Spanish version of the Investment Model Scale

LAURA E. VANDERDRIFT,[a] CHRISTOPHER R. AGNEW,[b]
AND JUAN E. WILSON[c]

[a] *Syracuse University;* [b] *Purdue University; and* [c] *Universidad de Chile*

Abstract

Voluminous work has catalogued the utility of Rusbult's (1980) investment model of commitment processes in understanding why some relationships persist whereas others fail. To date this work has been conducted almost exclusively with samples of English-speaking individuals. To facilitate testing novel hypotheses among Spanish-speaking populations as well examining various cross-cultural questions, we present a Spanish version of the Investment Model Scale (Rusbult, Martz, & Agnew, 1998). With a sample of Spanish-speaking individuals from Chile, we demonstrate that our translation has the same structural properties as the English version (Study 1) and has good predictive validity (Study 2). The Spanish version of the Investment Model Scale will enable researchers to sample a larger subset of the population and allow for the examination of cultural influences on relationship processes.

Voluminous research has catalogued factors related to a relationship's maintenance (e.g., Canary & Dainton, 2003; Gaines & Agnew, 2003) and dissolution (e.g., Fine & Harvey, 2006), reflecting a great interest in understanding why relationships persist versus fail. This interest is with good reason, as relationship maintenance cognitions and behaviors have been found to be associated with numerous positive outcomes for individuals, and relationship dissolution has been found to be associated with numerous negative outcomes (e.g., experiencing negative emotions and decreased physical health, engaging in self-destructive behavior; Kiecolt-Glaser et al., 1987; Sbarra & Ferrer, 2006).

One theoretical model that has been particularly useful in explaining why relationships persist or dissolve is the Investment model of commitment processes (Rusbult, 1980; Rusbult, Agnew, & Arriaga, 2012),

which holds that the strongest, most proximal precursor of relationship maintenance (or lack thereof) is an individual's level of commitment to that relationship (i.e., his or her intent to persist in the relationship, coupled with a long-term orientation toward the relationship and a psychological attachment to it; Arriaga & Agnew, 2001). This model has been successfully applied to a variety of commitment targets, including both interpersonal (e.g., marital and nonmarital partnerships, friendships) and noninterpersonal (e.g., job, sports participation, support for public policies; see Agnew, Hoffman, Lehmiller, & Duncan, 2007) targets. Across applications, the investment model has demonstrated broad utility and strong predictive ability, shedding light on why some relationships persist and remain beneficial for the involved individuals, whereas others end (see Le & Agnew, 2003).

Today, relationship science is characterized by contributions from researchers across the globe, studying diverse populations. As research on commitment processes has spread around the world and a greater proportion of the U.S. population has become primarily Spanish speaking, there is a greater need for a Spanish-language instrument that

Laura E. VanderDrift, Department of Psychology, Syracuse University; Christopher R. Agnew, Department of Psychological Sciences, Purdue University; Juan E. Wilson, Universidad de Chile.

Correspondence should be addressed to Laura E. VanderDrift, Syracuse University, Department of Psychology, 410 Huntington Hall, Syracuse, NY 13244-2340, e-mail: lvanderd@syr.edu.

taps the constructs within the investment model and has been empirically shown to be equivalent to the English version. Such a scale would not only help researchers to test novel hypotheses among Spanish speaking populations, but would also allow for more controlled tests of cross-cultural hypotheses. To that end, the goal of the current studies was to analyze the psychometric properties of a Spanish-language translation of the Investment Model Scale (IMS; Rusbult, Martz, & Agnew, 1998), created using widely accepted back-translation techniques.

The Investment Model Scale

The investment model emerged in the early 1980s, directly influenced by a period within social psychology in which there was great interest in understanding seemingly irrational human behavior. In the realm of close relationships, this zeitgeist led researchers to consider why individuals remain in relationships that are, at times, characterized by a dearth of positive affect (Rusbult et al., 2012). As originally conceptualized by Rusbult (1980, 1983), the investment model holds that commitment to a target is fueled by three independent factors: (a) satisfaction level, (b) quality of alternatives, and (c) investment size. This model was the first to hold that relationship commitment is predicted not only by the positive qualities of the relationship that attract partners to one another (satisfaction level), but also by the ties that bind the partners together (investment size) and the absence of a better option beyond the relationship with the current partner (quality of alternatives). The theoretical extensions present in the investment model have proven fruitful empirically; meta-analytic syntheses of work using this model have found that satisfaction, investment, and alternatives each contributes unique variance to the explanation of commitment, combining to jointly account for more than 60% of this variance (Le & Agnew, 2003). Importantly, the associations found between commitment and satisfaction, alternatives, and investment are not moderated by gender (i.e., no sex differences exist in the predictive utility of the model), ethnicity (measured

"White" vs. "non-White"), sexual orientation, exclusivity of the relationship, or duration of the relationship (Le & Agnew, 2003), suggesting universal applicability of the model.

