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Contextual Variations in Associations Between Measures of Aggression and Withdrawal and Functioning With Peers: A Replication Study

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Data from 790 older school-age (M_{age} = 10.2 years, *SD* = 1.2 years) girls (*N* = 427) and boys from Barranquilla, Colombia (*N* = 449) and Montréal, Canada (*N* = 331) were used to replicate findings reported by Valdivia et al. (2005). This prior study revealed contextual variations in the association between two measures of social behavior, specifically aggression and withdrawal, and two measures of effective functioning with peers, specifically sociometric preference and friendship. The Montréal participants were primarily from families with European backgrounds. The ethnicity of the participants from Barranquilla can be described as Latinx/Caribbean. Multilevel analyses provided evidence of replication of place differences only for the associations

between measures of aggression and sociometric preference. Stronger negative associations were observed between (a) measures of aggression and socio- metric preference, (b) measures of withdrawal and sociometric preference, and (c) withdrawal and friendship in peer groups that were high in collectivism. These findings are interpreted as largely replicating the deep structure of the findings from the Valdivia et al. study.

***Keywords**:* peer relations, culture, replication, collectivism

An enduring question in research on peer relationships concerns the association between children's social behavior and their effective functioning in the peer group (see Newcomb et al., 1993; Parker & Asher, 1987; Rubin et al., 2006). Studies addressing this issue typically examine how measures of social behavior such as aggression, withdrawal, and sociability are associated with measures of liking by peers, particularly measures of peer acceptance, sociometric preference (i.e., relative likeableness among peers), and friendship engagement (Rubin et al., 2016). An important and growing component of the large literature on peer relations includes studies aimed at assessing contextual variations in these associations. In the present study our interest is with a set of findings reported by Valdivia et al. (2005). They reported that the associations between measures of aggression and withdrawal and measures of sociometric preference and friendship were stronger (i.e., more negative) in a sample of older school-age children from a city in Cuba than in a sample of similarly aged children from a Canadian city. These authors chose these two places for their comparative analyses because they were identified as differing on the cultural dimensions of individualism and collectivism. The differences between the patterns of associations observed in these two places supports the claim that contextual analyses are critical for our understanding of the dynamics of children's experiences with peers (Chen et al., 2006).

Contextual differences observed in studies of peer relations can be interpreted from at least two interrelated perspectives. According to cultural approaches, the importance of particular behaviors for liking will vary according to the significance

ascribed to them by prevailing cultural values or by injunctive norms or expectations (Bukowski & Sippola, 1998; Chen & French, 2008; Chen et al., 2006). Cultural studies have typically emphasized the dimensions of individualism and collectivism. Whereas individualism ascribes significance to behaviors that are aligned with self-assertion and self-reliance, collectivism ascribes significance to behaviors that promote interpersonal sensitivity, social connections, and interpersonal support.

Another approach emphasizes processes at the level of the group, especially with respect to the concept of "normative fit." According to this concept, the effect of individual-level behaviors on liking and disliking will vary across groups as a function of group norms, particularly descriptive norms (Wright et al., 1986). The central claim of the concept of normative fit is that the association between a particular behavior and acceptance and rejection will vary to the degree that the behavior is consistent or inconsistent with a descriptive group norm. Support for this approach is found in studies of aggression, prosocial behavior, and academic achievement (e.g., Bass et al., 2021; Boivin et al., 1995; Chang, 2004; Stormshak et al., 1999). It is important to recognize that the essential feature of this approach is that liking derives from the intersection between behaviors at the level of the person and norms at the level of the group.

The study by Valdivia et al. is a widely cited exception to the relative paucity of culturally informed comparative studies of the associations between measures of social behaviors and effective functioning with peers. This study assessed differences in associations between peer measures observed with older school- age children in two places. One place was Santa Clara, a city in southeastern Cuba whose culture was presumed to value collectivism more highly; the other place was London, a city in Ontario, Canada whose culture was presumed to place less value on collectivism. Their study was partly organized around the idea that the negative effects of aggression and withdrawal on being liked by peers would be stronger in contexts that emphasize collectivism. The aggression-related findings from the Valdivia et al. (2005) indicated that (a) the negative association between a measure of aggression and a measure of sociometric preference was equal for the fourth grade participants from Cuba and Canada (coefficients = -.28 in both Cuba and Canada), but stronger (i.e., more negative) for the sixth graders from Cuba (-.42) than those from Canada (-.30), and

(b) the negative association between aggression and friendship was stronger for the participants from Cuba than for children from Canada, but more so for the fourth graders (coefficients = -.37 and -.17, respectively) than for the sixth graders (coefficients = -.23 and -.13, respectively). Similar findings were observed with the measure of withdrawal: (a) the negative association between withdrawal and sociometric preference was equal for the fourth grade participants from Cuba and Canada (coefficients = -.06 in Cuba and .02 in Canada), but more negative for the sixth graders from Cuba (-.35) than those from Canada (-.23), and (b) the association between withdrawal and friendship was equal for the fourth graders (.02 and -.08 for the Cuban and Canadian fourth graders, respectively), but stronger for Cuban sixth graders (-.30) than for Canadian sixth graders (-.08).

