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With a Little Help from Our Friends:  
The Impact of Cross-group Friendship on Acculturation Preferences

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**Abstract**

Despite extensive research on intergroup contact and acculturation, our understanding of how contact affects receiving society members' preferences for acculturation orientation of immigrants over time is still relatively rudimentary. This longitudinal study examined how perceived group similarity and outgroup trust mediate the effects of cross-group friendship on acculturation preferences (culture maintenance and culture adoption) of the receiving society. It was predicted that cross-group friendship would affect acculturation preferences over time, and that these relationships would be partly mediated by outgroup trust and perceived group similarity. A three-wave full longitudinal sample ( $N = 467$  Chilean school students) was analyzed using structural equation modeling. Results confirmed that cross-group friendship longitudinally predicted majority members' support for the adoption of Chilean culture (via perceived group similarity) and Peruvian culture maintenance (via outgroup trust). Conceptual and practical implications are discussed.

Keywords: intergroup contact; acculturation; cross-group friendship; outgroup trust; perceived group similarity.

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Globalization has elicited greater connectedness between citizens of different nations and a swell in the flow of immigration. Approximately 3.3% of the world's population – more than 244 million people – can now be defined as immigrants (United Nations, 2015). This rise in immigration may generate intergroup tensions, but it also brings opportunities for positive intergroup contact, which has been shown to reduce prejudice and promote positive intergroup relations (Brown & Hewstone, 2005; González, Sirlopú, & Kessler, 2010; Pettigrew & Tropp, 2006). The process by which different cultures mutually influence each other is known as 'acculturation' (Brown & Zagefka, 2011). Despite the conceptual affinities between intergroup contact and acculturation approaches (e.g., Gieling, Thijs, & Verkuyten, 2014; Van Acker & Vanbeselaere, 2011; Ward & Masgoret, 2006; Zagefka, Brown, & González, 2009), longitudinal studies are still rare. Combining the strengths of both approaches into a coherent framework, the present research examines how the majority changes its acculturation preferences over time as a result of intergroup contact with minority members, along with specifying the mechanisms – trust and perceived group similarity – that explain this process.

**Theoretical Background**

Decades of research have shown that contact between members of different groups can improve intergroup attitudes (Allport, 1954), with studies conducted in a wide variety of settings and amongst diverse ethnic and racial groups (Brown & Hewstone, 2005; Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). In particular, cross-group friendship has been identified as a special form of contact that is likely to promote positive intergroup attitudes (Binder et al., 2009; Davies, Tropp, Aron, Pettigrew, & Wright, 2011; González et al., 2010; Paolini, Hewstone, Cairns, & Voci, 2004; Pettigrew & Tropp, 2006; 2011; Wright, Arons, & Tropp, 2002; West Pearson, Dovidio, Shelton, & Trail, 2009; West & Dovidio, 2013). Longitudinal studies indicate

that such positive effects of cross-group friendship occur because this form of contact is most effective in creating affective ties between members of different groups (Binder et al., 2009; Ellers & Abrams, 2003; Levin, van Laar, & Sidanius, 2003). Also, cross-group friendships provide social and normative support for cross-group relations (see Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; Gomez, Tropp, & Fernandez, 2011).

A number of recent studies in the domain of immigration confirm the particular role of cross-group friendships in the development of positive intergroup attitudes. For instance, in a longitudinal study with sojourners, Geeraert, Demoulin, and Demes (2014) observed a consistent positive correlation between the number of close friends among members of the host society and positive intergroup attitudes. Kotic, Kruglanski, Pierro, and Mannetti (2004) asked immigrants to retrospectively indicate the number of host friendships they had shortly after arrival in the country; these authors found that the number of cross-group friendships correlated significantly with positive attitudes towards cross-group contact and participants' current participation in the life of the host community (see also Ramelli, Florack, Kotic, & Rohmann, 2013). Given that research on peer relations has emphasized the importance of distinguishing between the number and quality of friendships (Carbonaro & Workman, 2013; Hartup, 2009; South, Haynie, & Bose, 2007), we distinguish between the quantity and quality of cross-group friendship. This is consistent with work which shows that contact quality typically plays the dominant role in links between contact and attitudes (Binder et al., 2009; Islam & Hewstone, 1993). The present research extends this body of work by longitudinally examining how the number and quality of cross-group friendships predict acculturation preferences of majority members, i.e. majority members' desires and beliefs about how minority members in the country should manage their cultural difference, in the context of the recent immigration flow in Chile.

### Acculturation Preferences and Cross-Group Relations

Acculturation refers to the processes by which different cultures adapt to one another (Brown & Zagefka, 2011) and it is particularly important to consider in relation to immigration. Acculturation processes involve both attitudes toward immigrants' maintenance of their heritage culture, and attitudes toward their adoption of the culture of the receiving society (see Berry, 1997; Bourhis, Moise, Perrault, & Senecal, 1997).

As is well documented, the increase in cultural diversity in any given society leads to a need for establishing trust and promoting a peaceful coexistence between different ethnic, cultural, and religious groups. Therefore, both immigrants and members of the receiving society benefit from learning how to live with existing differences and how to identify similarities. While research has primarily focused on acculturation preferences from the perspective of immigrants, some valuable research on the majority (i.e. the receiving society's) perspective can be found as well (e.g. Montreuil & Bourhis, 2001; Pelletier-Dumas, de la Sablonnière, & Guimond, 2017; Sirlopú & Van Oudenhoven, 2013; Zagefka & Brown, 2002, Zagefka et al., 2014). Such research is essential, since the members of the receiving society also have preferences for the way they want immigrants to acculturate (e.g., Berry, 1997; Breugelmans & Van de Vijver, 2004; Dinh & Bond, 2008; González et al., 2010), and immigrants' acculturation strategies and experiences can be significantly influenced by the acculturation preferences of the members of the host society (Geschke, Mummendey, Kessler, & Funke, 2010; Zagefka, González & Brown, 2011). Given the importance of the preferences of majority members regarding the acculturation process, it is crucial to understand the factors that shape their acculturation preferences.

Evidence suggests that host nationals often demand that immigrant groups adopt the mainstream culture of the host society, while not supporting the immigrants’ maintenance of their culture of origin (Kunst, Sadeghi, Tahir, Sam, & Thomsen, 2016; Van Acker & Vanbeselaere, 2011; Zagefka, Brown, Broquard, & Martin, 2007; Zagefka et al., 2014), and this is especially true for immigrants from devalued communities (Montreuil and Bourhis, 2001).

Given that maintenance of the heritage culture is often associated with healthy psychosocial outcomes for immigrants (Berry, 1997), at the same time as receiving societies often oppose this cultural heritage maintenance (Zagefka et al., 2014), it is crucial to understand the processes through which majority group members come to support both immigrants’ maintenance of their culture of origin and adoption of the majority culture. Here, we expect that cross-group friendships will play a crucial role. As members of the receiving society engage in cross-group friendships, they may witness – and experience first-hand – how immigrants seek contact and make efforts to adopt the mainstream culture. When majority group members realize that their immigrant friends strive for culture adoption as well as culture maintenance, they may be more sympathetic toward immigrants and more supportive of their efforts to maintain their cultural heritage (Van Acker & Vanbeselaere, 2011; Zagefka et al., 2007). However, there is still relatively little research examining this hypothesis. Capitalizing on a longitudinal design, the present research tests the dynamic process through which cross-group friendships with immigrants can lead members of the receiving society to promote support for culture maintenance and adoption over time.

Much of intergroup research has focused on negative intergroup interactions, characterized by fear, anxiety, and conflict (Florack, Bless & Piontkowski, 2003; Florack, Piontkowski, Rohmann, Balzer & Perzig, 2003; Van Acker & Vanbeselaere, 2011; White, Duck &



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Newcombe, 2012). In reality, however, intergroup contact can often be described as remarkably smooth and enriching in many multicultural societies. Research focusing entirely on the negative is in danger of giving ammunition to those ideologists who argue that ethnic homogeneity is essential for peace maintenance. Thus, in this research we wanted to focus on positive intergroup processes, i.e. perceived similarity and trust, to highlight the frequently positive effects of intergroup friendships over negative intergroup processes which have enjoyed extensive previous research attention. By inspecting the role of these two psychological mediators, we are expecting to add value to the literature and to complement the central role of intergroup anxiety and threat in the relationship between contact and acculturation strategies.

Taking the developmental nature of contact into account (Pettigrew, 1998), research suggests that anxiety and other negative emotions might play a more important role at the initial stages of intergroup contact, while positive emotions become more prevalent over time. While anxiety is generally higher in cross-group contact than in intra-group contact (Stephan & Stephan, 1985), positive cross-group contact has been shown to reduce intergroup anxiety (Islam & Hewstone, 1993; Zagefka et al., 2017). This in turn is directly related to intercultural adaption (Gudykunst, 1988). The more negative emotions decrease over time, the more the role of positive emotions might become prevalent<sup>1</sup> (Gao & Gudykunst, 1990; López-Rodríguez, Cuadrado, & Navas, 2016). We expect close contact – in particular cross-group friendship – to encourage the development of outgroup trust and to provide a framework for the perception of intergroup similarity.

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<sup>1</sup> We addressed the potential role of anxiety in relation to our model. Two items assessed anxiety: 1) 'How nervous do you feel when you are with Peruvian students?' 2) 'How awkward do you feel when you are with Peruvian students?'. In line with our reasoning, we found neither a longitudinal effect of cross-group friendship on anxiety nor a longitudinal effect of anxiety on acculturation preferences. We additionally re-ran the full SEM model adding anxiety as control variable. The pattern of effect stayed the same when controlling for anxiety.

Thus, in the current research, we focus on trust (Tam, Hewstone, Kenworthy, & Cairns, 2009; Turner, Hewstone, & Voci, 2007) and perceived group similarity (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993; Brown & Hewstone, 2005) as crucial mechanisms that are also likely to grow through cross-group friendship and guide acculturation preferences over time.