Beyond explaining the antecedents of commitment, the investment model has spurred a large body of literature predicting behavior. Most notably, meta-analytic results have revealed that commitment has been found to be significantly associated with relationship dissolution, $r = -.47$ (Le & Agnew, 2003). Moreover, compared to other constructs, commitment has also been found in meta-analyses to be among the very best predictors of stay–leave behavior (Le, Smoak, Agnew, Korn, & Mutso, 2010). Beyond persistence, commitment has also been shown to be associated with numerous relationship maintenance behaviors, including being willing to sacrifice for the betterment of the relationship, being willing to forego negative responses to a partner behaving badly (i.e., accommodating), forgiving partner transgressions, and holding greater positive illusions regarding the partner's traits (Rusbult et al., 2012). Furthermore, commitment is thought to be integral to a pattern of mutual cyclical growth that occurs in relationships such that (a) commitment promotes pro-relationship thinking and actions, (b) pro-relationship acts are perceived by the partner, (c) the perception of pro-relationship acts enhances the partner's sense of cognitive interdependence and trust, and (d) cognitive interdependence and trust increases the partner's willingness to become committed to the relationship, and so on (Agnew, Van Lange, Rusbult, & Langston, 1998; Wieselquist, Rusbult, Foster, & Agnew, 1999). Thus, both directly and indirectly, commitment is associated with behaviors individuals enact with regard to their relationships.

Why a Spanish Version of the IMS Is Needed

The investment model has shown great utility in predicting relationship state and fate, for a variety of relationship types. Much of the published work based on the investment model has used the IMS, an English-language measure developed by Rusbult and colleagues

(1998). This has resulted in the majority of data collected to date on the investment model being generated by English-speaking samples, predominantly in the United States. Within the United States, the prevalence of Spanish-speaking individuals is quite significant. In 2007, 34.5 million U.S. Americans spoke Spanish at home (∼12.3% of the population of the United States aged 5 or older at that time; Shin & Kominski, 2010). Of these, only roughly half reported that they also spoke English "very well." Certainly, a Spanish version of the IMS would be an asset to those hoping to assess relational processes of these individuals in their research. Beyond the United States, Spanish is the official language of 14 countries, and the de facto official language of an additional 6 (*The World Factbook*, 2009). As relationship research, and social science research more broadly, continues to expand its efforts to understand human behavior globally, a Spanish IMS has real and practical utility (see Alonso-Arbiol, Balluerka, & Shaver, 2007, for similar efforts in creating a Spanish measure to assess adult attachment).

From a cultural psychological perspective, there are also potentially interesting avenues of research to be traversed with populations who speak predominantly Spanish. The constructs of individualism and collectivism, for example, have been found to be useful in explaining the conceptualization of the association between individuals and their society (Oyserman & Lee, 2008). Whereas individualism holds that societies exist to support the individual, collectivism focuses on the society (i.e., society exists and individuals fit into it). International comparative data reveal no difference in individualism between the United States and predominately Spanish-speaking Latin America ($d = 0.00$), but Latin America is significantly higher in collectivism than the United States ($d = 0.47$; Oyserman, Coon, & Kemmelmeier, 2002). Within-U.S. comparisons between European Americans and Latino Americans reveal similar findings, although less robust than the international comparisons. Specifically, results reveal no difference in individualism between these within-U.S. groups ($d = −0.01$), but Latino Americans

are significantly higher in collectivism than are European Americans ($d = 0.21$; Oyserman et al., 2002). Taken together, these meta-analytic results suggest that, in terms of at least one psychological characteristic, those cultures whose members speak predominately Spanish may differ from those whose members speak predominately English. A Spanish-language version of the IMS that demonstrates empirically similar psychometric properties as the English version is imperative for researchers who are interested in examining how such differences influence close relationships.

There are a few examples in the literature of the investment model being used among Spanish-speaking populations, both within the United States (e.g., Warren, Harvey, & Bovbjerg, 2011) and outside of the United States (e.g., Friedman et al., 2010). In these cases, the scales were translated for the studies by the research teams and evidenced acceptable reliability. A benefit of using the IMS is that the psychometric properties and predictive validity of the English-language scale are known to be sound, allowing a researcher to test novel hypotheses knowing how the scale is expected to perform. The vast body of literature using the theory behind the investment model provides a backdrop for new research, and having an instrument that is reliable and valid enables a researcher to capitalize on this benefit. As such, when translations of scales are used, it is important not only to translate the scale, but also to check that the reliability and predictive validity remain present in the new form. Thus, despite there being examples in the literature of the IMS being successfully translated, future Spanish-language uses of the IMS will benefit from having a standard translation available in which the reliability and validity have been empirically tested. We provide a Spanish translation of the IMS, complete with information pertinent to its reliability and predictive validity relative to the original English version.

Study 1

To begin, we translated the 22 general items of the IMS (Rusbult et al., 1998) into

Spanish. To ensure the Spanish version was not only functionally equivalent to the English version (i.e., the words used have the same definitions), but also conceptually equivalent (i.e., the items convey the same ideas), we then translated the Spanish version back to English (Brislin, 1980). Specifically, two fluently bilingual individuals were involved in the translation. The first was very familiar with the investment model and crafted the Spanish version of the scale. The second was less familiar with the investment model at the time, and translated the scale back to English. After the translation and back-translation, the two individuals discussed some minor wording issues and converged on finalized Spanish wording to ensure conceptual parallelism. Next, we administered the Spanish version to a sample of participants in Chile and the English version to a sample of participants in the United States to compare the measurement and structural properties of the scale, assessing whether the items load onto their intended factor in both cultures. Finally, we tested whether the obtained loadings were invariant across cultures.

