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Preliminary Validation of the Spanish Version of the Multiple Stimulus Types Ambiguity Tolerance Scale (MSTAT-II)

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Despite widespread interest in ambiguity tolerance and other information-related individual differences, existing measures are conceptually dispersed and psychometrically weak. This paper presents the Spanish version of MSTAT-II, a short, stimulus-oriented, and psychometrically improved measure of an individual's orientation toward ambiguous stimuli. Results obtained reveal adequate reliability, validity, and temporal stability. These results support the use of MSTAT-II as an adequate measure of ambiguity tolerance.
Keywords: ambiguity tolerance, organizational behavior, decision making, uncertainty.

A pesar del amplio interés en la tolerancia a la ambigüedad y a otras diferencias individuales relacionadas con la información, las medidas existentes son conceptualmente dispersas y presentan deficiencias psicométricas. El propósito de este trabajo es presentar la versión española del MSTAT II, un instrumento de medida de las orientaciones de un individuo respecto a estímulos ambiguos con mejoras psicométricas sustanciales, independiente del contexto y suficientemente corto para ser utilizado junto con otras medidas. Los resultados obtenidos en cuanto a consistencia interna, estabilidad temporal y validez son satisfactorios. Estos resultados apoyan el uso del MSTAT-II en su versión española como una medida adecuada de tolerancia a la ambigüedad.
Palabras clave: tolerancia a la ambigüedad, comportamiento organizacional, toma de decisiones, incertidumbre.

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The concept of ambiguity (in)tolerance or its equivalents has attracted researchers' attention since its formal origins in the work of Frenkel-Brunswik (1948) around the end of the 1940s. This author is acknowledged as the first to conceptualize the trait called intolerance of ambiguity in her work published in the *American Psychologist*. In subsequent works (Frenkel-Brunswik, 1949, 1974), she describes the behavioral characteristics associated with ambiguity tolerance (AT) such as resistance to apparently changing stimuli, premature selection of a single solution in an ambiguous problem and reluctance to change it, inability to consider the possibility of positive and negative traits in the same person, acceptance of "black or white" ideas about life, seeking certainty, a tendency to use rigid classification categories, etc. (Furnham, 1994).

In view of the predictive potential of the construct, various authors followed Frenkel-Brunswik's conceptual definition of AT (e.g., Bhushan & Amal, 1986; Budner, 1962; Kischkel, 1984; MacDonald, 1970; Rydell & Rosen, 1966) in order to develop instruments to measure it. These measures evolved from a very strong initial emphasis on psychosocial relations, such as authoritarianism or ethnocentrism, going on to a broader conceptualization that led to the study of AT as an individual's orientation towards the characteristics of a stimulus (Furnham & Ribchester, 1995).

However, despite the continued interest in AT at that time, the reliability and validity of the most frequently used measures is poor (Furnham, 1994; Kenny & Ginsberg, 1958; Kirton, 1981; Lange & Houran, 1999; Norton, 1975; Ray, 1988). If such information appears at all, internal consistency values below .60 are common in the works published. Some of these measures lack a theoretical structure that is consistent with the information theory, especially with regard to the nature of ambiguity and information (see Furnham & Ribchester, 1995).

In this work, we present the preliminary adaptation to Spanish of a measure of ambiguity tolerance, the Multiple Stimulus Types Ambiguity Tolerance Scale (MSTAT-II; McLain, 2008), whose goal is to measure an individual's cognitive orientation towards various types of ambiguous stimuli, using a questionnaire that is short enough to avoid fatigue when used concurrently with other instruments, but which has acceptable levels of reliability and validity.

Background

Ambiguity is the perception derived from a cognitive challenge caused by the lack of information or because such information is diffuse. The complexity and lack of familiarity or logic are contextual characteristics that entail a challenge for the observer, who must mesh the limited information with an understandable and coherent whole. In this sense, ambiguity is related to uncertain courses of action in which the risks associated with possible future scenarios are either unknown or difficult to calculate (Ellsberg, 1961; Lauriola & Levin, 2001). Hogarth (1989) differentiates statistically risk and ambiguity quite clearly: risk is defined as a situation in which the likelihood of a result is expressed by a single probability distribution, whereas ambiguity is the impossibility of specifying a distribution with a concrete probability. Thus, when one must deal with a situation that requires a choice or an appraisal, ambiguity is perceived as a threat, presenting a cognitive challenge insofar as one desires information that either does not exist or is inaccessible.