Valdivia et al. attributed these differences to the higher level of collectivism in the cultural context of Cuba relative to that of Canada. Although this interpretation may be reasonable, it is nevertheless constrained by two limitations of this otherwise compelling study. The first is that their interpretation is inferential. It is premised on the essentialist assumption that the cultural contexts of the Cuban and Canadian cities where the participants live differ on the dimension of collectivism and that this particular difference between the two contexts accounts for the differences in the correlations observed in the two samples. Without having a measure of collectivism that would have directly assessed their hypotheses, their interpretation is necessarily based on an assumption. Relatedly, the second limitation is that they treat each of the two contexts where the participants are situated as single entities. In doing so they imply that each of the two places has a homogeneous culture that is shared by all the participants regardless of the features of the specific contexts where they function. This practice reflects what is known as the “ecological fallacy” (Brewer & Venaik, 2014).

The ecological fallacy occurs when features or conditions that are known to exist, or presumed to exist, at a group or aggregate level are treated as if they apply to all the subgroups and individuals who make up the larger group context (Diez-Roux, 2007, 2009). It can be described succinctly as a form of over generalization. This is problematic because it glosses over within group variability and fails to assess the effects of contextual features that are most proximal to the individual. It should be noted that

there is already evidence of within-culture variability in the value placed on dimensions of individualism and collectivism (Green et al., 2005). A consequence of the ecological fallacy is that the interpretation of findings is overly reliant on essentialist assumptions about group characteristics. This problem can be solved by sampling subgroups or individuals within the larger context and making assessments of each subgroup or individuals on the measures of interest (Diez-Roux, 2004; King, 1997). This practice avoids the essential assumptions that are central to the ecological fallacy problem. In the present study we followed this recommended solution by using the classroom-based same-gender peer group as the social domain in a multilevel analysis (see DeLay & Bukowski, in press).

The Valdivia et al. (2005) study has many positive features including a relatively large sample, a set of strong measures applied consistently across the participants from each place, and important and interesting results. It also has two potentially important limitations beyond those already discussed. The first is that their measure of culture is likely to be confounded with socioeconomic status (SES). Beyond the cultural differences between them, the participants from Canada are likely to be from more affluent families than are the participants from Cuba. It is conceivable that the place differences observed by Valdivia et al. could be due, at least in part, to differences in SES. Variations in SES may overlap with aspects of goal orientation and resource management that are linked to dimensions of culture (Cohen, 2009). Upper-middle class individuals may value individualism as a means of pursuing and obtaining resources and they may also ascribe significance to social engagement as a necessary condition for functioning in a competitive market place (Miyamoto et al., 2018). Accordingly, some forms of self-assertion may be valued more in upper-middle class contexts. This variation may manifest itself in lower levels of intolerance for aggressive behaviors. At the same time the need for market participation as a means of maintaining upper-middle class status and income may be manifested in children's negative views of peers who are at the periphery of the peer group. For this reason, studying SES and culture together may have important advantages. One can hypothesize that the effects of aggression will be more positive, or less negative, for upper middle class children.

An additional limitation of the Valdivia et al. (2005) study is the reliance on a

single conceptual perspective. Valdivia et al. emphasized a cultural dimensions approach to understanding place differences to the exclusion of the approach that emphasizes the concept of fit. This focus on cultural dimensions to the exclusion of other perspectives is not necessarily problematic but it constrains the range of possible interpretations of observed findings. Even if one were to include measures of cultural dimensions, one would not be able rule out the effects of the other variables. To explore this hypothesis fully, a measure of collectivism as well as measures of group norms for aggression and withdrawal are needed. From a more general perspective, the use of multiple measures of group differences should be considered so that the relative value of the different approaches to understanding between- groups differences in the associations between peer measures can be identified.

The present study has four goals. The first is to assess whether the aggression-related and withdrawal-related findings reported by Valdivia et al. (2005) can be replicated in a sample that includes participants from upper- and lower-middle class neighborhoods in Barranquilla, Colombia and Montréal, Canada. In parallel to the sampling procedures of Valdivia et al. the participants in our study were drawn from two places. Colombia and Canada were chosen as comparison points based on evidence (see Globe Project, 2021; Hofstede Insights, 2021) that Colombian culture is higher in collectivism or lower in individualism and Canadian culture is higher in individualism or lower in collectivism. As previously noted, a Canadian location was used by Valdivia et al. as a place whose culture was believed to be lower in collectivism and higher in individualism and that a Cuban location was chosen as a place whose culture was believed to be lower in individualism and higher in collectivism.

The second goal of the current study can be seen as attempt to replicate the findings reported by Valdivia et al. We see this goal as addressing the surface structure of the prior paper in the sense that it is directed at repeating the manifest findings reported by Valdivia et al. The third and fourth goals of the study were concerned with the deep structure of the prior study. The deep structure of the prior study is concerned with the specific contextual factors other than place per se that account for between-group differences in the associations between peer measures. The third goal was concerned specifically with the effects of contextual variations in individualism and

collectivism. These two dimensions were used as the conceptual frame in the Valdivia et al. study. The fourth goal was to assess the effects of other contextual factors. These contextual factors include measures of gender, school grade, SES, descriptive group norms, and the interaction between grade and place. The interaction between grade and place was used to reassess the grade differences reported by Valdivia et al.