Method

Participants

This study involved data collection in two countries: Chile and the United States. The Chilean sample consisted of 174 individuals in nonmarital romantic relationships (39.2% male). The average duration of relationship for the Chilean sample was 23.09 months ($SD = 23.57$, $Mdn = 19.8$), and most participants indicated that they were involved in an exclusive dating relationship (92%). Chilean participants' ages ranged from 18 to 36 years ($M = 21.73$, $SD = 3.49$), and the majority indicated that their ethnic origin was Hispanic (74.8%, with 1.7% Asian, 16.8% White, and 6.7% Other). The U.S. sample consisted of 175 individuals in nonmarital romantic relationships (58.8% male) with an average relationship duration of 16.52 months ($SD = 15.11$, $Mdn = 12.0$). Most of the U.S. participants indicated that they were involved in an exclusive dating relationship (87%).

The U.S. participants' ages ranged from 18 to 30 years ($M = 19.60$, $SD = 1.61$), and the majority indicated that they were White (70.7%, with 16.1% Asian, 5.8% Black, 4.6% Hispanic, and 2.8% Other).[1]

Procedure

All participants completed the measures described below either in partial fulfillment of an introductory psychology course requirement (the U.S. sample) or for no compensation (the Chilean sample). Participants in the U.S. sample signed up for a particular time to complete the study through a university subject pool website, whereas participants in the Chilean sample were recruited via announcements on a university website as well as via flyers posted throughout the university campus. All participants completed the measures described below on the Internet along with a consent form, after which they were presented with a written debriefing and thanked for their time.

Measures

All participants completed the four IMS subscales (Rusbult et al., 1998) tapping satisfaction with, alternatives to, investment in, and commitment to their current romantic relationship. The satisfaction, alternatives, and investment subscales each contained five items, and the commitment subscale contained seven items, each of which was assessed on a 9-point scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). These items included (in either English or Spanish, as appropriate) "I feel satisfied with our relationship," to tap satisfaction; "My alternatives are attractive to me (dating another, spending time with friends or on my own, etc.)," to

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1. To select our sample size, we considered the "rule of five," in which five participants per variable is acceptable for structural equation modeling (Little, 2013; MacCallum, Widaman, Zhang, & Hong, 1999), although greater sample is preferred if possible. We have roughly eight participants per variable in each sample. This provides us confidence that we have sufficient power, especially in light of the traditionally strong psychometric properties of the investment model that have been found in past work.

tap alternatives; "I feel very involved in our relationship—like I have put a great deal into it," to tap investment; and "I am committed to maintaining my relationship with my partner," to tap commitment. Consistent with past findings with the IMS (reliability ranges: satisfaction: $\alpha s = .92$ to $.95$; alternatives: $\alpha s = .82$ to $.88$; investment: $\alpha s = .82$ to $.84$; commitment: $\alpha s = .91$ to $.95$; Rusbult et al., 1998), the reliability of each of the four subscales was high in both the Chilean and U.S. samples (satisfaction: $\alpha s = .92/.94$; alternatives: $\alpha s = .87/.81$; investment: $\alpha d = .72/.77$; commitment: $\alpha d = .94/.94$). See the Appendix for the Spanish version of the IMS.

Finally, all participants were asked several demographic questions, including age, gender, race, and relationship duration.

Results and discussion

Measurement model testing

For each sample separately, responses to the 22 IMS items were subjected to confirmatory factor analysis using SAS 9.3 PROC CALIS. To begin, we examined the hypothesized model with the U.S. sample, which was a four-factor model that constrained items assessing each of four latent dimensions of the investment model to those dimensions (i.e., satisfaction, alternatives, investment, and commitment). The four dimensions were allowed to covary. Results indicated that all items significantly loaded on their hypothesized factor (with t values ranging from 3.68 to 16.54, all paths significant at the .01 level). See Table 1 for confirmatory factor loadings. This model provided adequate fit to the data, $\chi^2(201) = 427.21$, root mean square error of approximation (RMSEA) $= .08$, Bentler comparative fit index (CFI) $= .92$, with a desirable chi-square to degrees-of-freedom ratio of 2.13.

We then compared the overall fit of this four-factor model with a one-factor model by computing the difference between the chi-square and degrees of freedom associated with each model (Loehlin, 1992). The one-factor model assumed that all 22 items are being driven by a single latent construct. To support the four-factor model, the loss in

degrees of freedom corresponding to the extra paths in that model would have to be offset by a significant reduction of chi-square value from the one-factor model. If not, acceptance of the four-factor model would amount to sacrificing theoretical and statistical parsimony for the sake of a negligible change in chi-square (Loehlin, 1992; MacCallum, Wegener, Uchino, & Fabrigar, 1993). A chi-square difference test indicated that the four-factor model provided a better fit to the data than did the one-factor model: one-factor model, $\chi^2(207) = 1053.08$, RMSEA $= .15$, CFI $= .69$, chi-square to degree-of-freedom ratio $= 5.09$, χ^2 difference between four-factor and one-factor models $(6) = 625.87$, $p < .001$. The results suggest that the hypothesized four-factor model in which the four factors are allowed to covary best represents the data.