After a decade in which AT research was characterized by its association with issues concerning the authoritarian personality, ethnic discrimination, dogmatism, or fascism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Block & Block, 1951; Coulter, 1953; Frenkel-Brunswik, 1948; O'Connor, 1952; Westie, 1953), the work of Budner (1962) led to the beginning of a new era in the measurement of AT.[1] According to Budner, AT is divided into several kinds of cognitive reaction towards diverse types of stimuli. Specifically, Budner proposes three types of ambiguous situations:

- new situations (for which there are no clues or familiar knowledge),
- complex situations (in which there is a large number of indications and information), and
- contradictory or insoluble situations (the available information suggests diverse possible structures).

This author indicates four possible behaviors in individuals faced with the threat of ambiguous situations:

phenomenological denial (repression and denial),

- phenomenological submission (anxiety and discomfort),
- operative denial (destructive and reconstructive behavior),
- operative submission (avoidance behavior).

According to Budner's explanation of the construct, AT can be assumed to be a multidimensional construct for measuring possible reactions when faced with different kinds of stimulus (3 x 4). Nevertheless, as indicated by Kirton (1981), the final number of items of Budner's (1962) Intolerance of Ambiguity scale (16) is insufficient to maintain this pattern of 12 cells. Subsequent investigations

[1] Some researchers continue to maintain the definition of AT in the field of prejudice and discrimination (e.g., Chen & Hooijberg, 2000) or political orientation (Durrheim, 1998).

have revealed that, despite being an extensively used scale, it is not an adequate measure of AT (Benjamin, Riggio, & Mayes, 1996).

After the instrument developed by Budner, diverse measures of AT were published (e.g. MacDonald, 1970; Rydell & Rosen, 1966); these measures, in their original formats, have been the target of criticism, especially concerning their validity and internal structure (Furnham, 1994). Another argument brandished is that Budner's scale and other scales based on similar theoretical concepts present psychometric deficiencies (Lange & Houran, 1999; Norton, 1975; Ray, 1988). In this sense, the reliability measures seldom exceed the minimally acceptable values: the alpha coefficient in Budner's work was .49, much lower than the desirable level for a research instrument (Nunnally, 1976).

Rector and Roger (1993, 1996) developed a composite measure of AT for their studies, based on the suggestions of Kirton (1981). In the initial version, the Tolerance of Ambiguity (TAMB, Rector & Roger, 1993) scale had 36 items, which were reduced to 29 items in the 1996 version. The TAMB is made up of 11 items of Rydell and Rosen's (1966) instrument, 8 items from Budner's (1962) scale, and 10 items generated by the authors in a pilot study. In a Spanish context, Matud Aznar, García Rodríguez, & Matud Aznar (2002) found two main factors for the Spanish adaptation of Rector and Roger (1993) scale. The first factor —made up of 22 items with an internal consistency of .84— was considered as an adequate measure of AT and afterwards used in a second study (Matud, García & Matud, 2006), obtaining similar values of internal consistency.

As the definition of ambiguity underlying the initial measures of AT has frequently been rather unclear, in this section, we present a detailed discussion of the definition of AT, as well as a description of the characteristics of the stimuli and conditions associated with perceived ambiguity.

Ambiguity is basically a lack of the desirable information to understand a situation and make decisions with a predictable result. Ambiguity is, therefore, a barrier to decision-making and prediction. Intolerance of ambiguity is the aversion to this lack of information, whereas ambiguity tolerance is the degree of acceptance of, or even attraction to, this lack of information. Aversion to ambiguity reflects the need for a clearer understanding of the situation and may be manifest as stress, avoidance, delay, suppression, and denial (Budner, 1962). Although people normally want clear and adequate information to make decisions, and frustration emerges when this is not the case, in some situations, the challenge or the mystery that accompanies a complex problem with incomplete information can be attractive, particularly if the situation does not involve any kind of negative consequence.

Ambiguity may even be attractive when there is some likelihood of negative consequences (Viscusi & Chesson, 1999) and such ambiguity leaves open the possibility of avoiding this negative result. Such optimism about ambiguous situations can occur in people who like the potential of surprise or who enjoy the cognitive challenge associated with new, complex, or potentially insoluble situations. In this sense, both orientations (aversion or attraction) are possible and a complete definition of AT should take into account this array of possibilities.