Our comparative analyses were conducted with multilevel modeling. In our models the participants were nested in groups comprised of the other participating same-gender peers from their school classroom. The classroom-based same-gender peer group was used as the "nest" because for most school-age children it is the primary social context where they interact with peers (Rubin et al., 2016). A three-step approach was used. The first model (Step 1), assessed the overall association between the two predictors (i.e., aggression and withdrawal) and one of the two outcome measures (i.e., either sociometric preference or friendship). This Step 1 model reveals the baseline association between the predictors and the out- come. The second model (Step 2) addressed the first goal of the study. A measure of place (i.e., Montréal or Barranquilla) was included in the Step 2 model as a group level variable. The model assessed whether the associations observed in the Step 1 model between aggression and the outcome variable and withdrawal and the outcome measure differed for the groups from Montréal and Barranquilla. The third model (Step 3) addressed the second goal of the study, such that it expanded on the Step 2 model by examining whether the associations observed in the Step 1 model varied across the groups. In addition to the measure of place, the Step 3 model included other group-level variables previously mentioned, including whether it was a group of girls or a group of boys, SES, school grade, the interaction between place and grade, and the group means on individualism and collectivism and on aggression and withdrawal. The place by grade interaction was included to examine grade-related place differences observed by Valdivia et al.

Method

Participants

Children from 34 fourth, fifth, and sixth grade classrooms (N = 790; 427 girls; M_{age} = 10.2 years, SD = 1.2 years) in mixed-gender schools located in lower-middle and

upper-middle class neighbor- hoods in Barranquilla, Colombia (five schools; *N* = 449) and Montréal, Canada (three schools; *N* = 331) participated in the study. The participants from Montreal represented the diverse international ethnic mix that is characteristic of the city. The majority of the children (i.e., more than 80%) were from families with European backgrounds especially from France, Italy, Ireland, and the United Kingdom. The remaining children were from families whose origins include the Middle- and Far-East, and the Maghreb. The majority of the children in the Montreal sample were White. The ethnicity of the participants from Barranquilla can be described as Latinx/Caribbean. The majority of the participants (over 85%) are Mestizo (i.e., mixed race). The remaining participants would be distributed across the categories of *Afrocolombiano*, *Romany*, and indigenous. In Colombia, the designation of upper- or lower-middle class was based on the government assigned *estrato* index of neighborhood SES. Based on housing and material resource indicators (Rueda-Garcia, 2003), *estrato* scores range from 1 to 6, with higher scores indicating greater affluence. The mean *estrato* score for the children from lower- middle SES schools was 2.52 (*SD* = .70), indicating that the participants at the low-SES schools were within the lower socioeconomic strata. School administrators from the upper-middle class school in Barranquilla indicated that children in this school were largely from *estrato* 6 and, to a smaller extent, and *estrato* 5 neighborhoods. SES for the Montréal children was based on the average family income of the children in their school. Parents completed a questionnaire on which they selected the income level (from 10 choices ranging from below $15,000 to over $95,000 CDN) that was closest to that of household in the previous year. There were large differences between the three Montréal schools. The means for family income for the three schools were $36,027, $68,400, and $79,194. The first school was designated as lower-middle class, whereas the second and third schools were designated as upper-middle class. Information from the 2001 Canadian census, the census conducted closest to the time of the data collection, indicated that the mean family income of participants from the first school was considerably lower than the provincial average of $59,296, whereas the mean family income of participants in the latter two schools was above the provincial average (Statistics Canada, 2002). It is worth noting that the differences between the resources of the

upper- and lower-middle class children are likely larger in the Barranquilla sample than the Montréal sample.

In Barranquilla, the parents of the potential participants were informed by the school principal of the purposes and procedures of the study and that participation in the study was voluntary. Parents could ask that their child not be included in the study. Each participating child provided assent to be in the study. In Montréal, after permission was received from the first author's university, the school commission, and the individual schools, an active consent procedure was used to obtain permission from parents to allow their children to participate in the study. Using these recruitment procedures, participation rates of over 85% and 90% were obtained in Montréal and Barranquilla, respectively.

Procedure

As part of their participation in a larger study, the children completed a questionnaire at their desks in their school classrooms in a group administration. At least three members of the research team were in the classrooms during the data collections to ensure the children understood the instructions and the questions. The questionnaire used with the participants from Barranquilla was translated into Spanish by professionals working in the areas of education and psychology, and then back-translated into English by a separate group of translators to ensure that the meaning of items was retained.

Measures

Consistent with the procedures used by Valdivia et al. (2005), the children completed three measures. They were an unlimited- choice peer assessment procedure, two unlimited-choice sociometric measures, and a self-report measure.

Peer Assessments of Aggression and Withdrawal

With each sample a peer assessment procedure was used to measure aggression and withdrawal. Each construct was measured with three items. These items are shown in Table 1. With the peer assessment procedure each participant was given a list of all the

participating children in their class and a list of several characteristics and behaviors. They were asked to indicate which of their participating classmates fit each characteristic or behavior in the list. Each child was given a score on each item indicating how often they were nominated for it by their participating same-gender classroom peers. A procedure developed by Velásquez et al. (2013) was used to adjust these observed scores for potential biases that may result from variations in group size. Scores for each construct were created by calculating the mean of the adjusted scores for the items in each measure. When the reliability was assessed with Cronbach's a the observed values were .83 and .79 for the measure of withdrawal for the Montreal and Barranquilla participants, respectively, and .87 and .83 for the measure of aggression for the Montreal and Barranquilla participants, respectively.