**Trust.** Generally, trust can be conceptualized as social capital that encourages cooperation (Putnam, 1995), whereas distrust may trigger concerns that others will exploit one's own cooperative motives (Kramer, 2010; Rothbart & Hallmark, 1988). Thus, outgroup trust can be defined as a positive expectation about the intentions and behavior of a specific outgroup toward the ingroup (Lewicki, McAllister, & Bies, 1998; Tropp, 2008). Given that sharing the ingroup culture with the outgroup can be seen as an invitation to the outgroup to actively participate in the host society and to come closer to the ingroup, we expect trust to be positively associated with preference for culture adoption.

Cross-group friendship has been shown to impact intergroup attitudes positively through increased trust in the outgroup (Tam et al., 2009; Turner et al., 2007). Given that trust can affect general attitudes towards the outgroup, it may also be an important precursor of the receiving society's support for immigrants maintaining their culture of origin. This is likely because trust should lead members of the receiving society to feel confident that immigrants will not attempt to exploit the situation, at the same time as it enhances their willingness to cooperate with immigrants and support their interests. Trusting immigrant friends might allow members of the receiving society to feel more secure and ready to support cultural maintenance to the extent they do not see immigrants as threatening the existence of their mainstream culture (Van Acker & Vanbeselaere, 2011). Thus, trust built upon cross-group friendship seems to provide the psychological bond to support the development of positive intergroup relations for both members

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of the host society and the immigrant groups.

**Perceived group similarity.** Generally, perceived similarity can lead to greater attraction as well as to greater willingness to associate with others (Byrne, 1971). Studies in intergroup contexts also show that perceived similarity predicts more positive attitudes toward other groups (Gaertner et al., 1993; Piontkowski, Florack, Hoelker, & Obdržálek, 2000), and greater willingness to associate with other ethnic groups (Havekes, Uunk & Gijbert, 2011; Osbeck, Moghaddam, & Perreault, 1997; see also the “similarity principle” in Pettigrew, 1998). In line with this work, we expect that perceived similarity between groups will predict preferences for culture adoption as well. Members of host societies are often inclined to perceive immigrants’ cultural differences as potentially threatening, and discordance between the perspectives and acculturation preferences of immigrants and host society members can introduce intergroup tensions (López-Rodríguez, Cuadrado, & Navas, 2017; Piontkowski, Rohmann, & Florack, 2002; Zagefka, Nigbur, González, & Tip, 2013). By contrast, greater perceived similarity with immigrants tends to be associated with lower perceptions of threat and more positive views about relations with immigrants among host society members (López-Rodríguez et al., 2017). Greater concordance in the views of immigrants and host society members has also been shown to be particularly influential for predicting preferences for culture adoption, as this acculturation dimension is directly tied to orientations toward intercultural contact (Matera, Stefanile, & Brown, 2015). Moreover, the more host society members engage in cross-group friendship with immigrants, the more likely they are to perceive similarities between their groups and experience satisfaction in the interactions (Goto & Chan, 2005). Greater perceived similarity will increase the belief that cultural adoption is feasible, and hence will increase the support for cultural adoption. By contrast, maintenance of the heritage culture by the migrants emphasizes

differences between the two groups. Therefore, it is reasonable to assume that perceived similarity should predict culture adoption, which decreases the differences, yet perceived similarity should not predict culture maintenance, which emphasizes the differences.

**Current Research**

The main contribution of the present research to the existing body of research is the longitudinal examination of the mediating roles of perceived intergroup similarity and generalized outgroup trust in the relationship between both quantity and quality of cross-group friendships and the receiving society’s acculturation preferences. These issues are examined in school contexts in Chile by investigating Chileans’ contact experiences and acculturation preferences in relation to Peruvian immigrants over four months (three points in time, with a lag of two months between assessments).

Chile is currently experiencing a growing wave of intra- and interregional immigration. Continued economic growth and political stability has led this former immigrant-sending country to gradually becoming a more popular option for those looking for a better quality of life, including improved working conditions and social mobility. Most notably, the number of Peruvian immigrants has more than doubled during the last decade, making them the largest immigrant group in Chile (Departamento de Extranjería y Migración, 2016).

Most Peruvian immigrants (75%) reside in the capital city of Santiago and are low-skilled workers; moreover, the relative percentage of Peruvians in socio-economically disadvantaged areas of Santiago has increased. This has led to increased enrollment of Peruvian students in public schools in Santiago. As a consequence of the current concentration of Peruvians in

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downtown Santiago neighborhoods, Chilean schoolchildren in these areas are having more contact with Peruvian immigrant classmates.

These diverse classroom environments provide optimal conditions for enabling the development of cross-group friendships (Tropp & Prenovost, 2008; Tropp et al., 2016). Because our sample was taken in a school context, it is likely that this would facilitate the development of positive cross-group interaction and friendship between students alongside intergroup trust. Trust inside the classroom may be 'cultivated' within one's friendship and 'spill over' to the outgroup as a whole. Furthermore, the school context may also enhance development of familiarity between the classmates, which may influence perceived similarity in- and outside the classroom.

### Hypotheses

*Hypothesis 1:* We hypothesized that cross-group friendships at Time 1 ( $T_1$ ) will predict both acculturation preferences (i.e. culture maintenance and culture adoption) at Time 3 ( $T_3$ ).

*Hypothesis 2:* We hypothesized that the effect of cross-group friendships at Time 1 ( $T_1$ ) on both acculturation preferences (i.e. culture maintenance and culture adoption) at Time 3 ( $T_3$ ) will be mediated by outgroup trust at Time 2 ( $T_2$ ).

*Hypothesis 3:* We hypothesized that the effect of cross-group friendships at Time 1 ( $T_1$ ) on culture adoption at Time 3 ( $T_3$ ) will be mediated by perceived group similarity at Time 2 ( $T_2$ ).

Method

Participants

Participants were 467 Chilean<sup>2</sup> high school students (232 females;  $M_{age} = 14.74$ ,  $SD = 1.11$ , range 11-19 years; missing = 22) at baseline  $T_1$ , 373 at  $T_2$ , and 359 at  $T_3$ . All participants at  $T_2$  and  $T_3$  were part of the original sample at  $T_1$ . Selective attrition describes the tendency of some participants to be more likely to drop out of a study, and therefore causes a threat to validity. To assess selective attrition, we used Little’s MCAR test including all constructs under study as well as age and gender. The result was non-significant ( $\chi^2(1262) = 1260.99$ ,  $p = .503$ ), thus it can be assumed that the data is missing completely at random.

We chose to use all available data for each participant, because missing information can be partly recovered from earlier waves and it is statistically more accurate to impute data both within and between waves than to use previous methods of missing data handling like listwise deletion, pairwise deletion or mean substitution (Graham, 2009; Schafer & Graham, 2002; Wothke, 2000; see Asendorf, van de Schoot, Denissen & Hutteman, 2014 for practical guidelines). Thus, we used maximum likelihood-based procedures to impute missing observations.

Procedure and Materials

Forty schools from immigrant-dense neighborhoods in Santiago, Chile were contacted to

<sup>2</sup> 102 Peruvian students (52 females;  $M_{age} = 14.51$ ,  $SD = 1.36$ ) also took part in the survey. Descriptive statistics can be found in the supplementary materials. Due to the small sample size, we calculated a reduced structural equation model (SEM). Unfortunately, there was no convergence when running the SEM model. We followed Muthén and Muthén’s (1998-2012) suggestions of freeing the first factor indicator and fixing the variance at one as well as increasing the numbers of iterations, but this did not solve the problem. One reason that convergence is not achieved may be a misspecification of the model and/or too few cases. Therefore, the hypothesized model could not be tested for the Peruvian sample.

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request their participation in the longitudinal study. Of these schools, only ten schools gave consent and fulfilled the requirement of having at least three Peruvian students per class. The schools were either public municipal or subsidized schools, which are attended mainly by students of socio-economically disadvantaged or middle-income families. All the students were invited to participate, after obtaining informed consent from their parents and/or guardians. Since obtaining all parent/guardian consents took longer than expected, we were forced to start collecting data later than planned. The time lag of two months was chosen because the research team and the schools both agreed that the data collection should be completed within the academic year. One of the main reasons for this decision was that having parts of our data collection take place in the next academic year would probably have increased attrition. Approximately 50% of the contacted students participated at  $T_1$ , which was administered in June 2014 by a team of research assistants from the School of Psychology at Pontificia Universidad Católica de Chile, Chile. All research assistants were properly trained to ensure the confidentiality and quality of the data obtained. The students participating in the study filled out the questionnaires in Spanish during class time. The following waves took place in August, and September/October of the same year. Hence, data collection took place over a four-month period in total and each time point was assessed with a lag of two months. After their participation, the respondents were debriefed, thanked, and rewarded for their participation (approximately three US dollars for  $T_1$ , and four dollars each for  $T_2$  and  $T_3$ ).

**Measures**

All items were assessed on a 7-point-Likert scale (1 = *I strongly disagree*, 7 = *I strongly agree*), unless otherwise indicated. Each of the measures (besides the number of cross-group friends) represents a latent (unobserved) construct, measured with the help of manifest

(observed) indicators (individual items). Descriptive statistics for each of the measures at the three time points, with their reliability estimates and correlations between time points, are provided in Table 1<sup>3</sup>.

**Cross-group friendship.** Given that research on peer relations has emphasized the importance of distinguishing between the number and quality of friendships, we included a measure to assess the number of cross-group friends and a separate measure to assess the quality of cross-group friendships.

*Number of cross-group friends.* One item derived from Binder et al.'s (2009) study to assess the number of cross-group-friends: ‘How many Peruvian friends do you have at your school?’ (Scale from 0 to 10; 0 = No cross-group friends, 1 = 1 cross-group friend, ..., 10 = 10 or more cross-group friends).