We repeated the above analyses with the Chilean sample, utilizing the Spanish version of the IMS. As with the U.S. data, when testing the four-factor model we found that all items significantly loaded on their hypothesized factor (with t values ranging from 3.07 to 15.94, all paths significant at the .01 level). See Table 1 for confirmatory factor loadings. This model provided adequate fit to the data, $\chi^2(201) = 433.91$, RMSEA $= .08$, CFI $= .91$, with a desirable chi-square to degrees-of-freedom ratio of 2.16. A chi-square difference test indicated that the four-factor model provided a better fit to the data than did the one-factor model, one-factor model: one-factor model, $\chi^2(207) = 813.52$, RMSEA $= .13$, CFI $= .78$, chi-square to degree-of-freedom ratio $= 3.93$, χ^2 difference between four-factor and one-factor models $(6) = 379.61$, $p < .001$. The results suggest that the hypothesized four-factor model in which the four factors are allowed to covary best represents the data collected using the Spanish-language scale as well.

Equivalence of the samples

We tested a multiple-group structural equation model to ensure the Spanish version of the IMS had the same measurement properties as the English version. To do so, using SAS 9.3 PROC CALIS, we used the 22 IMS items and compared the fit of a model with

Table 1. *Factor loadings from confirmatory factor analyses from Study 1*

	Chile			United States		
	Loading	SE	t value	Loading	SE	t value
Satisfaction items						
I feel satisfied with our relationship.	0.93	0.06	15.94***	0.92	0.06	15.71***
My relationship is much better than others' relationships.	0.75	0.07	11.34***	0.81	0.06	12.75***
My relationship is close to ideal.	0.82	0.06	12.90***	0.83	0.06	13.17***
Our relationship makes me very happy.	0.90	0.06	15.20***	0.90	0.06	15.12***
Our relationship does a good job of fulfilling my needs for intimacy, companionship, etc.	0.76	0.06	11.61***	0.80	0.06	12.50***
Alternatives items						
The people other than my partner with whom I might become involved are very appealing.	0.79	0.07	11.97***	0.66	0.07	9.18***
My alternatives to our relationship are close to ideal (dating another, spending time with friends or on my own, etc.).	0.65	0.07	9.19***	0.47	0.08	6.01***
If I weren't dating my partner, I would do fine—I would find another appealing person to date.	0.77	0.07	11.65***	0.68	0.07	9.38***
My alternatives are attractive to me (dating another, spending time with friends or on my own, etc.).	0.71	0.07	10.40***	0.80	0.07	11.72***
My needs for intimacy, companionship, etc. could easily be fulfilled in an alternative relationship.	0.81	0.07	12.35***	0.76	0.07	11.01***
Investment items						
I have put a great deal into our relationship that I would lose if the relationship were to end.	0.49	0.08	6.20***	0.78	0.07	11.76***
Many aspects of my life have become linked to my partner (recreational activities, etc.), and I would lose all of this if we were to break up.	0.48	0.08	6.07***	0.56	0.07	7.50***
I feel very involved in our relationship—like I have put a great deal into it.	0.84	0.07	11.56***	0.83	0.06	12.82***
My relationships with friends and family members would be complicated if my partner and I were to break up (e.g., partner is friends with people I care about).	0.25	0.08	3.07***	0.29	0.08	3.68***
Compared to other people I know, I have invested a great deal in my relationship with my partner.	0.65	0.08	8.65***	0.85	0.06	13.35***

Table 1. *Continued*

	Chile			United States		
	Loading	SE	t value	Loading	SE	t value
Commitment items						
I want our relationship to last a very long time.	0.91	0.06	15.40***	0.94	0.60	16.54***
I am committed to maintaining my relationship with my partner.	0.88	0.06	14.61***	0.94	0.06	16.38***
I would not feel very upset if our relationship were to end in the near future.	0.58	0.07	8.20***	0.46	0.07	6.37***
It is likely that I will date someone other than my partner within the next year.	0.75	0.07	11.48***	0.66	0.07	9.72***
I feel very attached to our relationship—very strongly linked to my partner.	0.76	0.07	11.71***	0.79	0.06	12.34***
I want our relationship to last forever.	0.88	0.06	14.55***	0.83	0.06	13.29***
I am oriented toward the long-term future of my relationship (e.g., I imagine being with my partner several years from now).	0.82	0.06	13.05***	0.86	0.06	14.24***

***$p < .001$.

no cross-cultural constraints to the fit of a fully constrained model. In such analyses, if the model fit is not significantly worse in the fully constrained model than in the model with no constraints, it can be said that the measurement properties of the two samples are equivalent. To begin, we ran the fully unrestricted model, which was a four-factor model that constrained items assessing each of four latent dimensions of the investment model to those dimensions (i.e., satisfaction, alternatives, investment, and commitment), but all of the parameters for the two countries were allowed to be unique. This model provided a good fit to the data, $\chi^2(402) = 814.26$, RMSEA $= .08$, CFI $= .92$, with a desirable chi-square to degrees-of-freedom ratio of 2.03.