Sociometric Preference

Sociometric preference is a measure of relative likeableness (Bukowski & Hoza, 1989; Newcomb & Bukowski, 1983). It refers to the difference between how much a child is liked by peers and how much a child is disliked by peers. It is computed by subtracting a child's score on a measure of peer rejection from the child's score on a measure of peer acceptance (Bukowski et al., 2000). Two measures of peer acceptance were computed. One measure was computed using a traditional unlimited choice nomination procedure in which children identified the participating peers whom they perceived to be their friends (Bukowski et al., 2012). Children identified the same-gender peers whom they perceived to be their first best friend, their second best friend, and their third best friend, and any other same-gender peers whom they perceived to be a friend. A nomination-based acceptance score was created for each participant by computing the number of times the child was chosen as a perceived friend by participating same-gender peers. A second measure of peer acceptance was created with a sociometric procedure that used a rating scale format. Using a 5-point scale each participant rated how much they liked each of their participating class- room peers a score of 1 meant *do not like* and 5 meant *like a lot*. The rating scale based measure of acceptance was the number of times the child received a rating of 5 from same-gender peers. The ratings obtained with this rating score procedure were also used to compute

a measure of peer rejection. The measure of peer rejection was the number of times the child received a rating of 1 from same- gender peers. Again, the procedures described by Velásquez et al. (2013) were used to correct these measures of acceptance and rejection for potential biases that may result from between-classroom differences in the number of same-gender peers. An overall acceptance measure was created by computing a mean of the nomination- based and rating-based measures. The reliability of this measure, as indexed by Cronbach's a, was .95. The measure of sociometric preference was computed by subtracting the measure of peer rejection from the composite measure of peer acceptance.

Table 1

Items Used in Peer Assessment and Self-Report Measures

Procedure	**Construct**	**Items**
Peer assessment	Aggression	Is mean to others.
		Hurts other people.
		Causes other people trouble.
	Withdrawal	Someone who prefers to be alone.
		Someone who is by themselves
		Because they prefer to be.
Self-report	Collectivism	The help of classmates is really important for getting good grades.
		Students should be able to count on their classmates for help with their school work.
		We should always help our friends no matter what.
		It is always good for classmates to study in groups.
		I would lend money to a classmate who needed to buy lunch.
	Individualism	I don't like to talk to my friends about my problems. I solve them myself.
		I don't pay attention to my friend's advice when I have to make an important decision.
		It less fund to do things with friends than by myself because with friends I can't always do as I want to.

Friendship

The friendship measure indicated whether any of a child's first three friendship nominations were reciprocated by the nominated peer, coded dichotomously (-1 = not friended, 1 = friended). This operational definition of friendship has been used extensively in peer research (see Bukowski et al., 2012, and Bukowski et al., 2009). The percentages of friended children were 66% and 69% for the participants from Barranquilla and Montreal, respectively.

Measures of Collectivism and Individualism

Self-report procedures were used to measure collectivism and individualism. The participants used a 5-point scale to rate how much they agreed with items designed to assess each construct (see Table 1). The items were inspired by the content of the widely used measure created by Singelis (1994). The wording of items was adapted in two ways. First, the substance of the items was changed to fit an older school-age population. Second, our items were written to capture a different personal perspective. The items developed by Singelis were written from the perspective of the first-person (e.g., "I prefer being direct an forthright.") so as to capture the person's view of the self in context. In contrast, our items were written from multiple perspectives (e.g., The help of classmates is really important for getting good grades) so as to acquire a more complete view of how the participants perceived their group contexts on the dimensions of individualism and collectivism. Scores computed for each child on each measure were the means of their ratings of the items from each measure. When assessed with Cronbach's a, the reliability of the measures of collectivism, and individualism was observed to be .67 and .66. The corresponding values in Montreal and Barranquilla were .68 and .64 for collectivism and .69 and .63 for individualism. The score on the measure of collectivism was higher (p ， .05) for the participants from Barranquilla (M = 3.95, SD = .92) than for those from Montréal (M = 3.86, SD = .85). The opposite pattern was seen with the measure of individualism. It was higher (p , .01) for the participants from Montréal (M = 2.89, SD = 1.18) than for the Barranquilla participants (M = 2.65, SD = 1.02).

Measurement invariance was examined with M*plus*. The purpose of these analyses was to examine the extent to which the factor structure of the measures of

individualism and collectivism was the same for the participants from Montréal (reference group) and Barranquilla. Configural invariance was specified in which both factors were estimated simultaneously within each of the groups. The factor mean was fixed to 0 and the factor variance was fixed to 1 for each factor. Using the MLR (robust maximum likelihood) estimator, the -2LL rescaled difference tests were conducted to compare the models for the two participant groups. To assess metric invariance, model constraints were applied to the unstandardized item factor loadings across groups; factor means and variances were still fixed to 0 and 1, respectively. There observed findings revealed a nonsignificant change in the metric invariance model fit relative to the configural model, -2DLL(6) = 2.86, p = .83. These indicated that for each of the measures same factor structure was observed with the participants from the two places.

Group Means

Group scores were computed for the measures of aggression, withdrawal, collectivism, and individualism. These values were the arithmetic means on these measures for the participants in the classroom-based same-gender peer groups.

Intraclass correlations (ICCs) were computed with each of these measures to estimate the relative amounts of within group and between group variance. This analysis would ascertain whether there was sufficient between group variance to use the group measures in our analyses. The ICC values observed with the meas- ures of aggression, withdrawal, individualism, and collectivism were .046, .083, .179, and .082, respectively. Each of these values was observed to be statistically significant indicating that there would be sufficient between-group variance on these measures for them to be used in the between group analyses.

