-R1: Presence of Meaning of life. MLQ-S-R2: Search of Meaning of life. CIHS-S-R: Intellectual Humility. HSGPA: Grades achieved in High School. UEE: University Entrance Examinations.

Table 7 Means differences on cognitive skills and previous achievement between MLQ-R-S profiles

	MLQ-S-R:Presence of meaning	MLQ-S-R:Search for meaning
Verbal ability	$F(2,134) = 2{,}27$ $p = .11$	$F(2,134) = 0.56$ $p = .57$
Spatial ability	$F(2,134) = 0.16$ $p = .85$	$F(2,134) = 1.12$ $p = .33$
Attention	$F(2,134) = 0.07$ $p = .93$	$F(2,134) = 0.32$ $p = .73$
Reasoning	$F(2,134) = 0.51$ $p = .60$	$F(2,134) = 0.09$ $p = .91$
Mathematical ability	$F(2,134) = 1.44$ $p = .24$	$F(2,134) = 2.71$ $p = .07$
Mechanical aptitude	$F(2,134) = 0.32$ $p = .73$	$F(2,134) = 0.88$ $p = .42$
Spelling	$F(2,134) = 0.82$ $p = .44$	$F(2,134) = 0.93$ $p = .40$
BAT-7 Total Score	$F(2,134) = 1.08$ $p = .34$	$F(2,134) = 1.82$ $p = .17$
HSGPA	$F(2,134) = 1.58$ $p = .21$	$F(2,134) = 0.97$ $p = .38$
UEE	$F(2,134) = 0.90$ $p = .41$	$F(2,134) = 0.82$ $p = .44$

MLQ-S-R: Meaning of Life Questionnaire. MLQ-S-R1: Presence of Meaning of life. MLQ-S-R2: Search of Meaning of life. CIHS-S-R: Intellectual Humility. HSGPA: Grades achieved in High School. UEE: University Entrance Examinations.

Table 8 Means differences on cognitive skills and previous achievement between CIHS-R-S profiles

	CIHS-S-R: Total Score	**CIHS-S-R: Lack**	**CIHS-S-R: Respect**	**CIHS-S-R: Ego**	**CIHS-S-R: Openness**
Verbal ability	*F(2,132)* = 0.80 *p* = .45	*F(2,134)* = 2.29 *p* = .11	*F(2,134)* = 1.01 *p* = .37	*F(2,132)* = 1.36 *p* = .26	*F(2,132)* = 2.20 *p* = .11
Spatial ability	*F(2,132)* = 2.09 *p* = .13	*F(2,134)* = 0.24 *p* = .79	*F(2,134)* = 1.04 *p* = .36	*F(2,132)* = 0.52 *p* = .59	*F(2,132)* = 0.44 *p* = .64
Attention	*F(2,132)* = 5.15 *p* = .01$^{H<L;\ H<M}$	*F(2,134)* = 0.14 *p* = .87	*F(2,134)* = 1.14 *p* = .32	*F(2,132)* = 0.10 *p* = .91	*F(2,132)* = 1.39 *p* = .25
Reasoning	*F(2,132)* = 2.85 *p* = .06$^{H<M}$	*F(2,134)* = 0.70 *p* = .50	*F(2,134)* = 0.52 *p* = .60	*F(2,132)* = 0.43 *p* = .65	*F(2,132)* = 0.44 *p* = .65
Mathematical ability	*F(2,132)* = 0.11 *p* = .90	*F(2,134)* = 1.06 *p* = .35	*F(2,134)* = 0.20 *p* = .82	*F(2,132)* = 2.74 *p* = .07	*F(2,132)* = 1.60 *p* = .21
Mechanical aptitude	*F(2,132)* = 0.69 *p* = .50	*F(2,134)* = 0.01 *p* = .99	*F(2,134)* = 0.04 *p* = .96	*F(2,132)* = 0.27 *p* = .76	*F(2,132)* = 0.62 *p* = .54
Spelling	*F(2,132)* = 3.19 *p* = .04$^{H<M}$	*F(2,134)* = 0.92 *p* = .40	*F(2,134)* = 1.36 *p* = .26	*F(2,132)* = 2.28 *p* = .11	*F(2,132)* = 1.06 *p* = .35
BAT-7 Total Score	*F(2,132)* = 3.93 *p* = .02$^{H<M}$	*F(2,134)* = 0.38 *p* = .68	*F(2,134)* = 0.89 *p* = .41	*F(2,132)* = 0.37 *p* = .69	*F(2,132)* = 2.43 *p* = .09$^{H<L}$
HSGPA	*F(2,132)* = 1.6 *p* = .21	*F(2,134)* = 3.22 *p* = .04$^{H<M}$	*F(2,134)* = 0.00 *p* = .99	*F(2,132)* = 0.14 *p* = .87	*F(2,132)* = 0.12 *p* = .89
UEE	*F(2,132)* = 0.96 *p* = .38	*F(2,134)* = 0.64 *p* = .53	*F(2,134)* = 0.03 *p* = .97	*F(2,132)* = 0.20 *p* = .82	*F(2,132)* = 0.09 *p* = .92