Next, we ran the fully constrained model, in which parameters were held to be invariant across the two samples. This model fits the data from both countries with the same estimates, so it will only fit well if the two samples are equivalent. The model again provided a good fit to the data, $\chi^2(454) = 872.39$, RMSEA $= .07$, CFI $= .92$, with a desirable chi-square to degrees-of-freedom ratio of 1.92.

Finally, we compared the fit of the model with no cross-cultural constraints to the fit of the fully constrained model by computing the difference between the chi-square and degrees of freedom associated with each model (Loehlin, 1992). This test indicated that the two models did not significantly differ with regard to fit, $\Delta\chi^2(52) = 58.13$, *ns*.

In all, the results from these analyses revealed that the Spanish version of the IMS was equivalent to the English version in terms of measurement. Having provided initial validation of the Spanish IMS, we turned to examining its predictive validity.

Study 2

The investment model has been used in past research to predict numerous relationship maintenance processes (e.g., accommodation, willingness to sacrifice; see Rusbult et al., 2012), but the majority of the research generated by the investment model has focused

on relationship persistence (see Le & Agnew, 2003). Relationship persistence can be seen as the ultimate outcome measure in this type of work, as persisting in a relationship assumes relationship maintenance processes function well, whereas failing to persist is a failure to maintain (Agnew & VanderDrift, in press). In Study 2, with a separate sample from Study 1, we examined whether the Spanish version of the IMS evidenced similar predictive validity as the original English version by comparing how well the two versions predict relationship persistence.

Method

Design and participants

In this study, we used a two-wave longitudinal design, again collecting data in both Chile and the United States. Approximately 4 months after participation at Time 1, participants were contacted and asked to complete a follow-up questionnaire. The Chilean sample consisted of 354 individuals in nonmarital romantic relationships who participated at both times (29.1% male). The average duration of relationship at Time 1 for the Chilean sample was 21.85 months $(SD = 19.11)$, and most participants indicated that they were involved in an exclusive dating relationship (93%). Chilean participants' ages ranged from 18 to 30 years $(M = 21.29, SD = 2.05)$, and the majority indicated that their ethnic origin was Hispanic (78.5%, with 14.3% White and 7.2% Other). The U.S. sample consisted of 353 individuals in nonmarital romantic relationships who participated at both times (41.9% male). The U.S. participants had an average relationship duration at Time 1 of 15.61 months $(SD = 13.93)$. Most of the U.S. participants indicated that they were involved in an exclusive dating relationship (94%). The U.S. participants' ages ranged from 18 to 30 years $(M = 19.29, SD = 1.21)$, and the majority indicated that they were White (88.1%, with 3.1% Asian, 2.8% Black, 4.0% Hispanic, and 2.0% Other).[2]

Procedure

All participants in the U.S. sample completed the Time 1 measures described below in partial fulfillment of an introductory psychology course requirement, whereas all participants in the Chile sample participated in exchange for entry into a lottery to win one of seven gift cards to a retail store, two of which were worth 50,000 pesos (~US$105) and five worth 20,000 pesos (~US$42). Participants in the U.S. sample signed up for a particular time to complete the study through a university subject pool website, whereas participants in the Chilean sample were recruited via announcements on a university website and via flyers posted throughout the university campus. All participants completed the measures described below on the Internet along with a consent form, after which they were presented with a written debriefing and thanked for their time.

Approximately 4 months after participating at Time 1 $(M = 4.51$ months, $SD = .63)$, participants were contacted via e-mail individually and invited to return to the questionnaire website to complete a Time 2 questionnaire for no compensation. They were reminded of their Time 1 partner's first name prior to completing the Time 2 measures. Participants were allowed to complete Time 2 at whatever time they chose from any location with Internet access.

Time 1 measures

All participants completed the same four IMS subscales tapping satisfaction with,

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2. To get the 707 who had complete data (i.e., both time points) and would thus be used in analyses, we ran an initial 1,578 participants (44.8% retention rate). Those participants who completed only Time 1 did not differ on any Time 1 study measures from those participants who completed both time points. This low retention rate can be attributed to the fact that participants in both samples were recruited for a one-time study. At the end of the session, we collected contact information from those participants who were willing to let us contact them for a brief follow-up, but providing contact information and indeed participating in Time 2 were completely voluntary and not part of the requirement to receive their introductory psychology credits (in the United States) or entry into a raffle (in Chile) for participating. We provided no compensation for completing the Time 2 survey.

Table 2. *Descriptive statistics and partial correlations between Study 2 variables*

Scale	1	2	3	4	5
Chile mean (*SD*)	7.52 (1.3)	3.19 (1.7)	5.78 (1.6)	7.92 (1.4)	0.16
U.S. mean (*SD*)	7.64 (1.3)	5.14 (1.8)	6.25 (1.5)	7.64 (1.6)	0.30
Chile reliability (α)	0.87	0.82	0.74	0.88	
U.S. reliability (α)	0.93	0.84	0.78	0.92	
1. Satisfaction	—	−0.36***	0.19***	0.62***	−0.30***
2. Alternatives	−0.30***	—	−0.16**	−0.53***	0.12*
3. Investments	0.41***	−0.22***	—	0.33***	−0.09
4. Commitment	0.65***	−0.47***	0.60***	—	−0.23***
5. Dissolution	−0.38***	0.20***	−0.25***	−0.38***	—

Note. Numbers above the diagonal represent correlations from Chilean data, numbers below the diagonal represent correlations from U.S. data. Correlations involving dissolution are point-biserial coefficients; all other correlations are Pearson product moment coefficients. Controlling for age (in years), gender (coded 1 = male, 2 = female), and relationship duration (in months).
*p < .05. **p < .01. ***p < .001.

alternatives to, investment in, and commitment to their current romantic relationship as in Study 1. Consistent with past findings with the IMS (including Study 1), the reliability of each of the four subscales was high in both the Chilean and U.S. samples. See Table 2 for descriptive statistics of all study variables by country.