*Quality of cross-group friendship.* Items used to assess quality of cross-group friendship were adapted from González and colleagues (2010). Three facets of friendship quality were assessed in relation to one’s closest two cross-group friends. The facets were: perceived support, affective reactions, and friendship commitment. Each facet was assessed with two items. The three facets were highly inter-correlated and loaded on one factor.

The aspect of perceived support from cross-group friends consisted of these items: ‘How accepted by your Peruvian friend do you feel?’ and ‘How supported by your Peruvian friend do you feel?’

Affective reactions were measured by asking: ‘How much do you admire your Peruvian friend?’ and ‘How much do you trust your Peruvian friend?’.

<sup>3</sup> Please note that we found that Chilean students’ preferences for both acculturation preferences slightly decreased over the time of our study. However, Chilean students on average were not opposed to culture maintenance, nor did they prefer culture adoption over culture maintenance (see Table 1).



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Commitment to cross-group friends was measured with: 'I want our friendship to last forever' and 'I am committed to maintain this friendship'.

All items were assessed on a 7-point-Likert scale (1 = *Not at all*, 7 = *Very much*). The participants had to answer all the cross-group friendship questions separately for the best cross-group friend, and then again for the second-best cross-group friend. Thereby, participants were asked to answer a total of 12 items on the quality of cross-group friendship. For the longitudinal analysis, we used the indicators of each facet in parcels (we used parcels of items as manifest variables in structural equation modelling (SEM)) following the internal-consistency approach (Kishton & Widaman, 1994). This means that one parcel included all four items for perceived support, the next all four items for affective reaction, and the last all four items for friendship commitment.

**Perceived group similarity.** Two items measured perceived group similarity: 'I think that Peruvian students and Chilean students are quite similar among them' and 'I think that Peruvian students and Chilean students have a lot in common'.

**Outgroup trust.** Two items measured general outgroup trust: 'Most of the Peruvians are trustworthy' and 'In general, I think that Peruvians act in an honest way<sup>4</sup>'.

**Acculturation preferences.** The items were derived from Zagefka and colleagues (Zagefka, Tip, González, Brown, & Cinnirella, 2012).

Three items measured the preference for *cultural maintenance*: 'It is important to me that Peruvian immigrants keep their... a) customs and traditions; b) way of life; c) own culture'.

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<sup>4</sup> There was a third, reverse scored item ('I think that Peruvians try to take advantage of others') that had a low communality (< 3.5) and a negative covariance. The composite trust measure showed a higher estimate of reliability without this third item. Therefore, this third item was not included in the composite measure.

Three items assessed the preference for *cultural adoption*: ‘It is important to me that Peruvian immigrants adopt a) Chileans’ customs and traditions; b) Chileans’ way of life; c) the Chilean culture’.

**Results**

**Data Analytic Strategy**

Data analyses proceeded in three steps: Preliminary analysis, followed by the measurement model, and finally the structural equation model. We differentiated between the confirmatory test of the predicted structural equation model and exploratory tests of alternative structural equation models testing for reverse causation or bi-directional relationships.

First, preliminary analyses tested for selective attrition and examined means, standard deviations, and construct validity for the measures, as well as the stability of the constructs and changes in scores over time (see Table 1). Please note that cross-sectional mediation analyses typically generate biased estimates (Maxwell & Cole, 2007; Maxwell, Cole, & Mitchell, 2011). Thus, we did to not calculate the associations between the variables within the same time-lag.

Structural equation modeling (SEM) using latent constructs (Mplus software Version 7.1, Muthén & Muthén, 2012) was then used to explore the longitudinal mediation effects of cross-group friendships (number and quality) and the two mediators (outgroup trust and perceived group similarity) on the dependent variables of acculturation preferences (culture maintenance and culture adoption) across three time points of data.

A two-phase approach, which separates the model into its measurement and its structural portions, was used to analyze the longitudinal mediation model with latent constructs (Mueller & Hancock, 2008). Based on this two-phase approach, the fit of the measurement model was assessed first, followed by the assessment of the fit of the whole structural model. We evaluated

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the model fit within the different measurement models and later the different SEM models using  $\chi^2$  statistics, the ratio of  $\chi^2$  statistics to the degrees of freedom ( $\chi^2/\text{df}$ ), and multiple fit indices, including the standardized root-mean-square-residual (SRMR; Hu & Bentler, 1999), root-mean-square error of approximation (RMSEA; Steiger, 1990), and the comparative fit indices (CFI; Bentler, 1990). Since the  $\chi^2$  statistics are highly sensitive to sample size, Kline (1998) suggested that a  $\chi^2/\text{df}$  ratio of less than 3 indicates an acceptable model fit. Rule of thumb guidelines for acceptable model fit suggested by Hu and Bentler (1999) are a CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. All variables were screened to ensure that the assumption of normality was met.

Finally, we differentiated between our main analysis – the confirmatory test of the predicted unidirectional forward model for the effect of cross-group friendship on both acculturation preferences – and additional exploratory analysis. In the additional exploratory analysis, we tested for reverse causation (unidirectional reverse longitudinal model) and bidirectional relationships (bidirectional longitudinal model).

**SEM with Latent Constructs**

To explore the longitudinal effects of cross-group friendship on acculturation preferences we capitalized on Swart and colleagues' practical application of a full longitudinal mediation model that served as the base for running the current model (Swart, Hewstone, Christ, & Voci, 2011). Because all the constructs were measured within each time point, an autoregressive model with time-ordered mediation was calculated. Each of the measures represents a latent (unobserved) construct, measured with the help of manifest (observed) indicators (individual items). For perceived group similarity, outgroup trust, culture maintenance, and culture adoption, the individual items served as the manifest indicators for that construct. Three parcels were used

as indicators for the construct of cross-group friendship quality, one for each facet. Cross-group friendship quantity was measured by one observed variable.

**Measurement model.** At first, we tested whether the measurement model provided a good fit for the data. We used a confirmatory factor analysis using a robust maximum likelihood estimator (MLR) to determine the goodness of fit of the measurement model at each of the three time points. The model fits suggested that the measurement models for each time point fit the data well ( $T_1$ ,  $\chi^2(64) = 124.52$ ;  $p < .001$ ;  $\chi^2/\text{df}$  ratio = 1.95; CFI = .974; RMSEA = .045; SRMR = .042;  $T_2$ ,  $\chi^2(64) = 106.23$ ;  $p < .001$ ;  $\chi^2/\text{df}$  ratio = 1.66; CFI = .981; RMSEA = .042; SRMR = .062;  $T_3$ ,  $\chi^2(64) = 122.76$ ;  $p < .001$ ;  $\chi^2/\text{df}$  ratio = 1.92; CFI = .976; RMSEA = .051; SRMR = .058). This sets the basis for comparison of more parsimonious models.

**Establishing measurement invariance.** One of the key issues is to establish whether the concepts of cross-group friendship (quality and quantity), outgroup trust, intergroup similarity, and the acculturation preferences are stable or if they change over time. If the measurement is not stable, it is not possible to compare the constructs over time. Therefore, we tested whether the measurement stability of the constructs had not changed over time following procedures outlined by Preacher, Rucker, and Hayes (2007). First, an unconstrained longitudinal measurement model was calculated and subsequently compared to more restricted (and nested) measurement models using the Satorra-Bentler scaled chi-square difference test (i.e., testing for measurement invariance).

In the first longitudinal measurement model, each latent construct had a scale constraint, but parameters were freely estimated. This model combines all of the three cross-sectional models. The residuals of corresponding indicators were allowed to correlate from  $T_1$  to  $T_2$ , and  $T_2$  to  $T_3$  (Little, Preacher, Selig, & Card, 2007; Swart et al., 2011). The fit of this unrestricted

longitudinal model was good ( $\chi^2(663) = 985.12, p < .001$ ;  $\chi^2/df = 1.49$ ; CFI = .966; RMSEA = .032; SRMR = .075). The good fit of this longitudinal CFA and of the three cross-sectional measurement models supports the factorial validity within each time point and longitudinally. The next level of measurement invariance is the so-called invariance or weak factorial invariance, which is a minimum requirement for longitudinal model comparison. Basically, this means that the indicators represent the same underlying construct over time. Therefore, it is necessary to test and establish measurement invariance prior to any model comparison. To establish weak factorial invariance, loadings of corresponding indicators were equated across time (Cole & Maxwell, 2003; Geiser, 2010). The longitudinal weak factorial invariance model had a good fit,  $\chi^2(679) = 1004.40, p < .001$ ;  $\chi^2/df = 1.48$ ; CFI = .966; RMSEA = .032; SRMR = .075, and the nested model comparison revealed no significant decrease in fit,  $\Delta\chi^2(16) = 18.66, p = .287$ , indicating that weak factorial invariance in the measurement model can be assumed across all three time points.

**Structural model.** We started with the most basic longitudinal model, specifying only first-order autoregressive effects between constructs over time. This basic model was compared step-by-step with more restrictive models using a scaled chi-square difference test (Satorra & Bentler, 2001), as can be seen in Table 2. Standardized data will yield inaccurate parameter estimates and standard errors; consequently, unstandardized parameters were used and reported (Cole & Maxwell, 2003).

**Autoregressive longitudinal model.** A major issue in longitudinal analysis is to test whether every variable is a predictor for itself over time. Thus, a first-order autoregressive model was built, in which all first-order autoregressive paths between common factors were estimated. In the first model, the various parameters were freely estimated (Model 1a, autoregressive model

with freely estimated parameters). Since the time lags between the measurements are of equal lengths, we tested whether the change in the constructs between  $T_1$  and  $T_2$  would mirror the change from  $T_2$  to  $T_3$  – if the effects were stable over time (i.e. testing for the assumption of stationarity; see e.g. Cole & Maxwell, 2003). Therefore, a model with equated within-construct paths (Model 1b, autoregressive model with within construct path equivalence) was compared to the former model (see Table 2). Considering there was no difference between the models ( $\Delta\chi^2(6) = 6.08, p = .414$ ), we kept the more restricted one (Model 1b).