Several situational characteristics can induce the perception of ambiguity but Budner's (1962) novel, complex, and insoluble types are basic. Novelty, or lack of familiarity, is a challenge to the degree to which perceivers must interpret a situation in which they encounter information that they have never found before. Although a novel situation may require time to be interpreted, it may be relatively simple in terms of information processing. Complexity overwhelms the perceiver, who must examine a large amount of information to find some meaning to the situation. Perhaps none of the elements to be considered individually is unfamiliar, but taken conjointly with other elements, it is difficult to distinguish which part of the information of a complex stimulus is really necessary.

An insoluble stimulus contains informative conflicts that must be solved if one is to take efficient action with predictable results. This conflict may be relatively trivial, such as elements that do not fit in completely or—more serious—that lead impossible or contradictory structures. Insoluble stimuli lead to multiple interpretations (Poesio, 1996).

The MSTAT Scales

These scales receive the name of the *Multiple Stimulus Types Ambiguity Tolerance scale* (MSTAT) because the items of the scale refer to stimuli that are complex, novel, insoluble, and uncertain, in addition to stimuli that are generally perceived as ambiguous. The MSTAT-I is a 22-item scale developed by McLain (1993) in response to the problems of reliability and validity of the more frequently used instruments. The results obtained for the MSTAT-I can be considered quite satisfactory: reliability (Cronbach's alpha) is .86, the positive and significant correlations with the two most well-known scales—Budner's (1962) and MacDonald's (1970)—are proof of convergent validity (DeRoma, Martin, & Kessler, 2003); likewise, McLain (1993) reports negative correlations with the dogmatism scale of Troldahl and Powell (1965) and positive ones with receptivity to change, as measured with the scale of Dunham and colleagues (Dunham, Grube, Gardner, Cummings, & Pierce, 1989). Factor analysis of this instrument indicates that the best solution is unifactorial: General Tolerance of Ambiguity.

The MSTAT-II is an evolution of the MSTAT-I, developed to create a measurement of AT that is appropriately short, but with adequate psychometric characteristics and contextually independent. This goal is desirable insofar as the results of prior studies (Furnham, 1994) show that only longer instruments present acceptable internal consistency. However, the cognitive fatigue caused by excessively long tests, especially when used conjointly with other tests, is a key argument to develop short scales, as long as they maintain adequate levels of reliability and validity.

Thus, starting with an instrument with adequate psychometric characteristics, the MSTAT-II was developed with the goal of decreasing the number of items without reducing reliability. This reduction was carried out (McLain, 2008) by identifying the elements that met four criteria:

- contribution to the theoretical definition of the construct
- item-scale correlation higher than .4 (using data from prior studies)
- neutrality and contextual independence (e.g., the items should not refer to specific situations, but to types of stimuli)
- being understandable for individuals with diverse antecedents

As a result, the following items were obtained: 3 insoluble stimuli items, 2 novel stimuli and 2 complex stimuli items, 1 uncertain stimulus item, and 5 generally ambiguous stimuli items. The items were rated on a Likert-type format with 5 alternatives, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher score indicates higher ambiguity tolerance.

This version of the MSTAT-II (in English) was assessed by means of various studies whose main results are presented below (McLain, 2008).

The first study, carried out with a large number of students, was designed to estimate the reliability and confirm the design of the MSTAT-II. The results yielded a Cronbach value of .826, which did not increase if any element of the scale was eliminated. Confirmatory factor analysis indicated adequate fit to the theoretical (unifactorial) model.

The second study, designed to study the validity of the scale, compared the values obtained with those of other instruments that measure AT: the scales of Budner (1962) and MacDonald (1970), a measure of orientation toward risk—obtained from Zuckerman's (1984) Sensation-seeking Scale—and also with the Marlow-Crowne Social Desirability Scale (Crowne & Marlow, 1960) to confirm that the responses are unbiased. The results of this study indicated high internal consistency for the MSTAT-II (.79) and low internal consistency for the other measures of AT, especially for that of Budner (.47), and it was therefore accepted as evidence of the validity of the instrument.

Method

Participants

The sample was composed of 1,449 university students from two Spanish public universities. By sex, the sample includes 59% of women and 41% of men.

The participants were aged between 20 and 60 years, mean age 23, and standard deviation 3.5 years. Although the age range was quite broad, 90% of the sample was 26 years old or younger.

Procedure

The questionnaires were administered during the normal class schedule to all the students of the group, in the presence of an investigator and the teacher.

The teachers of the groups of participants were previously contacted to explain the purpose of the investigation and to request their participation.