Finally, all participants were asked several demographic questions, including age, gender, and relationship duration.

Time 2 measures

At Time 2, participants were asked the following question to assess stay/leave behavior: "Are you still romantically involved with this person?" Possible responses were "No, we are not romantically involved (i.e., we broke up)" and "Yes, we are still romantically involved." At Time 2, 58 (16.4%) of the Chilean participants and 105 (29.9%) of the U.S. participants indicated they were no longer dating their Time 1 romantic partner.

Results and discussion

All analyses were conducted controlling for the effects of age (in years), gender (coded 1 = male, 2 = female), and relationship duration (in months). Meta-analytic work involving the English version of the IMS suggests

that neither gender nor relationship duration produce meaningful differences in the mean level of IMS variables or the bivariate associations between IMS variables (Le & Agnew, 2003). However, these demographic variables were found to differ significantly between the two samples: age, $t(705) = 15.89$, $p < .001$; gender, $\chi^2(1) = 12.36$, $p < .001$; and relationship duration, $t(705) = 4.99$, $p < .001$. To date there have been no systematic examinations of demographic effects on the IMS in Spanish speaking populations, so we exercised caution and controlled for these demographics. The pattern of results obtained remains identical without these controls (i.e., all significant associations remain so and no nonsignificant associations become significant). Unless otherwise noted, all analyses presented were general linear models, conducted with SAS 9.2 PROC GLM. See Table 2 for bivariate correlations among IMS variables assessed at Time 1 and dissolution by Time 2.

Mean levels

We began by examining whether the two samples differed in mean level on any of the IMS variables. Results from analysis of covariance (ANCOVA) in which each of the IMS variables was predicted by our covariates and country revealed that whereas our two samples did not differ with regard to

satisfaction, $F(1, 702) = 0.00$, $p = .96$, the U.S. sample evidenced greater alternatives, $F(1, 702) = 156.73$, $p < .001$, and investment, $F(1, 702) = 7.94$, $p = .01$ than the Chilean sample. The Chilean sample evidenced significantly greater commitment than the U.S. sample, $F(1, 702) = 4.62$, $p = .03$.

Predicting commitment

Next, we examined whether the two samples differed in the strength of association between each of the three IMS bases and commitment. To begin, we examined the association between satisfaction and commitment in each country separately, finding it to be significantly positive in both Chile, $\beta = .615$, $t(348) = 14.56$, $p < .001$, and the United States, $\beta = .650$, $t(349) = 16.28$, $p < .001$. Combining the data from the two countries, we constructed a model in which satisfaction, country, and the two-way interaction of satisfaction and country were held to predict commitment level. This two-way interaction was significant; the association between satisfaction and commitment was stronger in the United States than in Chile, $F(1, 700) = 7.72$, $p = .01$.

Next, we examined the association between alternatives and commitment. Alternatives was significantly and negatively associated with commitment in both Chile, $\beta = -.618$, $t(348) = -14.44$, $p < .001$, and the United States, $\beta = -.530$, $t(349) = -11.64$, $p < .001$, and this association was equivalent in strength across the two samples (i.e., there was no two-way interaction of alternatives and country on commitment when the data from the two countries was combined), $F(1, 700) = 0.07$, $p = .80$. Investment was significantly and positively associated with commitment in both Chile, $\beta = .326$, $t(348) = 6.18$, $p < .001$, and the United States, $\beta = .561$, $t(349) = 12.48$, $p < .001$. This association did significantly differ in strength across the two samples, such that it was a stronger association in the United States than in Chile, $F(1, 700) = 20.97$, $p < .001$.

Finally, we examined whether the effects of satisfaction, investment, and alternatives on commitment had the properties of an additive model, as previous work with the investment model has found (i.e., we tested whether, when examined concurrently, each of the three IMS bases exerted unique explanatory power beyond the other predictors). As expected, we found that in the U.S. sample, when considered concurrently in a multiple regression model, satisfaction, $\beta = .426$, $t(347) = 11.69$, $p < .001$; alternatives, $\beta = -.334$, $t(347) = -9.70$, $p < .001$; and investment, $\beta = .311$, $t(347) = 8.56$, $p < .001$, were each significantly associated with commitment in the expected directions. In Chile, this was also true; satisfaction, $\beta = .429$, $t(346) = 11.35$, $p < .001$; alternatives, $\beta = -.435$, $t(346) = -11.45$, $p < .001$; and investment, $\beta = .170$, $t(346) = 4.61$, $p < .001$, were each significantly associated with commitment in the expected directions.