**Main analysis: Unidirectional forward longitudinal models.** Building on the most restricted autoregressive model (Model 1b), we tested the model fit of the unidirectional forward model derived from our hypotheses (predictors  $T_1 \rightarrow$  mediators  $T_2 \rightarrow$  outcomes  $T_3$ ). In this case, the independent variables (number and quality of cross-group friendships) were constrained to predict the mediators (group similarity and outgroup trust) at the next time point; the same constraints were set for the mediators, which were constrained to predict change in the dependent variables (acculturation preferences) at the subsequent time point.

In the first unidirectional forward longitudinal model, all newly added parameters were freely estimated (Model 2a, unidirectional forward model freely estimated parameters). This model had a good fit (see Table 2). In the following, more parsimonious model, we increased the parameter restriction by constraining equivalence between  $T_1$  and  $T_2$  as well as  $T_2$  and  $T_3$  (i.e., testing for the assumption for stationarity; Model 2b). The assumption of stationarity could be tested through those restrictions (Cole & Maxwell, 2003), which assumes that the cross-lagged regression effects connecting  $T_1$  to  $T_2$  are identical to those that connect  $T_2$  and  $T_3$ . This more restricted model (Model 2b, unidirectional forward model with within construct path equivalence) also fits the data well, and the fit difference test indicated that its fit was not

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significantly reduced compared to that of the less restricted unidirectional model (Model 2a),  $\Delta\chi^2(8) = 10.22, p = .250$  (see Table 2). Due to the equality constraint between constructs, the pattern of significant relationships from  $T_1$  to  $T_2$  data panel corresponds with that from  $T_2$  to  $T_3$  data panel. Next, we included direct paths from  $T_1$  cross-group friendship to  $T_3$  acculturation preferences (Model 2c, unidirectional forward model with within construct path equivalence and direct paths), to see whether acculturation preferences were also directly affected by contact or whether there was only an indirect effect of contact on acculturation preferences. The direct-indirect unidirectional forward model (Model 2c) had a good model fit, and adding these direct paths resulted in a significantly better model fit (compared to Model 2b),  $\Delta\chi^2(4) = 12.68, p = .013$  (see Table 2). Consequently, it may be concluded that outgroup trust and group similarity mediate the effect of cross-group friendship on acculturation preferences only partly, and cross-group friendship also had a direct effect on the change in acculturation preferences over time. Hence, the direct-indirect unidirectional forward longitudinal model (Model 2c) was kept.

In this direct-indirect unidirectional forward longitudinal model (see Table 3 and Figure 1),  $T_1$  quality of cross-group friendship had direct effect on  $T_3$  culture maintenance. Further, both  $T_1$  number and quality of cross-group friendship positively predicted both  $T_2$  mediators (group similarity and outgroup trust) as we expected. However, we found asymmetrical patterns for the mediators: Outgroup trust at  $T_2$  positively predicted both culture maintenance and (marginally) culture adoption at  $T_3$ . By contrast, perceived similarity at  $T_2$  predicted culture adoption but not culture maintenance at  $T_3$ .

*Cross-lagged relationship.* The direct and indirect cross-lagged paths of the direct-indirect unidirectional forward longitudinal model (Model 2c) are reported in Table 4. It is important to consider that each of the autoregressive effects have been controlled for. Therefore,

each of the significant effects is only a partial effect unique to that independent variable. Furthermore, within- and between-construct paths for the indirect paths have an equality constriction over time, so that the  $T_1$  to  $T_2$  relations mirror the  $T_2$  to  $T_3$  associations for the indirect paths.

According to Hypothesis 1, cross-group friendship at  $T_1$  should have a positive direct effect on both acculturation preferences at  $T_3$  (i.e. culture maintenance and culture adoption). Quality of cross-group friendship at  $T_1$  had a direct positive effect on culture maintenance but not culture adoption at  $T_3$ . The number of cross-group friendship at  $T_1$  was not directly associated with both acculturation preferences at  $T_3$  (see Table 4 and Figure 1). Thus, Hypothesis 1 was only partly supported.

However, both number of cross-group friends and quality of cross-group friendship at  $T_1$  had indirect effects on both acculturation preferences. In line with predictions, the mediational pattern can be distinguished for the two predicted acculturation preferences.

According to Hypothesis 2, outgroup trust at  $T_2$  should mediate this relationship for both dependent variables. In line with predictions, we found an indirect effect for number of cross-group friends (marginally) and quality of friendship at  $T_1$  on culture maintenance  $T_3$  via outgroup trust at  $T_2$ . By contrast, the indirect effect of cross-group friendship (both quality and quantity) at  $T_1$  on culture adoption at  $T_3$  via outgroup trust at  $T_2$  was not significant. Thus, Hypothesis 2 was partly supported.

According to Hypothesis 3, intergroup similarity at  $T_2$  should mediate the relationship between friendship (both quality and quantity) at  $T_1$  and culture adoption. The indirect effect of cross-group friendship (both quality and quantity) at  $T_1$  on culture maintenance at  $T_3$  via intergroup similarity at  $T_2$  was non-significant. As assumed, perceived group similarity at  $T_2$



mediated the relationship between quality of cross-group friendship and number of cross-group friendship at  $T_1$  (marginally) and culture adoption  $T_3$ . Thus, we found support for Hypothesis 3.

### Additional Exploratory Analysis

Having tested the hypothesized model as part of the confirmatory analysis, we tested the fit of alternative longitudinal models. We tested reverse models and bidirectional longitudinal models to rule out alternative hypotheses.

**Unidirectional reverse longitudinal models.** To see whether we could find evidence for the reverse causation, we interchanged the predictor and outcome variables. Here, the unidirectional reverse cross-lagged relationships between constructs over time were  $T_1$  acculturation preferences predicting  $T_2$  group similarity and outgroup trust and those predicting both number and quality of cross-group friendships at  $T_3$  (outcomes  $T_1 \rightarrow$  mediators  $T_2 \rightarrow$  predictors  $T_3$ ). In the first unidirectional reverse model, all newly added parameters were estimated freely (Table 2, Model 3a, unidirectional reverse model with freely estimated parameters). In the next model we constrained equivalence between  $T_1$  and  $T_2$  as well as  $T_2$  and  $T_3$  (Model 3b, unidirectional reverse model with within construct path equivalence). The direct-indirect unidirectional reverse model (Model 3c) additionally includes direct paths from  $T_1$  cross-group friendship to  $T_3$  acculturation preferences. The fit of these unidirectional reverse models was acceptable, except for the slightly high SRMR. Adding the direct paths (Model 3c) produced no significant increase in model fit compared to the indirect unidirectional model (Model 3b),  $\Delta\chi^2(4) = 2.57, p = .631$ , therefore, Model 3b was retained. The best unidirectional forward model (Model 2c) fit the data significantly better than the best unidirectional reverse model (Model 3b),  $\Delta\chi^2(4) = 31.18, p < .001$  (see Table 2). Thus, the unidirectional reverse model was rejected.

***Bidirectional longitudinal models.*** The bidirectional longitudinal models combine the paths from the unidirectional forward and the unidirectional reverse longitudinal models (see Table 2). Including the bidirectional longitudinal model, we can test whether the link between cross-group friendship and acculturation is best described as recursive or unidirectional. First, the cross-lagged parameters are estimated freely (Model 4a in Table 2, bidirectional model with freely estimated parameters), then the cross-lagged parameters were equated across time (Model 4b, bidirectional model with within construct path equivalence), and finally we added the direct paths (Model 4c, direct-indirect bidirectional model)<sup>5</sup>. The resulting direct-indirect bidirectional longitudinal model (Model 4c) had a good fit,  $\chi^2(726) = 1010.01$ ;  $p < .001$ ;  $\chi^2/\text{df}$  ratio = 1.39; CFI = .970; RMSEA = .029; SRMR = .049. Model 4c described the data significantly better than both unidirectional models (Model 2c = unidirectional forward model and Model 3b = unidirectional reverse model). However, while we found partly significant indirect effects for forward paths from  $T_1$  to the dependent variables (see Table 6), there was only one marginal sum of indirect effect for the reverse paths from the dependent variables at  $T_1$  to cross-group friendship quality  $T_3$ : specifically,  $T_1$  culture maintenance marginally predicted quality of cross-group friendship at  $T_3$  via outgroup trust. This suggests that the mediated paths from cross-group friendship at  $T_1$  to acculturation preferences at  $T_3$  have more predictive value than vice versa.

When comparing the best bidirectional model (Model 4c; Figure 2, Table 6) with the best unidirectional model (Model 2c; Figure 1, Table 4), the pattern for the mediation effects holds, even though the indirect effect from quality of cross-group friendship at  $T_1$  to culture adoption at  $T_3$  via group similarity (Hypothesis 3) is now only marginally significant; this is probably due to the rather low power of the bidirectional model. Furthermore, the total indirect effect from

<sup>5</sup> Only the four direct forward paths were included, since the reverse model with direct paths did not fit the data better than the indirect model. The non-significant direct forward paths were not depicted in Figure 2.

number of intergroup friends to culture maintenance becomes significant in the bidirectional model, while it was only marginally significant in the unidirectional one. However, a strength of the bidirectional model is that it provides additional information, as it allows us to better understand the dynamics of change over time. Outgroup trust seems to play a major role in this process, since it is predicted by cross-group friendship and preferences for culture maintenance, and on the other hand affects quality of cross-group friendship and culture maintenance (and marginally culture adoption) over time (see Figure 2 and Table 5). Further, there appears to be a bidirectional cross-lagged relationship between perceived group similarity and culture adoption; that is, culture adoption at  $T_1$  predicts greater perception of group similarity at  $T_2$ , which in turn predicts a stronger preference for culture adoption at  $T_3$  and vice versa (see Figure 2 and Table 5).