MLQ-S-R: Meaning of Life Questionnaire. MLQ-S-R1: Presence of Meaning of life. MLQ-S-R2: Search of Meaning of life. CIHS-S-R: Intellectual Humility. HSGPA: Grades achieved in High School. UEE: University Entrance Examinations.

As Table 7 indicates, no significant differences were found between the profiles of the MLQ-R-S dimensions and academic performance. Mathematical ability was the only cognitive skill where a trend was identified with the MLQ-S-R2-high group with a higher mean (M = 18.49, SD = 4.56) than the MLQ-S-R2-medium group (M = 16.07, SD = 4.95).

When comparing groups using CIHS-S-R total scores, significant differences were found in BAT-7 total scores and in both spelling and attention dimensions (see Table 8). With respect to the BAT-7 total scores, the mean obtained by the high group (M = 330.74, SD = 82.87) was significantly lower than that of the medium group (M = 377.55, SD = 76.71). These differences between these two groups were also significant in the spelling dimension (high group: M = 20.79, SD = 5.02; medium group: M = 23.55, SD = 5.34). Regarding the attention dimension, the mean score of the high group (M = 33.79, SD = 10.69) was significantly lower than that of the low group (M = 40.02, SD = 11.06) and medium group (M = 39.86, SD = 9.77). In addition, the results obtained for the reasoning dimension tended towards significance in the same direction as the above results (high group: M = 19.00, SD = 3.85; medium group: M = 21.05, SD = 4.14).

Multiple comparisons considering the different groups (high/medium/low) of the four CIHS-S-R subscales yielded different results. When comparing the CIHS-S-R-lack groups, there were significant differences

only in HSGPA. The results showed that the scores obtained by participants in the high group (M = 7.63, SD = 0.95) were significantly lower than those obtained by participants in the medium group (M = 8.21, SD = 1.05). Regarding the remaining factors of intellectual humility, no significant differences were detected between groups.

Discussion

The present study aimed to understand how personal values are related to participants' characteristics and academic performance. The final goal of the study was to evaluate whether personal values play a role in the definition of academic excellence.