Results

Multilevel modeling was conducted with M*plus* (Version 7; Muthén & Muthén, 2010). In two sets of models, four associations were assessed: (a) the association between the measures of aggression and sociometric preference, (b) the association between the measures of withdrawal and sociometric preference, (c) the association between the measures aggression and friendship, and (d) the association between the

measures of withdrawal and friendship. In one set of analyses the measure of sociometric preference was used as the outcome variable. The measure of friendship was used as the outcome variable in the other set of analyses. In the multilevel analyses, the “within,” or Level 1, model included the individual participants. Participants were “nested” within their classroom-based same- gender peer group. These groups were the Level 2 or between groups component of the multilevel model. With this multilevel approach, a within group model was first used to assess the associations between each of the two predictors (i.e., aggression and withdrawal) and one of the two outcome variables (i.e., sociometric preference or friend- ship). We called this within-groups model the “Step 1” model. Each of the Level 1 effects (i.e., the association between aggression and the outcome and the association between withdrawal and the out- come) was set to be “random,” such that these effects were free to vary across groups. Next, two separate models were used to examine between group variations in the effects observed in the Level 1, or the Step 1, model. In the first between-groups model the measure of place (i.e., Barranquilla, coded as 1, or Montréal, coded as -1) was used to account for the between-group variations in associations observed in the Level 1, or Step 1, model. This first between-groups model was referred to as the Step 2 model. The second between- groups model, referred to as the Step 3 model, was used to assess the effects of the other group-level measure on the between-group variations in effects observed in the Step 1 model. Five between- groups variables were included in the Step 3 model. They were (a) a binary index of SES (i.e., lower-middle class, coded as -1, or upper- middle class, coded as 1); (b) a binary index of gender indicating whether the group included girls, coded as 1, or boys, coded as -1; (c and d) the group means on the measures of aggression and withdrawal; and (e and f) the group means on the measures of individualism and collectivism. There were 790 children at Level 1 and 68 groups at Level 2. There were exactly 34 groups of girls and 34 groups of boys. There were no missing data; all participants completed all measures. The correlations between the measures of aggression, withdrawal, sociometric preference, and friendship are shown in Table 2. The values for the Montreal participants are shown below the diagonal; the values for he Barranquilla participants are shown above the diagonal. The correlations between the group level variables are shown in Table 3. The findings

from our analyses are presented in Figure 1. All variables at both levels were standardized before being included in our models.

Aggression and Withdrawal as Predictors of Sociometric Preference

The initial Step 1 model revealed statistically significant negative associations between the measures of aggression and sociometric preference (standardized coefficient = -.32 (.04), t = -7.67, p , .001), and between withdrawal and sociometric preference (standardized coefficient = -.26 (.04), t = 6.68, p,.001). These values are the intercepts for these associations. These Level 1 associations were observed to vary significantly across the Level 2 groups (variance coefficient = .074, t = 2.499, p , .005 for the effect of aggression; variance coefficient = .123, t = 3.59, p , .001 for the effect of withdrawal). The Step 2 model assessed whether the associations observed in the Step 1 model varied as a function of place. The measure of place was observed to be a statistically significant predictor of the between group variability in the association between aggression and sociometric preference (standardized coefficient = -.066 (.041), t = 1.63, p , .053), but not of the association between withdrawal and sociometric preference (standardized coefficient = .03 (.04), t = .95, p . .35). Using these significant effects of group-level measures on the between-group variability in the association between aggression and sociometric preference. These findings show that the Level 1 association between aggression and sociometric preference is moderated by two group level variables. The two group-level variables were the measures of the group mean for aggression (standardized coefficient = .08 (.04), t = 2.22, p , .01) and the group mean for collectivism (standardized coefficient = -.06 (.03), t = -1.91, p , .03). In the Step 3 model the intercept for the association between aggression and sociometric preference was -.36 (t = -9.358, p ,.001). The effect of the group level measure of place was no longer statistically significant. Using the coefficients for the statistically significant group level effects, predicted correlations were computed by multiply the standardized coefficient by standardized values representing different levels of the group variable and adding the product to the intercept. These values are the simple slopes for the association between aggression and sociometric preference at different levels of the

group level variable. The association between aggression and sociometric preference was calculated to be stronger (i.e., more negative) for (a) groups that had a low score (-1 *SD*) on the group mean for aggression (predicted *r* = -.44) than for groups that had a high (1 *SD*) score (predicted *r* = -.28), and (b) for groups that had a high (1 *SD*) score on the measure of collectivism (predicted *r* = -.42) than for groups that had a low (-1 *SD*) score (predicted *r* = -.29).