### Discussion

This study contributes to the existing body of research by integrating contact theory and acculturation research. To reach this goal, we designed and used a longitudinal mediation model. The study clearly showed that cross-group friendship influences acculturation preferences. In particular, the better the quality of the friendship that Chilean students establish with Peruvian immigrants at school, the more they want Peruvians to keep their heritage culture (partially mediated via outgroup trust). Furthermore, Chilean students also want the Peruvian migrants to adopt the Chilean culture (mediated via perceived similarity) (see Table 3 and Table 4). Given that prior research shows that being high in both cultural maintenance and cultural adoption is a pattern that often has beneficial outcomes for migrant groups (Berry, 1997; see also Brown & Zagefka, 2011), the finding that intergroup contact leads group members of the receiving society to be supportive of both cultural adoption and cultural maintenance is another positive outcome

from intergroup contact beyond changes in general intergroup attitudes: Having a Peruvian friend affected both the willingness to allow Peruvians to keep their heritage culture as well as the desire to see the Peruvians adopt the Chilean culture (desire for Peruvian integration into the Chilean society).

Former studies found that majority members often want the immigrants to adopt the mainstream society, while not supporting their cultural maintenance (e.g., Tip et al., 2012; Van Oudenhoven et al., 1998; though cf. Celeste, Brown, Tip, & Matera, 2014; Matera, Stefanile, & Brown, 2011). However, the status of the immigrants seems to moderate the acculturation preferences of the receiving society (Montreuil & Bourhis, 2001). The receiving society is more supportive of cultural maintenance for “valued” than “devalued” immigrants and more supportive of acculturation preferences encompassing cultural adoption for “devalued” than “valued” immigrants. In the context of our study, Peruvians are to be considered low status, “devalued” immigrants. Yet, Chilean students on average were not opposed to culture maintenance, neither did they prefer culture adoption over culture maintenance (see Table 1). Further, in line with our assumptions, cross-group friendship raised Chilean students’ support for culture maintenance (see Table 3 and Table 4). This has important theoretical and practical implications as it has the ability to lead to more harmonious intergroup relations, as research on multiculturalism (a sociological counterpart to integration) has shown (Tip et al., 2012). This in turn leads to better socio-psychological consequences for the migrants.

But *why* do Chilean students with Peruvian friends support the maintenance of the Peruvian culture? Cross-group friendship positively predicted outgroup trust at  $T_2$ , which was positively associated with culture maintenance and (marginally) with culture adoption acculturation preferences at  $T_3$  (see Figure 2). Thus, trust is an affective mediator between

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contact and acculturation (Hypothesis 2). This is especially important, because it shows that cultural maintenance varies as a function of cross-group friendship and trust.

Trust is the feeling of emotional closeness and the conviction that the others will act in a benevolent way, and it therefore allows cooperation under uncertainty (Lewicki et al., 1998). Trust in the classroom might be cultivated within one's friendship group and generalize to the outgroup as a whole. Thus, high trusting Chileans should feel more comfortable with immigrants keeping their heritage culture. Moreover, as a friend, they should support their Peruvian friends in their cultural maintenance and add more value to diversity. Hence, the positive change in trust should raise the support for culture maintenance, as has been found here. While many people in a receiving society are opposed to the wish of immigrants to maintain their culture (Tip et al., 2012; Van Acker & Vanbeselaere, 2011), creating possibilities for the development of cross-group friendships and outgroup trust might positively affect their support for the immigrants' cultural maintenance.

The mediating role of group similarity (Hypothesis 3) differed from that of trust. The effect of cross-group friendship at  $T_1$  was positively associated with group similarity at  $T_2$ , which significantly predicted the increase of culture adoption at  $T_3$ , but was not significantly related to culture maintenance (see Figure 2). One reason for this asymmetrical pattern of the mediator variables may be that the maintenance of the heritage culture by the migrants emphasizes differences between the two groups. Therefore, it is reasonable to assume that perceived similarity predicts culture adoption, which decreases the differences, yet similarity does not predict culture maintenance, which emphasizes the differences. As hypothesized (Hypothesis 1), cross-group friendship promotes both acculturation dimensions (culture maintenance and culture adaption) in a positive way, which corresponds with the dual-identity strategy (Gaertner,

Dovidio, Guerra, Hehman, & Saguy, 2015; Gonzalez & Brown, 2003, 2006; Hewstone & Brown, 1986). The dual-identity strategy in turn may prevent identity threat, which leads to increased differentiation (Jetten, Spears, & Manstead, 1997).

Furthermore, for both practical and theoretical reasons, it is important that our findings indicate that friendship *quality* seems to be more potent than the number of friends on acculturation preferences. The effect sizes for number of cross-group friendships were smaller, and sometimes only marginally significant (see Tables 4 and 6). Also, only one direct path emerged from friendship quality to culture maintenance. Consequently, knowing members of the outgroup is good, having an outgroup friend is even better, and having a good quality of friendship with this outgroup friend leads to the best outcome of all.

The direction of change is less clear than the relative impact of friendship quantity and quality. Does friendship only affect acculturation, or does acculturation also affect friendship? Bidirectional links have been found in research addressing the contact hypothesis, and a meta-analytic review supports the assumption that the contact-prejudice link is recursive (contact reducing prejudice, but prejudice also reducing contact, Binder et al., 2009). Also, bidirectional links may exist for acculturation preferences (e.g., Zagefka et al., 2014) since a dynamic interdependence between intergroup relations and acculturation preferences may be expected theoretically (Brown & Zagefka, 2011).

On the one hand, the evidence generated by this study leads to the conclusion that a bidirectional model best describes the data, given that the model fit improved significantly. On the other hand, only the reverse path from culture maintenance at  $T_1$  marginally predicted cross-group friendship quality at  $T_3$  via  $T_2$  outgroup trust, while all the other reverse paths turned out to be non-significant. In contrast, all the forward paths (from friendship at  $T_1$  predicting

acculturation preferences at  $T_3$ ) significantly (once marginally) predicted the dependent variables (see Table 6). This leads to the conclusion that the paths from friendship at  $T_1$  to acculturation at  $T_3$  via the mediators at  $T_2$  have more predictive value than the other way around.

### Strength and Limitations

Some strengths and weaknesses of the present research should be noted. Acculturation preferences were assessed as general orientations with no reference to specific life domains, but they may vary depending on the domain considered (Arends-Tóth & Van de Vijver, 2003). Our sample, which only included high school students, might also restrict the generalization of our results. Further, while we followed common practice by assessing quantity of friendship with one item, we used a finer grained measure for quality of friendship. Possibly, the effects for quantity would have been stronger had we used a reliable multi-item measure (see Davies et al., 2011; Pettigrew & Tropp, 2006). This should be taken into account when interpreting the results of the study. Furthermore, one methodological limitation is the length of the two-month time lags, which may have been too short for the cross-group friendship effects to fully emerge.

The strengths of the present study include that we conducted a three-wave longitudinal study. Most intergroup longitudinal studies have not collected data for more than two waves (see exceptions Binder et al., 2009; Swart et al., 2011), but at least three waves are needed to explore full longitudinal mediation effects (Selig & Preacher, 2009). Even though the time-lags are rather short for processes to unfold, we found support for our main predictions.

Further, the present study supplements the existing literature on intergroup contact and acculturation by integrating both approaches. It is one of the few studies that assess the antecedents, rather than just the consequences, of acculturation. In addition, the present study extends the existing literature by addressing outgroup trust and perceived group similarity as

mechanisms through which intergroup contact affects acculturation preferences. It also focuses on the preferences of members of the receiving society, who play an important role in acculturation processes of migrants.

Future studies should attempt to replicate the present findings for the receiving society in different national contexts and with different social groups. It is important to investigate potential moderators of the cross-group friendship-acculturation link (e.g., being a migrant vs. a member of the receiving society; dissimilarity of cultural background) as well as omitted factors that may influence the acculturation preferences and hinder the development of cross-group friendships, namely anxiety, empathy, and perspective-taking (see Tropp & Pettigrew, 2005a, 2005b).

**Practical Implications**

The present research provides evidence that the number of cross-group friends and the quality of cross-group friendship promote both acculturation preferences (culture maintenance and culture adoption) via outgroup trust and group similarity. The knowledge about these antecedents enables us to find ways to lessen the gap that often exists between the preferences of the migrants and the receiving society, and, therefore, improve intergroup relations both inside and outside schools. Schools are especially critical for children to learn social skills and how to deal with different others (Ainscow, 2009). Consequently, we need to develop strategies for building trust and group similarity in school contexts. For example, one might provide conditions in schools that facilitate the development of harmonious and supportive acculturation preferences, especially support for the more critical dimension culture maintenance. Thus, structured school interventions could aim to facilitate intergroup contact and cross-group friendship through cooperative learning environments and the creation of an inclusive classroom environment.