According to the results, personal values assessed in the present study seem to not be related to academic performance. First, the correlations between personal values and the indicators of academic performance were mostly not significant. Only the total score of the CIHS-S-R reached significant correlations with the total score on the BAT-7, but these correlations were negative, which suggests that higher intellectual humility is related to lower cognitive skills. A similar pattern is found between the CIHS-S-R dimension of openness to revising one's viewpoint. One possible explanation for this lack of relationship may be due to the non-identification of specific thinking styles in students, such as cognitive style (Sagiv et al., 2013) or strategic thinking (Steptoe-Warren, 2011), which could provide further evidence on the association between personal values and academic performance. Second, the profile exploration also shows that connection as significant differences were found in the means of the cognitive skills between groups divided by their total scores on the CIHS-S-R. Differences in attention, reasoning, spelling, and total scores on the BAT-7 indicated worse performance among participants with higher levels of intellectual humility. However, medium levels of intellectual humility were connected to higher scores in these cognitive skills. In terms of the indicators of academic performance, the results showed that participants with higher HSGPAs were in the medium group of the lack of intellectual overconfidence dimension of the CIHS-S-R. In this sense, previous studies have shown that giftedness is not a unitary measure of intelligence (Sternberg & Zhang, 1995) so that as it increases, other talents become more relevant, such as creativity (Runco, 2005). These results suggest that intellectual humility might have an optimal score that is located in the middle of the range.

Furthermore, meaning of life was unrelated to academic performance, which suggests that this personal value does not have a direct relationship with academic performance. Therefore, contrary to expectations, the meaning of life and intellectual humility are not clearly related to academic performance in students with a mean age of 17.76 years, but this is something that could change over the years. This could be explained by the students' own life stage. The learning environment is in a process of change as students move from high school to university (Ziegler et al., 2013). This may imply that personal values have a greater influence when students are studying at university and may even have a direct impact on GPA (Harackiewicz et al., 2018).

Considering the results in Study 2, three conclusions are drawn. First, perhaps the question is not whether personal values are related to academic performance; otherwise, the objective must be oriented to

determine which personal values could be associated with academic performance. For instance, Matthews et al. (2007) suggested that personal values such as self-direction, self-aggrandizement or benevolent change may be related to learning. Second, personal values may not be directly connected to academic performance, but other noncognitive variables could moderate the relationship. For instance, previous studies show that these variables include personality traits, motivation factors, self-regulatory learning and other personal qualities (Duckworth et al. 2015; Richardson et al., 2012). Finally, the BAT-7 and indicators of academic performance may not capture the abilities of students to be successful in their professional lives. Although the use of batteries for assessing cognitive skills is extensive, the tests used may not capture the actual capacity of students to handle specific challenges at university. Previous studies have shown that broad assessments of student abilities can predict subsequent performance to a greater extent than if only purely cognitive or intellectual variables were considered (Niessen et al., 2018; Schmitt et al., 2009). Future studies will address a more extensive evaluation of students where additional instruments measuring personal values and other noncognitive variables are included as part of the assessment protocol. In addition, other indicators of academic performance such as achievement during university courses will be incorporated. Furthermore, future data collection should include participants with a wider range of ages in order to investigate whether personal values play a relevant role in different age groups.

Besides the substantive results, the present study also provides two reliable assessment instruments to measure the meaning of life and intellectual humility in Spanish participants. In this study, we adapted two instruments to Spanish and analysed the psychometric properties. In terms of reliability, both instruments showed adequate properties. In terms of dimensionality, the results suggest that intellectual humility is not defined in Spanish participants as it is theoretically. In fact, some additional indicators were incorporated as part of the construct since they were relevant in the specific population. Self-criticism and self-knowledge are elements that have acquired importance in Spanish university teaching-learning processes (Abad-Segura, 2019; Fidalgo & García, 2009). Future studies should be developed to confirm the structural dimensionality of the CIHS-S-R in order to determine whether subscales should be considered or whether total scores are better for reflecting the nature of the construct, as was considered in the present study. Self-criticism and self-knowledge are elements that have acquired importance in university teaching-learning processes.

Although our findings indicate that personal values are not directly related to academic performance, they are already relevant for educational purposes. Therefore, they should be evaluated properly by using adequate instruments, and new studies should shed light on the impact they have in people's lives.