The students were informed of the importance of their participation, the goal of the study, and that their participation was voluntary and, particularly, that their data was confidential and would only be used for the aims of the investigation. Confidentiality and the inexistence of correct or incorrect responses to the items were stressed in order to obtain sincere responses. The questionnaire included some personal items (age and sex) and an identification number, preferably the ID. We emphasized the confidentiality of the data and that this ID number was only used to match the data with other data obtained later on (grades or subsequent tests), and also so that anyone who so wished could request information about their results.

Instruments

The MSTAT-II was translated with the direct *forward-translation* method. This procedure has the advantage that the translator's possible limitations, particular viewpoints, and idiosyncrasies do not dominate the process (Hambleton & Kanjee, 1995). In turn, one of the most important drawbacks of the alternative process *(backward translation)* is avoided: the assessment of the equivalence between the original and the adaptation only in the original language (Hambleton, 2001).

Thus, two bilingual subjects, translation specialists, translated the instrument from English to Spanish independently. Subsequently, a panel of four experts in social research, with an extensive knowledge of English, examined the original and the two translations, in an iterative process, verifying the differences and similarities and choosing the most adequate version of the items. In case of doubt, they could consult with the translators. Given the simplicity of the original items, there were only small corrections of the drafting style.

Table 1
MSTAT-II Items

Code	Score	Type	Item
at01	R	G1	No tolero bien situaciones ambiguas
at02	R	Ins1	Prefiero evitar resolver problemas que deben verse desde distintas perspectivas
at03	R	G2	Intento evitar situaciones que son ambiguas
at04	R	Nov 1	Prefiero situaciones que me son familiares a otras nuevas
at05	R	Ins2	Los problemas que no pueden ser considerados desde un único punto de vista me intimidan un poco
at06	R	Comp 1	Evito situaciones que son demasiado complicadas como para que yo las comprenda o interprete fácilmente
at07		G3	Soporto bien situaciones ambiguas.
at08		Comp 2	Me gusta enfrentarme a problemas lo suficientemente complejos para ser ambiguos
at09	R	Ins 3	Intento evitar problemas que no parecen tener una solución claramente mejor que otras
at10		Nov 2	Generalmente prefiero novedad a situaciones conocidas
at11	R	G4	Me disgustan las situaciones ambiguas
at12	R	Uncertain	Encuentro difícil elegir cuando el resultado es incierto
at13		G5	Prefiero situaciones en las que hay cierta ambigüedad

Note. R = reversed score to obtain the scale, G = ambiguous stimuli in general, Ins = insoluble stimuli, Nov = novel stimuli, Comp = complex stimuli.
[Translator's note: As the article concerns the *Spanish* version of the scale, the items have not been re-translated to English. English version is available on request from the authors.]

The selection criteria (contextual neutrality and independence and being understandable for individuals of diverse backgrounds) for the items of the English version of the MSTAT-II facilitated its adaptation, because specific cultural and contextual referents (which are present, for example, in the scale of MacDonald, 1970) that can limit the validity of adaptations, are avoided. In this sense, the clear and precise language of the original items allowed us to meet the recommendations of the International Test Commission (Hambleton, 2001) with regard to cultural differences, procedures, and item content.

Table 1 presents the items of the Spanish version of the MSTAT-II and the type of stimulus to which they refer (information about the original version is found in previous sections).

The Tolerance for Disagreement scale (TFD; Teven, Richmond, & McCroskey, 1998). The TFD scale is designed to measure the degree to which individuals can tolerate opinions that disagree with their own beliefs. It is a one-dimensional scale with high reliability (.85) and a relatively small number of items (15 items in its latest version, rated on a 5-point Likert-type scale). Taking into account the characteristics associated with people with low ambiguity tolerance, a positive correlation between the TFD scores and ambiguity tolerance was expected.

Spanish version of the Tolerance of Ambiguity scale (TAMB; Matud et al., 2006). As mentioned in the Introduction, this 22-item scale is considered by to be an adequate measure of AT; it is an adaptation of the instrument proposed by Rector and Roger (1993).

Data Analysis

We used Pearson's coefficient (item-scale, test-retest, and inter-scales) to analyze the correlations, Cronbach's alpha to measure internal consistency, and multiple analyses of variance (MANOVA) to examine the differences between means. To measure the differences in related variables we used the paired *t*-test. The factor structure of the MSTAT-II was assessed with confirmatory factor analysis. We used the SPSS 13 and AMOS 6 programs for the statistical analyses.

Results

Descriptive Statistics, Reliability, and Item-Scale Correlations

In Table 2 are shown the descriptive statistics and the alpha value for each item and for the scale.