The Step 3 model also uncovered statistically significant effects of four group-level measures on the between-group variability in the association between withdrawal and sociometric preference. These findings show that the Level 1 association between withdrawal and sociometric preference is moderated by these four group level variables. They were the measures of SES (standardized coefficient = -.10 (.04), -2.19, *p* , .03), the measure of grade (standardized coefficient = .05 (.026), 1.85, *p* , .03), the group mean for collectivism (standardized coefficient = -.043 (.02), *t* = -1.98, *p* , .03), and the group mean for withdrawal (standardized coefficient = .06 (.036), *t* = 1.88, *p* , .03). In the Step 3 model the intercept for the association between withdrawal and sociometric preference was -.261 (*t* = -7.859, *p* , .001).The observed coefficients were used to create predicted correlations for groups that differed on the group level measures of SES, school grade, the group mean for collectivism, and group means for avoidance. The calculated values indicated that the association between the measures of withdrawal and sociometric preference was stronger (i.e., more negative) for (a) groups that are high in SES (predicted *r* = -.39) than for those that are low (predicted *r* = -.18), (b) groups of fourth graders (predicted *r* = -.34) than for groups of fifth graders (predicted *r* = -.28) or sixth graders (predicted *r* = -.23), and (c) for groups that are high (1 *SD*) in collectivism (predicted *r* = -.32) than for those that are low (-1 *SD*; predicted *r* = -.24), and (d) for the groups that had a low (-1 *SD*) mean on the measure of withdrawal (predicted *r* = -.35) than for the groups that had a high mean (predicted *r* = -.22).

Table 2

Correlations Between Level 1 Variables

Level 1 variable	Aggression	Withdrawal	Soc. Preference	Friendship
Aggression	.90(1.33)/.93 (1.33)	.21	-.33	-.1
Withdrawal	.06	.48(.87)/.60(1.1)	-.25	-.15
Social preference	-.30	-.31	2.77(2.8)/3.2 (3.15)	.35
Friendship	-.10	-.21	.38	.31 (.95)/.36 (.92)

Note. *N* = 790. Soc = social. The values for the Montreal participants are shown below the diagonal; the values for the Barranquilla participants are shown above the diagonal. The numbers in the diagonal are means (and standard deviations) for the unstandardized version of each variable. The values for the Montreal participants are shown on the left; the values for the Barranquilla participants are shown on the left.

Table 3

Correlations Between Group Level Variables

Level 2 variables	Place	SES	Gender	Aggression	Withdrawal	Individualism	Collectivism
Place	.17 (.98)						
SES	.23	.23(.97)					
Gender	.00	.00	.00(1.00)				
Aggression	.07	.08	-.15	.93(.32)			
Withdrawal	.26	-.04	.07	.43	.5(1.06)		
Individualism	-.19	-.51	-.17	.11	-.03	2.67(.57)	
Collectivism	.09	.06	.10	.10	-.17	-.28	3.92(.31)

Note. *N* = 68. SES = socioeconomic status. The numbers in the diagonal are means and standard deviations for the unstandardized version of each variable. Place was coded as -1 for Montréal and 1 for Barranquilla; SES was coded as -1 for lower-middle-class and 1 for upper-middle-class; and gender was coded as -1 for boys and 1 for girls.

Aggression and Withdrawal as Predictors of Friendship

The next set of analyses assessed between group variability in the association between the measures of aggression and friendship and between the measures of withdrawal and friendship. The Step 1 model showed that each of these associations was

statistically significant (standardized coefficient = -.083 (.037), t = -2.19, p ， .01 for aggression and friendship; standardized coefficient = -.17 (.04), t = -4.11, p , .001 for withdrawal and friendship). The amount of variance in the Level 1 association between aggression and friendship was observed to be statistically nonsignificant (variance coefficient = .008, t = .359, p . .5). The association between the measure of withdrawal and friendship was observed to vary significantly across the Level 2 groups (variance coefficient = .057, t = 2.19, p ， .05). The Step 2 model showed that neither of these effects varied across the groups as a function of place. Although the Step 3 model did not reveal any statistically significant effects for any of the group level variables on the association between aggression and friendship, three group level variables were observed to account for between group variability in the association between withdrawal and friendship. These findings show that the Level 1 association between withdrawal and sociometric preference is moderated by these three group level variables. They were the measures of SES (standardized coefficient = -.10 (.04), t = -2.188, p , .029), the measure of grade (standardized coefficient = .05 (.026), t = 1.85, p , .03) and the group mean for collectivism (standardized coefficient = -.043 (.02), t = -1.98, p ,.03). In the Step 3 model the intercept for the association between withdrawal and friendship was -.19 (t = -4.562, p , .001). Using these coefficients, we calculated predicted correlations for different levels of each these group variables. The observed values indicated that the association between the measures of withdrawal and friend- ship was stronger for (a) the groups of high SES participants (predicted r = -.31) than the lower SES participants (predicted r = -.03); (b) the groups of fourth graders (predicted r = -.26) than the groups of fifth (predicted r = -.17) and sixth graders (predicted r = -.08), and (c) for groups that are high (1 *SD*) in collectivism (predicted r =-.22) than for those that are low (-1 *SD*; predicted r = -.11).