References

Abad-Segura, E., & González-Zamar, M. D. (2019). Análisis de las competencias en la educación superior a través de flipped classroom. *Revista Iberoamericana De Educación, 80*(2), 29-45. https://doi.org/10.35362/rie8023407

Albert, R.S. & Runco, M.A. (1986). The activament of eminence: a model based on a longitudinal study of exceptionally gifted boys and their families. In R.J. Stemberg and J.E. Davidson (Eds.), *Conceptions of giftedness,* (pp. 332-357). Cambridge University Press.

Arribas-Águila, D., Santamaría, P., Sánchez-Sánchez, F., & Pinto, I. (2013). *BAT-7. Batería de Aptitudes de TEA, Manual.* Madrid, Spain: TEA Ediciones.

Chase, J. A., Houmanfar, R., Hayes, S. C., Ward, T. A., Vilardaga, J. P., & Follette, V. (2013). Values are not just goals: Online ACT-based values training adds to goal setting in improving undergraduate college student performance. *Journal of Contextual Behavioral Science, 2*(3–4), 79–84. https://doi.org/10.1016/j.jcbs.2013.08.002

Csikszentmihalyi, M., & Robinson, R. (2015). Culture, Time, and the Development of Talent. In M. Csikszentmihalyi (Ed.), *The systems model of creativity: The collected works of Mihaly Csikszentmihalyi* (pp. 27–46). Springer, Dordrecht. https://doi.org/10.1007/978-94-017-9085-7_3.

Davis, D. E., Rice, K., McElroy, S., DeBlaere, C., Choe, E., Van Tongeren, D. R., & Hook, J. N. (2016). Distinguishing intellectual humility and general humility. *The Journal of Positive Psychology*, *11*(3), 215-224. https://doi.org/10.1080/17439760.2015.1048818

Diseth, Å. (2003). Personality and approaches to learning as predictors of academic achievement. *European Journal of personality*, *17*(2), 143-155. https://doi.org/10.1002/per.469

Duckworth, A. L., & Yeager, D. S. (2015). Measurement Matters: Assessing Personal Qualities Other Than Cognitive Ability for Educational Purposes. *Educational Researcher, 44*(4), 237–251. https://doi.org/10.3102/0013189X15584327

Feather, N. T. (1972). Value Systems and Education: The Flinders Programme of Value Research. *Australian Journal of Education*, *16*(2), 136–149. https://doi.g/10.1177/000494417201600204

Fidalgo, R., & García, J.N. (2009). La evaluación de la metacognición en la composición escrita. *Estudios de Psicología, 30*(1), 51–72. https://doi.org/10.1174/021093909787536290

Field, A. P. (2009). *Discovering statistics using SPSS: (and sex and drugs and rock 'n' roll)*. London, Royaume-Uni: SAGE.

Hanushek, E. A. (1997). Assessing the effects of school resources on student performance: An update. *Educational evaluation and policy analysis*, *19*(2), 141-164. https://doi.org/10.3102/01623737019002141

Harackiewicz, J. M., & Priniski, S. J. (2018). Improving Student Outcomes in Higher Education: The Science of Targeted Intervention. *Annual Review of Psychology, 69*, 409–435. https://doi.org/10.1146/annurev-psych-122216-011725

Harkness, J. A., & Schoua-Glusberg, A. (1998). Questionnaires in translation. *ZUMA-Nachrichten Spezial, 7*, 87–125.

IBM Corp. (2019). *IBM SPSS Statistics for Windows* (Version 26.0). Armonk, NY: IBM Corp. [Computer software]

Krumrei-Mancuso, E. J., & Rouse, S. V. (2016). The development and validation of the comprehensive intellectual humility scale. *Journal of Personality Assessment*, *98*(2), 209-221. https://doi.org/10.1080/00223891.2015.1068174

Matthews, B., Lietz, P., & Darmawan, I. G. N. (2007). Values and learning approaches of students at an international university. *Social Psychology of Education, 10*(2), 247–275. https://doi.org/10.1007/s11218-007-9019-x