The reliability analysis carried out with the Spanish sample yielded satisfactory results that were very similar to those obtained with the English version. The alpha value was .824 and, as observed in Table 2, this value does not improve by eliminating any of the scale items. It is also noteworthy that the item-scale correlation is, in all cases, high ($r > .45$) and statistically significant ($p < .001$), maintaining the characteristics of internal consistency of the original version.

Table 2
Descriptive statistics and alpha coefficient for items and scale

Item	*M (1)*	*SD*	*r (2)*	*A (3)*
at01	3.19	1.132	.63	.811
at02	2.60	1.135	.59	.814
at03	3.17	1.184	.66	.807
at04	3.43	1.161	.54	.813
at05	2.60	1.135	.64	.808
at06	2.50	1.122	.61	.808
at07	2.85	1.032	.60	.806
at08	3.03	.991	.60	.811
at09	2.81	1.052	.46	.819
at10	2.95	1.087	.49	.823
at11	2.91	1.036	.67	.814
at12	3.27	1.047	.51	.816
at13	3.36	.877	.56	.813
Scale (*n* =1.205)	38.68	7.96	-	.824

(1) Mean of the unreversed original item.
(2) Item-scale correlation in absolute terms. Pearson coefficient. All significant *($p < .001$)*.
(3) Alpha if the item is eliminated.

Table 3
Summary of the MANOVA, AT by sex and age

Source of Variation	*SS*	*df*	*MS*	*F*	*p*
Gender	279.43	1	279.43	4.44	.035
Age	464.52	2	232.23	3.69	.025
Model	792.02	3	264.01	4.19	.006
Total	67,495.25	1,062	63.55		

Table 4
Mean AT score by sex and age

Factor	Code	*M*	*SD*	*N*
Gender	Male			
Age interval	Up to 20	38.60	8.10	100
Age interval	20-23	40.27	7.98	210
Age interval	Over 23	40.53	8.87	126
Gender	Female			
Age interval	Up to 20	37.87	7.00	175
Age interval	20-23	39.13	7.64	305
Age interval	Over 23	39.35	8.58	147
Entire group		39.30	7.97	1063

Evidence of the Relations with Demographic Variables

The results of the original version indicated differences in AT associated with age and sex. To verify whether these differences exist and are significant, we conducted multiple analysis of variance (MANOVA), using age and sex as explanatory factors. Age was previously reclassified in three intervals (up to 20, from 20 to 23, over 23 years).

Table 3 shows the main values of the MANOVA. Both factors were associated with significant differences in the AT score (sex: $p = .035$, age: $p = .025$), and the model was significant at 1%.

Table 4 shows the means segmented as a function of both factors. In general terms, the men presented higher AT values than the women. Likewise, it seems that, independently of sex, older individuals presented higher AT levels. This result is consistent with the idea that individuals are exposed to an increasing number of ambiguous situations over time, so they generally tolerate these stimuli better as they experience them.

Temporal Stability

We administered the questionnaire once again 5 weeks later to a subsample of the same students under the same conditions. The number of initial cases was 215, and we obtained 131 pairs of valid cases to perform the test. The internal consistency measured for these 131 cases was high (alpha between .813, $n = 215$, for the first block of questionnaires and .867, $n = 131$, for the retest). The test-retest correlation obtained for the scale was high and statistically significant, $r = .688$, $p < .001$. Comparing the pairs of scores (paired *t*-test), the results indicate that the differences between the test score and the retest score are minimal and statistically nonsignificant (mean difference of .02 on a mean AT score of 41.5, $p = .981$). These results suggest that the instrument has adequate temporal stability.

Confirmatory Factor Analysis

Confirmatory factor analysis allowed us to verify whether the unidimensional model proposed by McLain (1993, 2008) adequately fit the data obtained.

Except for the ratio value χ^2/df, which exceeds the value normally used as the limit (see Table 5, $\chi^2/df = 6.26$) the fit data obtained are satisfactory[2]. Arbuckle (2005) indicates that Hoelter's (1983) critical N is the largest sample for which the correct-model hypothesis can be accepted, and underlines that, although Hoelter does not specify any level of significance to determine N, he uses 5% in his examples. Values of *N* of 200 or higher are considered indicative of adequate fit. According to Hoelter's criterion, the results obtained (see Table 5)—219 for a level of significance of 5% and 258 for 1%—are satisfactory.