Predicting dissolution

We next used commitment as a predictor, rather than an outcome, and examined whether it significantly predicted relationship dissolution in both countries. Indeed, commitment was significantly and negatively associated with relationship dissolution in both Chile, $\beta = -.224$, $t(348) = -4.21$, $p < .001$, and the United States, $\beta = -.376$, $t(349) = -7.38$, $p < .001$. We then combined the data from the two countries and tested for moderation of the commitment–dissolution association by country. In this model, the two-way interaction between country and commitment was significant; the commitment–dissolution association was significantly stronger in the United States than in Chile, however, $F(1, 690) = 6.49$, $p = .01$.

Commitment is theorized to be a more proximal predictor of dissolution than satisfaction, alternatives, and investment, and as such, in models containing all four variables, commitment typically, but not always, subsumes the effects of the other three (Le & Agnew, 2003). We tested whether this held in this study, by entering the covariates, satisfaction, alternatives, investment, and commitment into a general linear model predicting dissolution. In the

Table 3. *Predicting commitment and dissolution in Chile and United States (Study 2)*

	Chile		United States		
	β	t	β	t	Difference between countries
Outcome: Commitment (each predictor tested individually)					
Satisfaction	0.615	14.56***	0.650	16.28***	$F = 7.72$**
Alternatives	−0.618	−14.44***	−0.530	−11.64***	$F = 0.07$
Investment	0.326	6.18***	0.561	12.48***	$F = 20.97$***
Outcome: Commitment (predictors tested concurrently)					
Satisfaction	0.429	11.35***	0.426	11.69***	
Alternatives	−0.435	−11.45***	−0.334	−9.70***	
Investment	0.170	4.61***	0.311	8.56***	
Outcome: Dissolution					
Commitment	−0.224	−4.21***	−0.376	−7.38***	$F = 6.49$**
Outcome: Dissolution (all predictors tested concurrently)					
Satisfaction	−0.262	−3.97***	−0.220	−3.38***	
Alternatives	−0.027	−0.40	0.021	0.35	
Investment	−0.26	−0.47	−0.36	−0.59	
Commitment	−0.078	−0.97	−0.212	−2.60**	

Note. Results from general linear models. Chile and United States results are from the data from the two countries when tested separately. Difference between countries column indicates whether there was moderation by country when the data from the two countries were combined. Controlling for age (in years), gender (coded 1 = male, 2 = female), and relationship duration (in months).
**$p < .01$. ***$p < .001$.

United States, commitment was indeed significantly and negatively associated with dissolution above and beyond the other variables, $\beta = -.212$, $t(346) = -2.60$, $p = .01$, as was satisfaction, $\beta = -.220$, $t(346) = -3.38$, $p < .001$, but investment, $\beta = -.036$, $t(346) = -0.59$, $p = .56$, and alternatives, $\beta = .021$, $t(346) = 0.35$, $p = .73$, failed to exert a significant effect above and beyond the others. In Chile, commitment failed to predict dissolution above and beyond the other variables, $\beta = -.078$, $t(345) = -0.97$, $p = .33$. Satisfaction was significantly and negatively associated with dissolution, $\beta = -.262$, $t(345) = -3.97$, $p < .001$, but investment, $\beta = -.027$, $t(345) = -0.40$, $p = .69$, and alternatives, $\beta = -.026$, $t(345) = -0.47$, $p = .64$, were not. See Table 3 for complete results from Study 2.

General Discussion

We began this work with the intention of providing a Spanish-language version of the IMS that evidenced equivalent structural properties and predictive validity as the original, English-language version. Prior to Study 1, we created the scale, using standard translation and back-translation techniques. We then administered this scale to a Spanish-speaking sample in Chile, while simultaneously administering the English version to a sample of English speakers in the United States. We compared the structural properties of these scales, finding that the factor structure was identical and all paths were invariant between the two samples. Supporting the construct validity of the Spanish-language version of the IMS, in Study 2, we administered the scale to a sample of romantically involved individuals in Chile to examine whether the Spanish version of the scale performed similarly to how theory and past research suggest it should (i.e., that satisfaction, alternatives, and investment each predicts commitment, which in turn predicts dissolution; see Le & Agnew, 2003). Indeed, in Chile, each of the three predictors of commitment was significantly associated

with commitment, their effects were additive, and commitment was significantly and negatively associated with dissolution (although not when considered in tandem with satisfaction, alternatives, and investment; we suggest a potential explanation for this below). The accumulated evidence gives us confidence that the Spanish translation was successful and that our translation has similar predictive validity to the original.

We see the utility of this new scale as twofold. First, by making available a validated Spanish version of the IMS, we hope to encourage researchers to include non-English-speaking individuals in studies of relationship processes. As relationship science becomes more globally representative, the need for validated versions of relationship process measures increases. Second, due to its broad applicability in both interpersonal and noninterpersonal relationships, the investment model is a valuable tool for crosscultural researchers, whose aim is to understand the cultural influences on relationship processes. The results from Study 2 provide initial evidence that there may be cultural differences in how relationships are evaluated and how relationship decisions are made, but future work with more controlled samples (i.e., samples provided with identical participation incentives, matched on demographic variables) and greater variety of dependent measures (e.g., dyadic adjustment for intact relationships) is needed to ascertain these differences are indeed predicted by culture.