Muijs, R. D. (1997). Predictors of academic achievement and academic self-concept: A longitudinal perspective. *British Journal of Educational Psychology*, *67*(3), 263-277. https://doi.org/10.1111/j.2044-8279.1997.tb01243.x

Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2018). Admission testing for higher education: A multi-cohort study on the validity of high-fidelity curriculum-sampling tests. *PLOS ONE, 13*(6), e0198746. https://doi.org/10.1371/journal.pone.0198746

Ramos, J. M. G., Armentia, P. G., & de la Fuente, M. O. (2008). Validación y medida de la responsabilidad social en la universidad. *Revista Complutense de Educación*, *19*(2), 385-404.

Reimers, F. (2009). Educating for global competency. In J. E. Cohen & M. B. Malin (Eds.), *International perspectives on the goals of universal basic and secondary education* (pp-183-202). New York: Routledge.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: *A systematic review and meta-analysis. Psychological Bulletin, 138*(2), 353–387. https://doi.org/10.1037/a0026838

Rokeach, M. (1968). The Role of Values in Public Opinion Research. *The Public Opinion Quarterly*, *32*(4), 547–559. https://doi.org/10.1086/267645

Runco, M. A. (2005). Creative Giftedness. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (p. 295–311). Cambridge, England: Cambridge University Press. https://doi.org/10.1017/CBO9780511610455.017

Sagiv, L., Amit, A., Ein-Gar, D., & Arieli, S. (2014). Not all great minds think alike: Systematic and intuitive cognitive styles. *Journal of Personality, 82*(5), 402–417. https://doi.org/10.1111/jopy.12071

Sahlberg, P. (2007). Education policies for raising student learning: The Finnish approach. *Journal of education policy*, *22*(2), 147-171. https://doi.org/10.1080/02680930601158919

Sánchez-Sánchez, F., &Arribas-Águila D. (2014). BAT-7, Batería de Aptitudes de TEA: Descripción y datos psicométricos. *International Journal of Developmental and Educational Psychology, 2*(1), 353-364. https://doi.org/10.17060/ijodaep.2014.n1.v2.450

Schmitt, N., Keeney, J., Oswald, F. L., Pleskac, T. J., Billington, A. Q., Sinha, R., & Zorzie, M. (2009). Prediction of 4-Year College Student Performance Using Cognitive and Noncognitive Predictors and the Impact on Demographic Status of Admitted Students. *Journal of Applied Psychology, 94*(6), 1479–1497. https://doi.org/10.1037/a0016810

Schwartz, S. H. (2006). Basic human values: Theory, measurement, and applications. *Revue française de sociologie*, *47*(4), 929-968. https://doi.org/10.3917/rfs.474.0929

Steger, M. F., & Frazier, P. (2005). Meaning in life: One link in the chain from religiousness to well-being. *Journal of Counseling Psychology, 52,* 574–582. https://doi.org/10.1037/0022-0167.52.4.574

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of counseling psychology*, *53*(1), 80-93. https://doi.org/10.1037/0022-0167.53.1.80

Steptoe-Warren, G., Howat, D., & Hume, I. (2011). Strategic thinking and decision making: literature review. *Journal of Strategy and Management, 4*(3), 238–250. https://doi.org/10.1108/17554251111152261

Sternberg, R. J., & Zhang, L. (1995). What Do We Mean by Giftedness? A Pentagonal Implicit Theory. *Gifted Child Quarterly, 39*(2), 88–94. https://doi.org/10.1177/001698629503900205

Thiele, T., Singleton, A., Pope, D., & Stanistreet, D. (2016). Predicting students' academic performance based on school and socio-demographic characteristics. *Studies in Higher Education*, *41*(8), 1424-1446. https://doi.org/10.1080/03075079.2014.974528

Ziegler, A. (2005). The actiotope model of giftedness. In R. J. Sternberg, & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 411-436). Cambridge, England: Cambridge University Press.