The value of the normed fit index (NFI; Bentler & Bonett, 1980) was .944, and the incremental fit index (IFI; Bollen, 1989) was .952. Both values are higher than .90, the value normally used as the limit. The Tucker-Lewis coefficient (TLI, also known as non-normed fit index, NNFI, Bentler & Bonett, 1980) had a value of .821. The values of this index range from 0 to 1, with values approaching 1 indicating adequate fit. The comparative fit index (CFI, Bentler, 1990, also called relative noncentrality index; RNI; McDonald & Marsh, 1990) had a value of .951, indicating adequate fit.

The value obtained (.076) for the root mean square error of approximation (RMSEA; Browne & Cudeck, 1989) is within the reasonable limits indicated by Arbuckle (2005) and Browne and Cudeck (1989), who note that errors of .09 or less are reasonable, suggesting .1 as the limit of error for a model.

Evidence of Convergent-Discriminant Validity

The original studies (McLain, 1993, 2008) present a broad array of evidence of convergence, mainly correlations with the AT-20 (MacDonald, 1970) scale ($r = .41$, $p < .01$), internal locus of control ($r = .18$, $p < .05$) and proclivity toward risk ($r = .27$, $p < .01$).

As a complement of the results obtained by McLain, we performed two studies. In the first one, a subsample of 375 students completed an instrument that, in addition to the MSTAT-II, contained the Tolerance for Disagreement scale (TFD; Teven et al., 1998).

We obtained 340 valid cases for comparison, with both instruments totally completed. In the subsample, the TFD

Table 5
χ^2/df and Hoelter's critical N

Model	χ^2/df	Hoelter's N for 5% significance	Hoelter's N for 1% significance
Default model	6.26	219	258
Independence model	30.48	38	42

[2] It should be taken into account that this value is very sensitive to sample size. Moreno Murcia, González-Cutre Coll and Chillón Garzón (2009) obtained a very value similar for the *χ2/df* index with a similar sample size.

scale obtained a very high alpha coefficient (.832), and this value did not improve by eliminating any items. As expected, the correlation between both scales, TFD and AT, was positive and statistically significant ($r = .431$, $p < .001$).

In a second study, an additional group of 244 students completed the MSTAT-II and the 22-item version of the TAMB used by Matud et al. (2006). We obtained 234 valid questionnaires. Reliability analysis carried out with the TAMB revealed an internal consistency of .778.

The correlation between the two instruments was statistically significant and in the expected direction ($r = -.282$, $p < .01$). Both results provide additional evidence of convergent validity to the results obtained for the original version.

Discussion

The importance of ambiguity for organizational behavior lies in its influence for decision-making. An effective measure of ambiguity tolerance should describe individual differences toward the lack of the adequacy of the information that emerges from the perception of different types of ambiguous situations. The purpose of this work was to present the Spanish version of the MSTAT-II, a conveniently short scale contextually independent, and which, nevertheless, presents in its English version better psychometric properties than the most frequently used scales.

The results obtained with the Spanish version are very satisfactory. The internal consistency is very high, only exceeded by the scale of Norton (alpha of .89, for a 69-item scale; Furnham & Ribchester, 1995). The temporal stability, as measured by the test-retest correlation, is high and statistically significant. The tests of convergent validity carried out with the original instrument, as well as the one carried out with the Tolerance for Disagreement scale (Teven et al., 1998) and the TAMB (Matud et al. 2006) present the expected patterns. Confirmatory factor analysis indicates that the fit to a one-dimensional model is adequate. Taken together, these data suggest that the MSTAT-II is a valid measure of ambiguity tolerance.

In the analysis of the difference of means, significant differences for sex and age were obtained. The results indicate that women present significantly lower levels of ambiguity tolerance than men. With regard to age, the results indicate that younger people present lower scores of ambiguity tolerance than older people, suggesting that, at least partially, exposure to ambiguous situations increases tolerance to this kind of stimuli.

To conclude, the results obtained allow us to consider the Spanish version of the MSTAT-II a valid and reliable measure of ambiguity tolerance, with the advantage of being short enough to be included in instruments made up of several scales.

Limitations and Extensions

Due to the composition of the sample, exclusively university students, the results obtained are not generalizable nor can they be taken as reference values. In this sense, as future extensions, we propose obtaining data from larger samples in order to establish adequate reference values.

This work was directly based on the reduced original version (MSTAT-II). As there is no Spanish version of the complete MSTAT-I, it was not possible to determine whether the procedure that led to the creation of the MSTAT-II based on the complete original instrument would have provided the same results if we had based it on the complete Spanish version.

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