Despite the pattern of prediction being identical across our samples, the mean level of the predictors and the amount of prediction afforded by the IMS in the two countries were not invariant. These findings must be interpreted cautiously. Whereas we did control for the demographic variables that we collected on which our two samples differed, we are certain that the samples differed in other ways that we did not measure. For instance, the mode of recruitment across the two samples differed (i.e., in Chile, cash payment was provided, whereas in the United States, course credit was provided). Any difference found could be a result of such sample characteristics, as much as it could be

a true cultural difference. Nevertheless, the differences in mean levels of alternatives, investment, and commitment, and the differences in strength of association between satisfaction and commitment, between investment and commitment, and between commitment and dissolution could reflect interesting, meaningful cultural differences in how relationships are evaluated and how relationship processes unfold in the two cultures. Future research aimed at understanding cultural influences on relationship processes would benefit from considering these effects, seeking to replicate and explain them.

A cross-cultural difference found that does warrant note is with regard to the fact that commitment did not predict dissolution above and beyond the three investment model bases in the Chilean sample. This was the only result in which the overall predictive pattern differed culturally (i.e., the only instance in which a significant predictor in one culture was not also significant in the other). We will speculate on one possibility regarding this finding, involving the notion of a collectivist worldview. As mentioned in the Introduction, cultures whose members speak predominantly Spanish (e.g., Chile) differ from those who speak predominately English (e.g., the United States) in terms of their collectivist worldview. The judgment of individuals in more collectivist societies is heavily influenced by social context, situational constraints, social connections, and social roles (Miller, 1984; Morris & Peng, 1994). Groups bind and influence the obligations that individuals experience in these cultures, leading individuals to rely on the advice and preference of their groups and social context when making decisions. By extension, individuals in less collectivist cultures rely more heavily on their own preferences when making decisions. Perhaps the decision to end a relationship in collectivist cultures is not as heavily influenced by commitment as it has been shown to be in the less collectivist United States because it is perceived as an individual preference, less relevant to decision making than other factors. Future research is needed to isolate whether this is the mechanism of this effect. It is our hope that having provided a

reliable, valid version of the IMS in Spanish will allow researchers to examine this, and other, cross-cultural hypotheses.

Conclusion

The two studies presented here provide initial validation of a Spanish version of the IMS (Rusbult et al., 1998). Using standard translation and back-translation techniques, we have created a version of the IMS that has the same structural properties as the original English version, and in an initial use of this scale, have found it to have good predictive validity. We are hopeful that this IMS translation will be useful in future studies of commitment and relationship behavior and will enable the field of relationship science to grow in multiple ways: beyond the confines of the English-language, to include a greater proportion of the global population in our studies, and to allow for the examination of cultural differences that may affect relationship processes.

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Appendix

Spanish Version of the Investment Model Scale

A continuación hay una serie de afirmaciones acerca de su actual relación de pareja. Por favor, elija un número de la escala entre 1 y 9 para indicar qué tan de acuerdo está usted con cada afirmación:

1	2	3	4	5	6	7	8	9
Para Nada de acuerdo								Completamente de acuerdo

1. ____Me siento satisfecho/a con nuestra relación.
2. ____Mi relación es mucho mejor que las relaciones de otros.
3. ____Mi relación es casi ideal.
4. ____Nuestra relación me hace muy feliz.
5. ____Nuestra relación satisface bien mis necesidades de intimidad, compañerismo, etc.
6. ____Hay otras personas que me atraen mucho con las que puede que me involucre como pareja.
7. ____Tengo excelentes alternativas en lugar de esta relación (otra pareja, juntarme con mis amigos/as, entretenerme solo/a, etc.).
8. ____Si esta relación se acabara, yo estaría bien, pues encontraría fácilmente otra pareja atractiva.
9. ____Hay alternativas a mi alcance que me atraen tanto o más que esta relación (otra pareja, juntarme con mis amigos/as, entretenerme solo/a, etc.).
10. ____Mis necesidades de intimidad, compañerismo, etc., podrían ser fácilmente satisfechas en una relación alternativa con otra persona.
11. ____He puesto mucho en nuestra relación, lo cual perdería si la relación se terminara.
12. ____Muchos aspectos de mi vida han quedado ligados a mi pareja (actividades recreativas, etc.), y perdería todo eso si nos separáramos.
13. ____Me siento muy involucrado/a en nuestra relación—como que le he dedicado mucho.
14. ____Mis relaciones con amigos y familiares se complicarían si mi pareja y yo nos separáramos (por ej., mi pareja es amigo/a de personas que me importan).
15. ____En comparación con otra gente que conozco, he invertido mucho en mi relación con mi pareja.
16. ____Deseo que nuestra relación dure mucho tiempo.

17. ____Estoy comprometido/a con mantener la relación con mi pareja.
18. ____No me afectaría mucho si nuestra relación terminara en el futuro próximo.
19. ____Es probable que tenga una pareja diferente dentro del próximo año.
20. ____Me siento muy apegado/a a nuestra relación—muy fuertemente unido/a a mi pareja.
21. ____Deseo que nuestra relación dure para siempre.
22. ____Estoy enfocado/a hacia el futuro a largo plazo de mi relación (por ej., me imagino estando con mi pareja por varios años más).