Ziegler, A., & Baker, J. (2013). Talent development as adaption: The role of educational and learning capital. In S. Phillipson, H. Stoeger, & A. Ziegler (Eds), *Exceptionality in East-Asia: Explorations in the actiotope model of giftedness* (pp. 18-39). Routledge.

Ziegler, A., Chandler, K., Vialle, W., & Stoeger, H. (2017). Exogenous and endogenous learning resources in the Actiotope Model of Giftedness and its significance for gifted education. *Journal for the Education of the Gifted, 40*, 310-333. https://doi.org/10.1177/0162353217734376

Ziegler, A., Debatin, T., & Stoeger, H. (2019). Learning resources and talent development from a systemic point of view. *Annals of the New York Academy of Sciences*, 1445, 39—51. https://doi.org/10.1111/nyas.14018

Ziegler, A., & Stoeger, H. (2017). Systemic gifted education. A theoretical introduction. *Gifted Child Quarterly, 61*, 183–193. doi:10.1177/0016986217705 713

Ziegler, A., Stoeger, H., & Balestrini, D. (2017). Systemic gifted education. In J. Riedl Cross, C. O'Rellly & T. Cross (Eds.), *Providing for the special needs of students with gifts and talents* (pp. 15-55). Dublin, Ireland: Kazoo Independent Publishing.

Ziegler, A., Vialle, W., & Wimmer, B. (2013). The actiotope model of giftedness: A short introduction to some central theoretical assumptions. In S. Phillipson, H. Stoeger, & A. Ziegler (Eds.), *Exceptionality in East Asia: Explorations in the actiotope model of giftedness* (pp. 1-17). London, England: Routledge.

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Appendix 1

Original and Spanish versions of the Meaning of Life Questionnaire (MLQ-S)

Original version	Adapted version
1. I understand my life's meaning	Entiendo cuál es el sentido de mi vida
2. I am looking for something that makes my life feel meaningful	Estoy buscando algo que haga que mi vida tenga sentido
3. I am always looking to find my life's purpose	Siempre estoy buscando el propósito de mi vida
4. My life has a clear sense of purpose	Mi vida tiene un claro propósito
5. I have a good sense of what makes my life meaningful	Tengo una idea clara de lo que hace que mi vida tenga sentido
6. I have discovered a satisfying life purpose	He descubierto un propósito vital que me satisface
7. I am always searching for something that makes my life feel significant	Siempre estoy buscando algo que me haga sentir que mi vida tiene un sentido
8. I am seeking a purpose or mission for my life	Busco un propósito o misión para mi vida
9. My life has no clear purpose*	Mi vida no tiene un propósito claro*
10. I am searching for meaning in my life	Estoy buscando sentido a mi vida

*reverse item

Appendix 2

Original and Spanish versions of the Comprehensive Intellectual Humility Scale (CIHS-S)

Original version	Adapted version
1. My ideas are usually better than other people's ideas*	Mis ideas suelen ser mejores que las ideas de otras personas*
2. For the most part, others have more to learn from me than I have to learn from them*	En general, los otros tienen más que aprender de mí que yo de ellos*
3. When I am really confident in a belief, there is very little chance that belief is wrong*	Cuando estoy realmente convencido/a de algo es poco probable que dicha idea sea errónea*
4. I'd rather rely on my own knowledge about most topics than turn to others for expertise*	Prefiero confiar en mi propio conocimiento sobre la mayoría de los temas que recurrir al conocimiento de otros*
5. On important topics, I am not likely to be swayed by the viewpoints of others*	En temas importantes, no es probable que me influyan los puntos de vista de otros*
6. I have at times changed opinions that were important to me, when someone showed me I was wrong	En ocasiones he cambiado opiniones que eran importantes para mí, cuando alguien me ha mostrado que estaba equivocado/a
7. I am willing to change my position on an important issue in the face of good reasons	Estoy dispuesto/a a cambiar mi posición en un tema importante, si hay buenas razones
8. I am open to revising my important beliefs in the face of new information	Estoy abierto/a a revisar creencias importantes para mí si dispongo de información nueva