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Tables and Figures

Table 1  
Descriptive Statistics

Items		Range	<i>M</i>	<i>SD</i>	$\alpha$	<i>r</i> <sub>SB</sub>	<i>r</i> <sub><i>T</i><sub>1</sub>-<i>T</i><sub>2</sub></sub>	<i>r</i> <sub><i>T</i><sub>2</sub>-<i>T</i><sub>3</sub></sub>	<i>r</i> <sub><i>T</i><sub>1</sub>-<i>T</i><sub>3</sub></sub>
Cross-group friendship (quality)									
<i>T</i> <sub>1</sub>	12 (3 parcels)	1.00-7.00	4.99	1.59	.92	–			
<i>T</i> <sub>2</sub>	12 (3 parcels)	1.00-7.00	5.00	1.50	.91	–			
<i>T</i> <sub>3</sub>	12 (3 parcels)	1.50-7.00	5.14	1.44	.90	–	.67***	.67***	.53***
Cross-group friendship (quantity)									
<i>T</i> <sub>1</sub>	1	0-10	2.89	3.29	–	–			
<i>T</i> <sub>2</sub>	1	0-10	2.63	3.15	–	–			
<i>T</i> <sub>3</sub>	1	0-10	1.94	3.00	–	–	.43***	.60***	.44***
Group Similarity									
<i>T</i> <sub>1</sub>	2	1.00-7.00	3.39	1.90	–	.79			
<i>T</i> <sub>2</sub>	2	1.00-7.00	3.48	1.79	–	.81			
<i>T</i> <sub>3</sub>	2	1.00-7.00	3.68	1.82	–	.83	.48***	.53***	.34***
Outgroup Trust									
<i>T</i> <sub>1</sub>	2	1.00-7.00	4.25	1.53	–	.55			
<i>T</i> <sub>2</sub>	2	1.00-7.00	4.17	1.46	–	.60			
<i>T</i> <sub>3</sub>	2	1.00-7.00	4.18	1.42	–	.64	.45***	.61***	.49***
Acculturation Preference Culture Maintenance									
<i>T</i> <sub>1</sub>	3	1.00-7.00	4.63	1.78	.92	–			
<i>T</i> <sub>2</sub>	3	1.00-7.00	4.23	1.78	.94	–			
<i>T</i> <sub>3</sub>	3	1.00-7.00	4.10	1.78	.96	–	.44***	.60***	.38***
Acculturation Preference Culture Adoption									
<i>T</i> <sub>1</sub>	3	1.00-7.00	4.25	1.79	.89	–			
<i>T</i> <sub>2</sub>	3	1.00-7.00	3.92	1.79	.92	–			
<i>T</i> <sub>3</sub>	3	1.00-7.00	3.95	1.76	.95	–	.38***	.46***	.38***

Note. A mean score was used for each parcel of cross-group friendship (quality).

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.



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Table 2

*Comparisons of Autoregressive, Unidirectional, and Bidirectional Longitudinal Models*

Model	Model Fit	Model Comparison	Scaled Chi-square Difference Test
1a	$\chi^2(740) = 1123.96; p < .001; \chi^2/\text{df ratio} = 1.52; \text{CFI} = .960; \text{RMSEA} = .033; \text{SRMR} = .106$		
1b	$\chi^2(746) = 1129.80; p < .001; \chi^2/\text{df ratio} = 1.51; \text{CFI} = .960; \text{RMSEA} = .033; \text{SRMR} = .106$	1b vs. 1a	$\Delta\chi^2(6) = 6.08, p = .414$
2a	$\chi^2(730) = 1044.36; p < .001; \chi^2/\text{df ratio} = 1.43; \text{CFI} = .967; \text{RMSEA} = .030; \text{SRMR} = .059$		
2b	$\chi^2(738) = 1054.53; p < .001; \chi^2/\text{df ratio} = 1.43; \text{CFI} = .967; \text{RMSEA} = .030; \text{SRMR} = .061$	2b vs. 2a	$\Delta\chi^2(8) = 10.22, p = .250$
2c	$\chi^2(734) = 1041.97; p < .001; \chi^2/\text{df ratio} = 1.42; \text{CFI} = .968; \text{RMSEA} = .030; \text{SRMR} = .056$	2b vs. 2c	$\Delta\chi^2(4) = 12.68, p = .013$
		2c vs. 1b	$\Delta\chi^2(12) = 78.24, p < .001$
3a	$\chi^2(730) = 1078.25; p < .001; \chi^2/\text{df ratio} = 1.48; \text{CFI} = .964; \text{RMSEA} = .032; \text{SRMR} = .089$		
3b	$\chi^2(738) = 1086.00; p < .001; \chi^2/\text{df ratio} = 1.47; \text{CFI} = .964; \text{RMSEA} = .032; \text{SRMR} = .090$	3b vs. 3a	$\Delta\chi^2(8) = 7.53, p = .480$
		3b vs. 1b	$\Delta\chi^2(8) = 44.35, p < .001$
3c	$\chi^2(734) = 1083.70; p < .001; \chi^2/\text{df ratio} = 1.48; \text{CFI} = .963; \text{RMSEA} = .032; \text{SRMR} = .089$	3b vs. 3c	$\Delta\chi^2(4) = 2.57, p = .631$
		3b vs. 2c	$\Delta\chi^2(4) = 31.18, p < .001$
4a	$\chi^2(714) = 1004.01; p < .001; \chi^2/\text{df ratio} = 1.41; \text{CFI} = .970; \text{RMSEA} = .029; \text{SRMR} = .048$		
4b	$\chi^2(730) = 1019.90; p < .001; \chi^2/\text{df ratio} = 1.40; \text{CFI} = .970; \text{RMSEA} = .029; \text{SRMR} = .053$	4b vs. 4a	$\Delta\chi^2(16) = 15.97, p = .455$
4c	$\chi^2(726) = 1010.01; p < .001; \chi^2/\text{df ratio} = 1.39; \text{CFI} = .970; \text{RMSEA} = .029; \text{SRMR} = .049$	4b vs. 4c	$\Delta\chi^2(4) = 9.82, p = .004$
		4c vs. 1b	$\Delta\chi^2(20) = 114.88, p < .001$
		4c vs. 2c	$\Delta\chi^2(8) = 34.06, p < .001$
		4c vs. 3b	$\Delta\chi^2(12) = 70.35, p < .001$

*Note.* CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; 1a = autoregressive model (freely estimated parameters); 1b = autoregressive model (within construct path equivalence); 2a = unidirectional forward model (freely estimated parameters); 2b = unidirectional forward model (within construct path equivalence); 2c = direct-indirect unidirectional forward model (unidirectional forward model 2b + direct paths); 3a = unidirectional reverse model (freely estimated parameters); 3b = unidirectional reverse model (within construct path equivalence); 3c = direct-indirect unidirectional reverse model (unidirectional reverse 3b + direct paths); 4a = bidirectional model (paths freely estimated); 4b = bidirectional model (within construct path equivalence for new paths); 4c = direct-indirect bidirectional model (bidirectional 4b + direct forward paths).

When comparing more restrictive and less restrictive versions of the same model (1b vs. 1a, 2b vs. 2a, 3b vs. 3a, 4b vs. 4a), the more restrictive model of the two being compared should not result in a significant worsening in model fit ( $p < .05$ ) for it to be retained. When comparing different models to one another (2c vs. 2b, 2c vs. 1b, 3b vs. 1b, 4c vs. 1b, 4c vs. 2c, 4c vs. 3b) only those models that produce a significant improvement in model fit ( $p < .05$ ) are retained.  $\chi^2/\text{df ratios} < 2:1$ ;  $N = 467$

Table 3  
Summary of Direct-Indirect Unidirectional Forward Model (Within Construct Path Equivalence) (Model 2c)

		<i>B</i>	<i>SE B</i>	<i>p</i>
<i>T</i> <sub>3</sub> APCM	<i>T</i> <sub>1</sub> Qual CG-F	.23	.08	.004
	<i>T</i> <sub>1</sub> # CG-F	.01	.02	.601
	<i>T</i> <sub>2</sub> OG Trust	.20	.07	.005
	<i>T</i> <sub>2</sub> Group Similarity	.05	.05	.323
	<i>T</i> <sub>2</sub> APCM	.39	.05	<.001
<i>T</i> <sub>3</sub> APCA	<i>T</i> <sub>1</sub> Qual CG-F	.13	.08	.119
	<i>T</i> <sub>1</sub> # CG-F	.01	.03	.585
	<i>T</i> <sub>2</sub> OG Trust	.13	.07	.086
	<i>T</i> <sub>2</sub> Group Similarity	.13	.05	.014
	<i>T</i> <sub>2</sub> APCA	.33	.05	<.001
<i>T</i> <sub>3</sub> Group Similarity	<i>T</i> <sub>2</sub> Qual CG-F	.22	.06	<.001
	<i>T</i> <sub>2</sub> # CG-F	.06	.02	.008
	<i>T</i> <sub>2</sub> Group Similarity	.46	.05	<.001
<i>T</i> <sub>3</sub> OG Trust	<i>T</i> <sub>2</sub> Qual CG-F	.16	.06	.012
	<i>T</i> <sub>2</sub> # CG-F	.03	.02	.036
	<i>T</i> <sub>2</sub> OG Trust	.59	.08	<.001
<i>T</i> <sub>3</sub> Qual CG-F	<i>T</i> <sub>2</sub> Qual CG-F	.70	.05	<.001
<i>T</i> <sub>3</sub> # CG-F	<i>T</i> <sub>2</sub> # CG-F	1.06	.09	<.001

*Note:* Full longitudinal forward model with latent constructs and the observed variable number of cross-group friends showing the partial mediation of the relationship between cross-group friendship and the two forms of acculturation preferences over time via group similarity and outgroup trust (Model 2c). Due to the equality constraint between constructs, the pattern of significant relationships from *T*<sub>1</sub> to *T*<sub>2</sub> data panel corresponds with that from *T*<sub>2</sub> to *T*<sub>3</sub> data panel.  
Chilean sub-sample (*N* = 467):  $\chi^2(734) = 1041.97$ ; *p* < .001; CFI = .968; RMSEA = .030; SRMR = .056.  
Unstandardized coefficients (the standardized loadings are not invariant, since state-factor and residuals are not restricted, see Geiser, 2010).