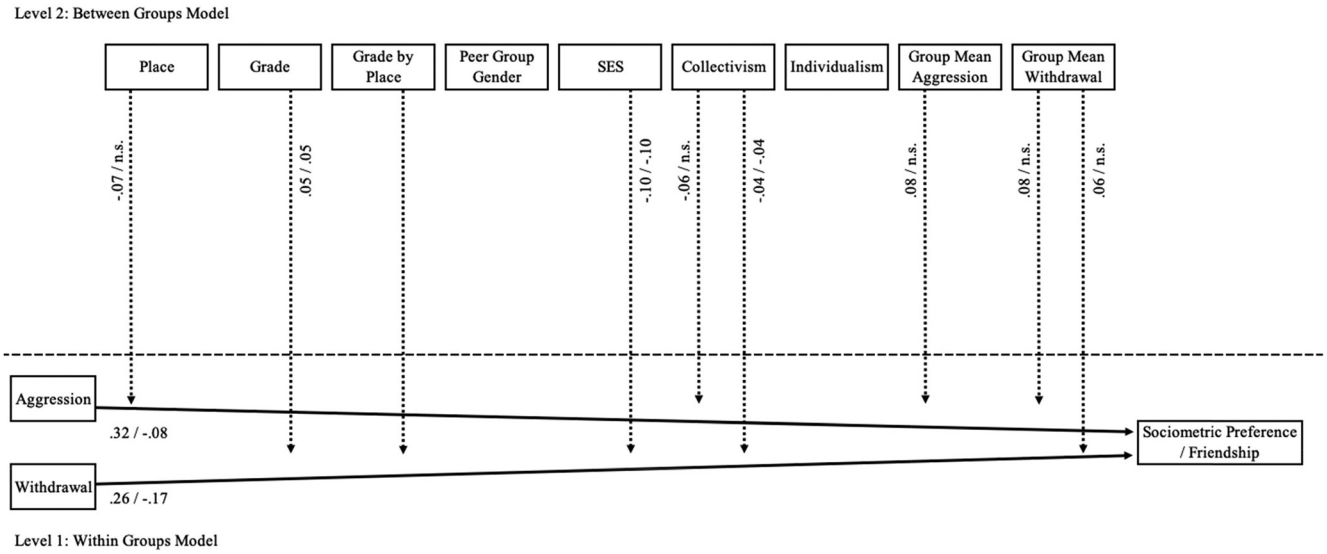
Discussion

Our goal was to replicate a set of findings reported by Valdivia et al. (2005). One can think of their study as having a surface structure and a deep structure. The surface structure consists of their actual findings; the deep structure refers to the purpose of their study and to the meanings ascribe to the findings. The surface structure of the

Valdivia et al. findings indicated that the overall negative associations between two forms of social behavior (i.e., aggression and withdrawal) and two indices of effective functioning with peers (i.e., sociometric preference and friendedness) were stronger for children from a city in Cuba than for children from a city in Canada, especially for older school-age children. The deep structure of their study was framed as an assessment of the effect of the cultural dimension of collectivism on factors underlying effective social functioning with peers. They interpreted their findings as indicating that aggression and withdrawal have more negative consequences for functioning with peers in contexts that emphasize the features of collectivism such as interpersonal sensitivity, social connections, and interpersonal support. Building from this framework, the current study focused on both the surface and deep structures of the Valdivia et al. study.

Figure 1

The Variables and Associations for the Level 1/Within Groups Model (Shown in the Bottom of the Figure), and the Level 2/Between Group Models (Top Part)



Note. The Level 1 associations are depicted with a solid line; Level 2 associations are depicted with a dashed line. Level 2 variables for which there are no associations had no effects on any of the Level 1/Within groups effects. Standardized path coefficients are shown separately for the model with sociometric preference as the outcome measure, shown on the left side, and the model with friendship as the outcome (shown on the left side).

Using methods and measures that paralleled those of the Valdivia et al. study, we

assessed a set of associations that were part of the surface structure of this prior study. Our analyses were conducted with school-age children drawn from two contexts that were chosen as having different levels on the dimensions of collectivism and individualism. We had limited success with replicating the contextual variations in the associations reported by Valdivia et al. We observed an effect of place per se (i.e., a difference between the findings for the Montréal and Barranquilla participants) on only one of the four associations we examined. The negative association between aggression and sociometric preference was observed to be two and a half times stronger for the participants from Barranquilla than for the participants from Montréal. Converting these values into effect sizes shows that aggression accounts for 15% of the variance in sociometric preference for the participants from Barranquilla but only 6% for the Montréal participants. Consistent with the findings reported by Valdivia et al. the negative association between aggression and sociometric preference was stronger in places in countries that have been identified as being higher in collectivism. It should be noted that the age effects reported by Valdivia et al. were not revealed by any of our analyses. In summary, these findings provide limited replicative evidence for the surface structure of the findings reported by Valdivia et al.

In contrast, our findings provide support for the deep structure of the Valdivia et al. study (Valdivia et al., 2005). Three of the four associations we examined were observed to vary across groups as a function of the group level measure of collectivism. With the associations between aggression and sociometric preference, withdrawal and preference, and withdrawal and friendship, stronger negative effects were observed for the groups with higher means on the measure of collectivism (*r*s = -.42, -.32, and -.22, respectively) than the groups with lower means (*r*s = -.29, -.24, and -.11, respectively). The association between the measures of aggression and friendship did not vary as a function of any of the group level variables. This observation that three of the four associations we examined varied as a function of the group-level measure of collectivism supports the deep structure of the Valdivia et al. article. Consistent with the conceptual framework of the Valdivia et al. the negative consequences of being aggressive or withdrawn in the peer group were observed to be more drastic in groups that have a stronger collectivist ethos. Presumably, aggression has more negative consequences

because it threatens the valued social fabric of collectivist social groups and contradicts the emphasis on interpersonal sensitivity. Conversely, the stronger negative consequences of withdrawal in groups that are high in collectivism may come from the lack of social participation shown by withdrawn children. Their hesitancy to engage with others detracts from the group fabric not via the explicitly disruptive behaviors associated with aggression, but instead by diluting the social connections between group members.