9. I am willing to change my opinions on the basis of compelling reason	Estoy dispuesto/a a cambiar de opinión ante razones de peso
10. I'm willing to change my mind once it's made up about an important topic	Estoy dispuesto/a a cambiar de opinión sobre un tema importante aunque ya estuviese convencido/a
11. I respect that there are ways of making important decisions that are different from the way I make decisions	Respeto que haya formas de tomar decisiones importantes que sean diferentes a la forma en que yo las tomo
12. Listening to perspectives of others seldom changes my important opinions*	Escuchar las perspectivas de los demás raramente cambia opiniones que son importantes para mí*
13. I welcome different ways of thinking about important topics	Valoro diferentes formas de pensar sobre temas importantes
14. I can have great respect for someone, even when we don't see eye-to-eye on important topics	Puedo sentir un gran respeto por alguien incluso si no coincidimos en temas importantes
15. Even when I disagree with others, I can recognize that they have sound points	Incluso cuando estoy en desacuerdo con otros, puedo reconocer que tiene sentido lo que dicen
16. When someone disagrees with ideas that are important to me, it feels as though I'm being attacked*	Cuando alguien está en desacuerdo con ideas que son importantes para mí, me siento atacado/a*
17. When someone contradicts my most important beliefs, it feels like a personal attack*	Cuando alguien contradice mis creencias más importantes, lo siento como un ataque personal*
18. I tend to feel threatened when others disagree with me on topics that are close to my heart*	Tiendo a sentirme amenazado/a cuando otros están en desacuerdo conmigo en temas que me tocan muy de cerca*
19. I can respect others, even if I disagree with them in important ways	Puedo respetar a los demás, incluso si el desacuerdo con ellos es importante
20. I am willing to hear others out, even if I disagree with them	Estoy dispuesto/a a escuchar a otros, incluso si estoy en desacuerdo con ellos
21. When someone disagrees with ideas that are important to me, it makes me feel insignificant*	Cuando alguien está en desacuerdo con ideas que son importantes para mí, me hace sentir insignificante*
22. I feel small when others disagree with me on topics that are close to my heart*	Me siento poca cosa cuando otros están en desacuerdo conmigo en temas que me tocan muy de cerca

*reverse item.

Appendix 3

Additional items included in the assessment protocol to measure self-criticism in Study 1

Original source	Items
SRS	Es importante para mí plantear una mirada abierta a los otros desde el respeto a su dignidad, sin juzgar sus circunstancias y limitaciones. *It is important for me to look at others with openness and respect for their dignity, without judging their circumstances and limitations (self-criticism 1).*
	Es importante para mí abrirme a los otros y aprender de ellos. *It is important for me to be open to others and learn from them (self-criticism 2).*
	Conozco mis potencialidades y mis limitaciones. *I know my potential and my limitations (self-criticism 3).*
Ad hoc	Soy capaz de autocriticarme y ver mis puntos débiles. *I am able to self-criticize and see my weaknesses (self-criticism 4).*
	Me gusta dialogar con personas que tienen ideas distintas a las mías. *I like to talk to with people with different ideas than I have (self-criticism 5).*
	Valoro positivamente que otras personas puedan expresar libremente sus ideas. *I appreciate the fact that other people can freely express their ideas (self-criticism 6).*
	Creo que exigirme a mí mismo/a me ayuda a mejorar. *I consider that making demands on myself helps me to improve (self-criticism 7).*

NOTE: Direct English direct translation is included for informative purposes

Appendix 4

Spanish revised version of the Meaning of Life Questionnaire (MLQ-S-R)