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Table 4

*Significance of the Mediation Effects for the Paths in the Direct-Indirect Unidirectional Forward Model 2c*

	$T_1$	$T_2$	$T_3$	Size of Indirect Effect (B)	95% Confidence Interval		$p$ -value of Effects	$P_M$
					Lower Limit	Upper Limit		
Forward paths ( $T_1$ number and quality of cross-group friendship $\rightarrow T_2$ mediators $\rightarrow T_3$ acculturation preferences)								
Sum of total effect	Qual CG-F		APCM	.27	.14	.40	.001	
Sum of indirect effect	Qual CG-F		APCM	.04	.01	.07	.013	.15
	Qual CG-F	Group Similarity	APCM	.01	-.01	.03	.319	.04
	Qual CG-F	OG Trust	APCM	.03	.01	.05	.033	.12
Direct	Qual CG-F		APCM	.23	.10	.36	.004	
Sum of total effect	Qual CG-F		APCA	.18	.04	.32	.033	
Sum of indirect effect	Qual CG-F		APCA	.05	.02	.07	.002	.26
	Qual CG-F	Group Similarity	APCA	.03	.01	.05	.027	.15
	Qual CG-F	OG Trust	APCA	.02	.00	.04	.104	.11
Direct	Qual CG-F		APCA	.13	-.01	.30	.119	
Sum of total effect	# CG-F		APCM	.02	-.02	.06	.385	
Sum of indirect effect	# CG-F		APCM	.01	.00	.02	.057	.43
	# CG-F	Group Similarity	APCM	.00	-.00	.01	.375	.14
	# CG-F	OG Trust	APCM	.01	.00	.01	.077	.29
Direct	# CG-F		APCM	.01	-.03	.05	.601	
Sum of total effect	# CG-F		APCA	.02	-.02	.07	.335	
Sum of indirect effect	# CG-F		APCA	.01	.00	.02	.015	.46
	# CG-F	Group Similarity	APCA	.01	.00	.01	.063	.29
	# CG-F	OG Trust	APCA	.00	-.00	.01	.156	.17
Direct	# CG-F		APCA	.01	-.03	.06	.585	

*Note.* Unstandardized coefficients. Explanation of the abbreviations:  $P_M$  = ratio of the indirect effect to the total effect; CG-F = Cross-group Friends/Friendship; Qual = Qualitative; # = Number of; OG = Outgroup; APCM = Acculturation Preference Culture Maintenance; APCA = Acculturation Preference Culture Adoption.

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Table 5  
Summary of Direct-Indirect Bidirectional Model (Within *Construct Path Equivalence*) (*Model 4c*)

		<i>B</i>	<i>SE B</i>	<i>p</i>			<i>B</i>	<i>SE B</i>	<i>p</i>
Forward paths					Reverse paths				
<i>T</i> <sub>3</sub> APCM	<i>T</i> <sub>1</sub> Qual CG-F	.20	.08	.011					
	<i>T</i> <sub>1</sub> # CG-F	.02	.02	.535					
	<i>T</i> <sub>2</sub> OG Trust	.22	.07	.002					
	<i>T</i> <sub>2</sub> Group Similarity	.04	.05	.353					
	<i>T</i> <sub>2</sub> APCM	.41	.05	<.001					
<i>T</i> <sub>3</sub> APCA	<i>T</i> <sub>1</sub> Qual CG-F	.11	.09	.183					
	<i>T</i> <sub>1</sub> # CG-F	.01	.03	.563					
	<i>T</i> <sub>2</sub> OG Trust	.14	.07	.061					
	<i>T</i> <sub>2</sub> Group Similarity	.12	.05	.018					
	<i>T</i> <sub>2</sub> APCA	.35	.05	<.001					
<i>T</i> <sub>3</sub> Group Similarity	<i>T</i> <sub>2</sub> Qual CG-F	.15	.06	.008	<i>T</i> <sub>3</sub> Group Similarity	<i>T</i> <sub>2</sub> APCM	.05	.05	.379
	<i>T</i> <sub>2</sub> # CG-F	.06	.02	.007		<i>T</i> <sub>2</sub> APCA	.14	.05	.006
	<i>T</i> <sub>2</sub> Group Similarity	.40	.05	<.001					
<i>T</i> <sub>3</sub> OG Trust	<i>T</i> <sub>2</sub> Qual CG-F	.13	.06	.027	<i>T</i> <sub>3</sub> OG Trust	<i>T</i> <sub>2</sub> APCM	.11	.04	.014
	<i>T</i> <sub>2</sub> # CG-F	.03	.01	.030		<i>T</i> <sub>2</sub> APCA	-.01	.04	.743
	<i>T</i> <sub>2</sub> OG Trust	.54	.08	<.001					
<i>T</i> <sub>3</sub> Qual CG-F	<i>T</i> <sub>2</sub> Qual CG-F	.64	.06	<.001	<i>T</i> <sub>3</sub> Qual CG-F	<i>T</i> <sub>2</sub> OG Trust	.16	.07	.028
						<i>T</i> <sub>2</sub> Group Similarity	-.04	.04	.321
<i>T</i> <sub>3</sub> # CG-F	<i>T</i> <sub>2</sub> # CG-F	1.12	.16	<.001	<i>T</i> <sub>3</sub> # CG-F	<i>T</i> <sub>2</sub> OG Trust	.14	.12	.218
						<i>T</i> <sub>2</sub> Group Similarity	-.17	.10	.077

*Note:* Full longitudinal forward model with latent constructs and the observed variable number of cross-group friends showing the bidirectional partial mediation of the relationship between cross-group friendship and the two forms of acculturation preferences over time via group similarity and outgroup trust (Model 4c). Due to the equality constraint between constructs, the pattern of significant relationships from *T*<sub>1</sub> to *T*<sub>2</sub> data panel corresponds with that from *T*<sub>2</sub> to *T*<sub>3</sub> data panel. Chilean sub-sample (*N* = 467):  $\chi^2(726) = 1010.01$ ;  $p < .001$ ;  $\chi^2/\text{df}$  ratio = 1.39; CFI = .970; RMSEA = .029; SRMR = .049. Unstandardized coefficients (the standardized loadings are not invariant, since state-factor and residuals are not restricted, see Geiser, 2010).

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Table 6

*Significance of the Mediation Effects for the Forward and Reverse Paths in the Bidirectional Model 4c*

				95% Confidence Interval		p-Value of Effects	P <sub>M</sub>
T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Size of Indirect Effect (B)	Lower Limit	Upper Limit		
Forward paths (T <sub>1</sub> number and quality of cross-group friendship → T <sub>2</sub> mediators → T <sub>3</sub> acculturation preferences)							
Sum of total effect	Qual CG-F		APCM	.24	.11	.35	.003
Sum of indirect effect	Qual CG-F		APCM	.04	.01	.06	.018
	Qual CG-F	Group Similarity	APCM	.01	-.01	.02	.355
	Qual CG-F	OG Trust	APCM	.03	.01	.05	.045
Direct	Qual CG-F		APCM	.20	.07	.33	.011
Sum of total effect	Qual CG-F		APCA	.15	.01	.29	.078
Sum of indirect effect	Qual CG-F		APCA	.04	.01	.06	.007
	Qual CG-F	Group Similarity	APCA	.02	.00	.04	.068
	Qual CG-F	OG Trust	APCA	.02	.00	.04	.103
Direct	Qual CG-F		APCA	.11	-.03	.26	.183
Sum of total effect	# CG-F		APCM	.02	-.02	.06	.321
Sum of indirect effect	# CG-F		APCM	.01	.00	.02	.045
	# CG-F	Group Similarity	APCM	.00	-.00	.01	.393
	# CG-F	OG Trust	APCM	.01	.00	.01	.061
Direct	# CG-F		APCM	.02	-.02	.05	.535
Sum of total effect	# CG-F		APCA	.03	-.02	.07	.317
Sum of indirect effect	# CG-F		APCA	.01	.00	.02	.012
	# CG-F	Group Similarity	APCA	.01	.00	.01	.066
	# CG-F	OG Trust	APCA	.00	.00	.01	.132
Direct	# CG-F		APCA	.01	-.03	.06	.563

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95% Confidence Interval								
	$T_1$	$T_2$	$T_3$	Size of Indirect Effect (B)	Lower Limit	Upper Limit	$p$ -Value of Effects	$P_M$
Reverse paths ( $T_1$ acculturation preferences $\rightarrow T_2$ mediators $\rightarrow T_3$ number and quality of cross-group friendship)								
Sum of indirect effect	APCM		Qual CG-F	.02	.00	.03	.092	–
	APCM	Group Similarity	Qual CG-F	-.00	-.01	.00	.519	–
	APCM	OG Trust	Qual CG-F	.02	.00	.03	.083	–
Sum of indirect effect	APCA		Qual CG-F	-.01	-.02	.01	.406	–
	APCA	Group Similarity	Qual CG-F	-.01	-.02	.01	.358	–
	APCA	OG Trust	Qual CG-F	-.00	-.01	.01	.753	–
Sum of indirect effect	APCM		# CG-F	.00	-.01	.02	.630	–
	APCM	Group Similarity	# CG-F	-.00	-.01	.01	.424	–
	APCM	OG Trust	# CG-F	.00	-.00	.02	.269	–
Sum of indirect effect	APCA		# CG-F	-.01	-.03	.00	.130	–
	APCA	Group Similarity	# CG-F	-.01	-.03	.00	.143	–
	APCA	OG Trust	# CG-F	-.00	-.01	.00	.751	–

*Note.* Unstandardized coefficients. The between construct paths for the indirect paths have an equality constriction over time, so that the indirect effects from  $T_1$  acculturation to  $T_2$  mediators to  $T_3$  acculturation mirror the paths from  $T_1$  mediators to  $T_2$  to acculturation to  $T_3$  mediators.  $P_M$  cannot be calculated for the reverse paths, since we did not include direct paths. Explanation of the abbreviations:  $P_M$  = ratio of the indirect effect to the total effect; CG-F = Cross-group Friends/Friendship; Qual = Qualitative; # = Number of; OG = Outgroup; APCM = Acculturation Preference Culture Maintenance; APCA = Acculturation Preference Culture Adoption.