There was evidence of the moderating effect of other group level measures. The importance of the concept of social fit was seen in the effects of group norms. The negative association between aggression and sociometric preference was stronger in groups that had a low mean on aggression. Similarly, the negative associations between aggression and sociometric preference was stronger in groups that had a low mean on aggression. This finding is consistent with prior evidence in support of the concept of normative fit within the peer group (Boivin et al., 1995; Chang, 2004; Stormshak et al., 1999; Wright et al., 1986). Differences between school grades were also observed. Although the measure of school grades did not moderate the effect of place, it did have a univariate group level effect on the association between withdrawal and sociometric preference and on the association between withdrawal and friendship. The strength of both of these associations became weaker (i.e., less negative) as a function of school grade in a linear manner. Apparently, children become more tolerant of withdrawn and aggressive peers as they grow older.

Differences between the lower-middle class and upper-middle class groups were seen with both associations that included withdrawal. The associations between withdrawal and preference and withdrawal and friendship were more negative in groups of upper- middle class children. This pattern of findings may reflect the social demands inherent in the work-related experiences of the parents in upper-middle class families. Success in occupations that generate salaries needed to be part of the upper-middle class may require effective functioning in multiple social contexts (Miya- moto et al., 2018). The importance that upper-middle class parents ascribe to engaging with social networks may be part of the socialization values that arise in upper-middle class homes. These values may, in turn, be manifested in the stronger negative consequences of being withdrawn in peer groups of upper-middle class children.

Several factors may account for the lack of place effects. Although we were careful to study participants from two places that differed from each other on the dimensions of individualism and collectivism it may be that the size of these differences was not sufficiently large to affect our findings. Other reasons may be related to the potential vacuity of country-by-country or place-by- place comparisons. Beyond the problems that derive from commit- ting the ecological fallacy, the interpretation of between place comparisons is challenging when places differ along multiple dimensions. Valdivia et al.'s (2005) attribution of their results to collectivism is reasonable but these differences could be attributed to other differences between the Cuban and Canadian cities where their study was conducted. The other factors include between- place variations in affluence, historical religious beliefs, power hierarchies, and norms. Ironically, even though our study was limited in its replication of the surface structure of the Valdivia et al. study, its findings regarding the effects of group differences in collectivism provide strong support for the deep structure of their study.

An important finding from this study is that the consistent associations for collectivism contrast sharply with the absence of findings for individualism. In comparison with the evidence that collectivism strengthens the negative association between aggression and effective functioning with peers, there was no evidence that individualism weakened these negative associations or made them positive. It may be that in this case collectivism is the more important cultural dimension because it is more directly relevant to the dynamics of the social context. In this way, it may have a stronger regulatory influence over the processes of liking in the peer group. One can speculate that individualism may have stronger effects on processes more directly related to the person such as achievement. It should be noted that the reliabilities of our measures of collectivism and individualism were, at best, marginally tolerable. Nevertheless, the overall consistency of the findings observed with the measure of collectivism is notable given that its psychometric properties were weak. That this measure should have such consistent effects despite its technical limitations is evidence of its importance. This evidence shows clearly that studying peer relations with designs that do not assess group properties, such as descriptive norms, are likely to produce results that cannot be generalized to other contexts. Beyond the dimensions of

individualism and collectivism, peer researchers may benefit from assessing additional cultural and network dimensions such as the hierarchical organization of social groups and power structures within context.

Replication studies raise many challenges, and particular challenges are posed by studies that involve between-context comparisons (Milfont & Klein, 2018). For example, it is important to consider sample equivalence in the replication of contextual effects. In the Valdivia et al. (2005) study, a place that was presumed to have a collectivist culture was compared with a place where collectivism was presumed to be weaker. We followed this same strategy in the current study. Nevertheless, to augment the goal of assessing how cultural dimensions affect the dynamics of functioning in the peer group, we assessed the dimensions of culture directly rather than relying on essentialist assumptions. This strategy is consistent with ideas that replication studies need to update measures so as to enhance validity and relevance in the cur- rent literature (Fabrigar et al., 2020). We did this in the current study by using measures of aggression and withdrawal that were more focused than those used in the original study. Despite these differences, our analyses provide support for what we have called the deep structure of the findings reported by Valdivia et al.

Beyond the concerns that come from the weak reliability of the measures of collectivism and individualism, this study has other potential limitations. One limitation comes from the design itself. In this replication we used the cross-sectional procedures used by Valdivia et al. Longitudinal designs might provide additional insights into these processes. The indices of gender and SES are also limited by their reliance on dichotomous measurement systems. Each of these critical concepts could be measured in more complex ways (Bukowski et al., 2020).

Replication studies are, by definition, aimed at reconsidering past results. Although the present study was inspired by findings from the past, the present findings point toward the future. The most important conclusion from this study is that the richness of research on the dynamics of the peer experiences is enhanced by the direct assessment of the contextual factors that account for between-group variations. A strength of the present study is the direct observation of the effects of one aspect of culture, specifically collectivism, on basic processes of the peer system. These findings

confirm the importance of ideas used at the center of studies by Valdivia et al. (2005) and others (Chen et al., 1992). The current findings also confirm the importance of assessing the effects of SES (Bukowski et al., 2020) The essential message here is that peer research needs to continue to build upon the basic perspectives that the dynamics of peer relations cannot be disentangled from the contexts where they are situated (Bukowski & Sippola, 1998; Chen & French, 2008; Chen et al., 2006).

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