MLQ-S-R items (items in the previous version of MLQ-S)
1. Entiendo cuál es el sentido de mi vida (MLQ-S-1)
2. Mi vida tiene un claro propósito (MLQ-S-4)
3. Tengo una idea clara de lo que hace que mi vida tenga sentido (MLQ-S-5)
4. He descubierto un propósito vital que me satisface (MLQ-S-6)
5. Mi vida no tiene un propósito claro* (MLQ-S-9)
6. Siempre estoy buscando algo que me haga sentir que mi vida tiene un sentido (MLQ-S-7)
7. Busco un propósito o misión para mi vida (MLQ-S-8)
8. Considero que tengo una misión que orienta mi vida (MLQ-S-10 modified)

*reverse item

Appendix 5

Spanish revised version of the Comprehensive Intellectual Humility Scale (CIHS-S-R)

CIHS-S-R items (items in the previous version of CIHS-S)
1. Soy capaz de autocriticarme y ver mis puntos débiles (self-criticism 4)
2. Me gusta dialogar con personas que tienen ideas distintas a las mías (self-criticism 5)
3. Valoro positivamente que otras personas puedan expresar libremente sus ideas (self-criticism 6)
4. Creo que exigirme a mí mismo/a me ayuda a mejorar (self-criticism 7)
5. Es importante para mí plantear una mirada abierta a los otros desde el respeto a su dignidad, sin juzgar sus circunstancias y limitaciones (self-criticism 1)
6. Es importante para mí abrirme a los otros y aprender de ellos (self-criticism 2)
7. Conozco mis potencialidades y mis limitaciones (self-criticism 3)
8. Mis ideas suelen ser mejores que las ideas de otras personas (CIHS-S-1)
9. En general, los otros tienen más que aprender de mí que yo de ellos (CIHS-S-2)
10. Cuando estoy realmente convencido/a de algo, no hago caso a ideas que me hagan replantearme mi punto de vista* (CIHS-S-3)
11. Prefiero confiar en mi propio conocimiento sobre la mayoría de los temas que recurrir al conocimiento de otros (CIHS-S-4)
12. Cuando un tema es importante para mí, no tengo en cuenta los puntos de vista de otras personas* (CIHS-S-5 modified)
13. En ocasiones he cambiado opiniones que eran importantes para mí, cuando alguien me ha mostrado que estaba equivocado/a (CIHS-S-6)
14. Estoy dispuesto/a a cambiar mi posición en un tema importante, si hay buenas razones (CIHS-S-7)
15. Estoy dispuesto/a a cambiar de opinión ante razones de peso (CIHS-S-9)
16. Respeto que haya formas de tomar decisiones importantes que sean diferentes a la forma en que yo las tomo (CIHS-S-11)
17. Cuando escucho otras perspectivas diferentes a mis opiniones, no suelo tenerlas en cuenta* (CIHS-S-12 modified)
18. Valoro diferentes formas de pensar sobre temas importantes (CIHS-S-13)
19. Puedo sentir un gran respecto por alguien incluso si no coincidimos en temas importantes (CIHS-S-14)
20. Incluso cuando estoy en desacuerdo con otros, puedo reconocer que tiene sentido lo que dicen (CIHS-S-15)
21. Cuando alguien está en desacuerdo con ideas que son importantes para mí, me siento atacado/a (CIHS-S-16)
22. Cuando alguien contradice mis creencias más importantes, lo siento como un ataque personal (CIHS-S-17)
23. Tiendo a sentirme amenazado/a cuando otros están en desacuerdo conmigo en temas que me tocan muy de cerca (CIHS-S-18)
24. Puedo respetar a los demás, incluso si el desacuerdo con ellos es importante (CIHS-S-19)
25. Estoy dispuesto/a a escuchar a otros, incluso si estoy en desacuerdo con ellos (CIHS-S-20)
26. Cuando alguien está en desacuerdo con ideas que son importantes para mí, me hace sentir insignificante (CIHS-S-21)
27. Me siento poca cosa cuando otros están en desacuerdo conmigo en temas que me tocan muy de cerca (CIHS-S-22)

*reverse item