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## Supplementary Materials: Peruvian Data

Table S1

## Descriptive Statistics

	Items	Range	<i>M</i>	<i>SD</i>	$\alpha$	<i>r</i> <sub>SB</sub>	<i>r</i> <sub><i>T</i><sub>1</sub>-<i>T</i><sub>2</sub></sub>	<i>r</i> <sub><i>T</i><sub>2</sub>-<i>T</i><sub>3</sub></sub>	<i>r</i> <sub><i>T</i><sub>1</sub>-<i>T</i><sub>3</sub></sub>
Cross-group friendship (quality)									
<i>T</i> <sub>1</sub>	12 (3 parcels)	2.17-7.00	5.76	.96	.84	—			
<i>T</i> <sub>2</sub>	12 (3 parcels)	2.58 -7.00	5.70	.98	.83	—			
<i>T</i> <sub>3</sub>	12 (3 parcels)	2.00 -7.00	5.65	1.11	.92	—	.62***	.83***	.70***
Cross-group friendship (quantity)									
<i>T</i> <sub>1</sub>	1	0-10	6.95	3.48	—	—			
<i>T</i> <sub>2</sub>	1	0-10	6.97	3.56	—	—			
<i>T</i> <sub>3</sub>	1	0-10	6.62	3.36	—	—	.52***	.59***	.51
Group Similarity									
<i>T</i> <sub>1</sub>	2	1.00-7.00	3.94	1.70	—	.78			
<i>T</i> <sub>2</sub>	2	1.00-7.00	4.12	1.71	—	.80			
<i>T</i> <sub>3</sub>	2	1.00-7.00	4.50	1.48	—	.71	.43***	.62***	.38***
Outgroup Trust									
<i>T</i> <sub>1</sub>	2	1.00-7.00	4.25	1.33	—	.54			
<i>T</i> <sub>2</sub>	2	1.00-7.00	4.46	1.37	—	.69			
<i>T</i> <sub>3</sub>	2	2.00-7.00	4.85	1.13	—	.52	.50***	.45***	.33***
Acculturation Preference Culture Maintenance									
<i>T</i> <sub>1</sub>	3	1.67-7.00	5.59	1.15	.92	—			
<i>T</i> <sub>2</sub>	3	1.00-7.00	5.23	1.46	.94	—			
<i>T</i> <sub>3</sub>	3	1.00-7.00	4.98	1.44	.96	—	.44***	.63***	.70***
Acculturation Preference Culture Adoption									
<i>T</i> <sub>1</sub>	3	1.00-7.00	4.69	1.45	.86	—			
<i>T</i> <sub>2</sub>	3	1.00-7.00	4.79	1.62	.94	—			
<i>T</i> <sub>3</sub>	3	1.00-7.00	4.76	1.45	.94	—	.21	.59***	.32***

Note. A mean score was used for each parcel of cross-group friendship (quality).

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

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Table S2  
*Intercorrelation Matrix Among the 18 Latent Variables for the Peruvian Sample*

Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 T1 Qual CG-F	—																	
2 T1 # CG-F	.12	—																
3 T1 Similarity	.24*	.19	—															
4 T1 OG Trust	.12	.07	.36***	—														
5 T1 APCM	.28*	.01	.17	-.19	—													
6 T1 APCA	.07	.18	.31**	.11	.41***	—												
7 T2 Qual CG-F	.62***	.21	-.01	.18	.17	-.06	—											
8 T2 # CG-F	.09	.52***	.24**	.10	.04	.29**	.09	—										
9 T2 Similarity	.02	.14	.43***	.24*	.06	.24*	.08	.13	—									
10 T2 OG Trust	.15	.21	.32**	.50***	-.13	.15	.29*	.25*	.54***	—								
11 T2 APCM	.31**	-.08	.09	.02	.44***	.05	.35**	-.01	.19	.01	—							
12 T2 APCA	.10	.07	.15	.08	.13	.21	.29*	.03	.43***	.25*	.52***	—						
13 T3 Qual CG-F	.70***	.10	.17	.21	.19	-.10	.83***	.13	.06	.16	.34**	.12	—					
14 T3 # CG-F	.21	.51***	.18	-.02	.00	.12	.16	.59***	.04	.21	-.03	-.05	.32	—				
15 T3 Similarity	.18	.33**	.38**	.28*	.06	.40***	.23	.23*	.62***	.44***	.27*	.37**	.22	.09	—			
16 T3 OG Trust	.26*	.15	.10	.33**	-.02	.00	.24	-.15	.33**	.45***	.11	.26*	.28*	.06	.31**	—		
17 T3 APCM	.47***	.13	.16	.17	.33**	.16	.36**	-.09	.06	.14	.63***	.35**	.38**	.08	.33**	.32**	—	
18 T3 APCA	.09	.16	.06	.18	.14	.32**	.19	-.07	.17	.12	.37**	.59***	.06	-.02	.28*	.27*	.54***	—

*Note.* Peruvian sub-sample ( $N = 102$ ). Explanation of the abbreviations: Qual CG-F = Quality of Cross-Group Friendship; # CG-F = Quantity of Cross-Group Friendship; OG = Outgroup; APCM = Acculturation Preference Culture Maintenance; APCA = Acculturation Preference Culture Adoption.  
\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



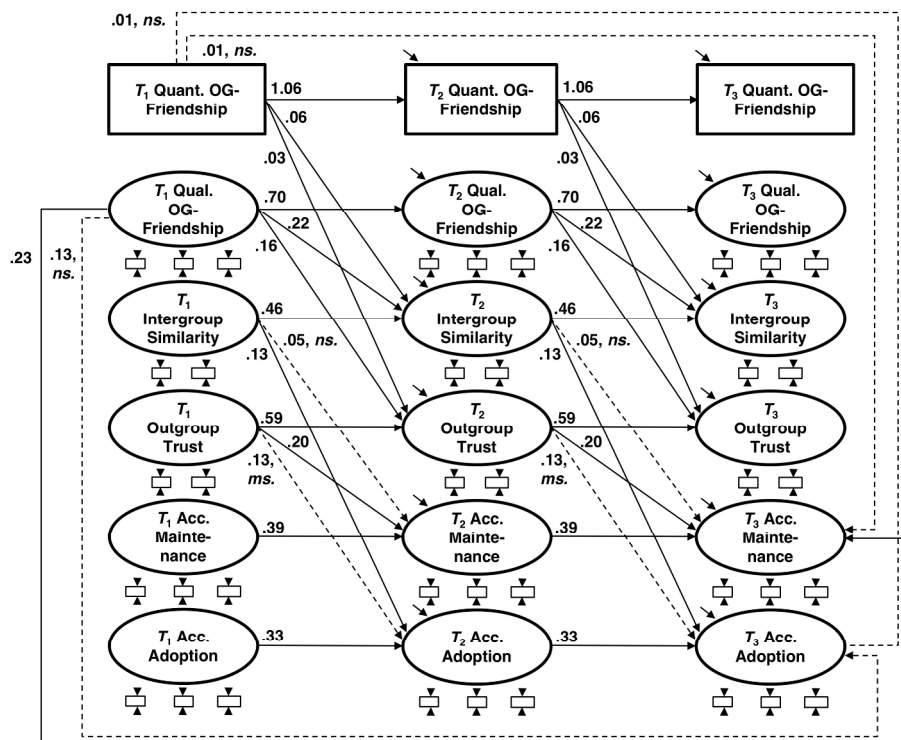


Figure 1. Explanation of the abbreviations: ms. = marginal significant. Full longitudinal forward model with latent constructs and the observed variable number of cross-group friends showing the partial mediation of the relationship between cross-group friendship and the two forms of acculturation preferences over time via group similarity and outgroup trust (Model 2c in Table 2). Chilean sub-sample ( $N = 467$ ):  $2(734) = 1041.97$ ;  $p < .001$ ; CFI = .968; RMSEA = .030; SRMR = .056. Unstandardized coefficients; the dotted lines show non-significant paths (for clarity, covariates within time points were not depicted).

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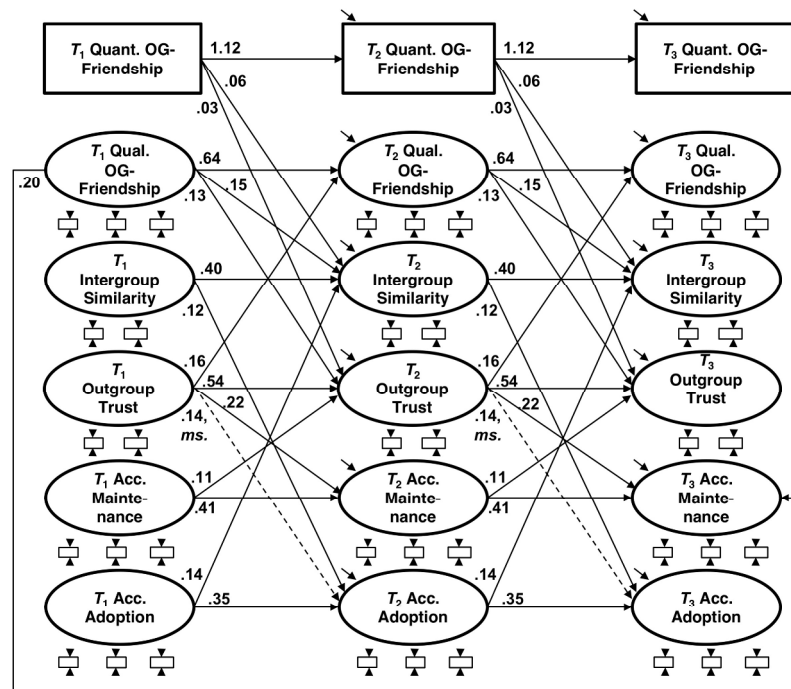


Figure 2. Explanation of the abbreviations: ms. = marginal significant. A longitudinal bidirectional mediation model with latent constructs and the observed variable number of cross-group friends showing the partial mediation of cross-group friendship effects on acculturation preferences (Model 4c in Table 2). Chilean subsample (N = 467):  $2(726) = 1010.01$ ;  $p < .001$ ; CFI = .970; RMSEA = .029; SRMR = .049. Unstandardized coefficients (for clarity, covariates within time points and non-significant paths were not depicted).

1057x793mm (72 x 72 DPI)