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RESEARCH ARTICLE

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Cross-cultural effects of parent warmth and control on aggression and rule-breaking from ages 8 to 13

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Abstract

We investigated whether bidirectional associations between parental warmth and behavioral control and child aggression and rule-breaking behavior emerged in 12 cultural groups. Study participants included 1,298 children (*M* = 8.29 years, standard deviation [*SD*] = 0.66, 51% girls) from Shanghai, China (*n* = 121); Medellín, Colombia (*n* = 108); Naples (*n* = 100) and Rome (*n* = 103), Italy; Zarqa, Jordan (*n* = 114); Kisumu, Kenya (*n* = 100); Manila, Philippines (*n* = 120); Trollhättan/Vänersborg, Sweden (*n* = 101); Chiang Mai, Thailand (*n* = 120); and Durham, NC, United States (*n* = 111 White, *n* = 103 Black, *n* = 97 Latino) followed over 5 years (i.e., ages 8–13). Warmth and control were measured using the Parental Acceptance-Rejection/Control Questionnaire, child aggression and rule-breaking were measured using the Achenbach System of Empirically-Based Assessment. Multiple-group structural equation modeling was conducted. Associations between parent warmth and subsequent rule-breaking behavior were found to be more common across ontogeny and demonstrate greater variability across different cultures than associations between warmth and subsequent aggressive behavior. In contrast, the evocative effects of child aggressive behavior on subsequent parent warmth and behavioral control were more common, especially before age 10, than those of rule-breaking behavior. Considering the type of externalizing behavior, developmental time point, and cultural context is essential to understanding how parenting and child behavior reciprocally affect one another.

KEYWORDS

aggression, cultural differences, parent behavioral control, parent warmth, rule-breaking

1 | INTRODUCTION

Externalizing problems (aggression, noncompliance, defiance, and rule-breaking) are among the most common mental health referrals for children and adolescents (Merikangas, Nakamura, & Kessler, 2009) and predict the emergence of antisocial behavior, criminality, and violence in adulthood (Burt, 2012). However, a robust literature now demonstrates that youth externalizing problems can be meaningfully divided into distinct aggression (AGG; fighting, hitting, and threatening) and rule-breaking (RB; stealing, vandalism, lying, and other nonaggressive delinquent acts) dimensions (e.g., Burt, 2012, 2013; Klahr, Klump, & Burt, 2014). These dimensions have distinct etiologies and correlates (Burt, 2012). AGG behavior is more likely to arise in early childhood, is more highly heritable, and may be less susceptible to environmental influence (Burt, 2012; Klahr et al., 2014). In contrast, RB is more likely to arise in adolescence, is relatively less heritable, and may be more susceptible to environmental influence (Burt, 2012).

Given these distinct etiologies and susceptibilities to environmental influence, prevention scientists have called for studies that examine the differential impacts of one large environmental influencer, parenting behavior, on AGG and RB over ontogeny (Klahr et al., 2014). This call is especially important, given that current evidence-based interventions for externalizing problems (including AGG and RB) attempt to ameliorate these problems by changing parenting behavior (i.e., behavioral parenting training; Kaminski & Claussen, 2017). In the current study, we answered this call by investigating the differential impact of two types of parenting behavior often targeted in parenting interventions (warmth and behavioral control) on AGG and RB behavior in a sample of 1,298 youth followed from ages 8 to 13 from 12 cultural groups. In so doing, we addressed three questions that experts in the AGG/RB field identified as needing answers in future research (Burt, 2012; Klahr et al., 2014). First, do parenting practices exhibit differential associations with AGG versus RB? Second, do AGG and RB differ in their evocation of parenting practices? Third, do these parenting-AGG/RB associations differ across cultures?

1.1 | Do parenting practices exhibit differential associations with AGG versus RB?

Though numerous reviews have investigated associations between parenting and externalizing behavior more generally (Dishion & Patterson, 2006; Pinquart, 2017), few investigations have explicitly examined differential associations between parenting practices and AGG/RB. The one investigation we know of that has done so investigated differential effects of maternal negativity (i.e., verbal criticism, harsh discipline) on AGG and RB in a cross-sectional sample of 824 twin families with children ages 6–10 (Klahr et al., 2014). This study found that AGG and maternal negativity were associated via genetic and environmental factors, whereas the association between RB and maternal negativity was entirely environmental in origin (Klahr et al., 2014). These investigators urged researchers to build on their work by investigating other parenting outcomes traditionally associated with externalizing behavior, especially warmth and control, and by investigating reciprocal associations between parent behavior and AGG and RB longitudinally, beyond ages 6–10. The current study met these objectives.

Specifically, we investigated whether parent warmth (i.e., acceptance, nurturing, and positive support of one's children; Pinquart, 2017) and parental behavioral control (i.e., parents' efforts to remain aware of, communicate consistent expectations for, and redirect children's behavior; Lansford, Rothenberg, et al., 2018) were differentially associated with child AGG and RB. Examining these associations is a priority because increasing parental warmth and teaching parents effective behavioral control are the two primary goals of evidence-based parenting interventions (Kaminski & Claussen, 2017). Therefore, it is important to account for differential associations between AGG and RB and these types of parenting behavior. Ample evidence from meta-analyses (Pinquart, 2017) and our own prior work using the present sample (Lansford, Rothenberg, et al., 2018) suggests that both parental warmth and behavioral control are prospectively associated with broad measures of externalizing behavior across ontogeny. Specifically, low parent warmth and low parent behavioral control predict subsequently higher levels of externalizing symptoms over time (Pinquart, 2017). However, if behavioral control is too high, it can also be perceived by children as hostile and intrusive, and children may consequently engage in externalizing behavior in attempts to increase and establish their sense of autonomy (Pinquart, 2017). Therefore, low parent warmth and low or excessively high parent behavioral control predicts increases in child externalizing behavior broadly (Lansford, Rothenberg, et al., 2018; Pinquart, 2017).

Yet, no investigations to our knowledge have examined the differential associations of these parenting behaviors with AGG and RB across time. However, extant work provides strong evidence that differential patterns of associations across AGG and RB should emerge. Therefore, we predicted environmental influencers like parent warmth and behavioral control to more often demonstrate associations with RB, as opposed to AGG, behavior. Furthermore, we expected these parenting effects to extend further into adolescence for RB, as opposed to AGG, behavior. Each of these hypotheses were tested in the current study.

1.2 | Do AGG and RB differ in their evocation of parenting practices?

Associations between parental warmth and behavioral control and child externalizing behavior are not unidirectional, but transactional in nature (Pinquart, 2017). Both meta-analyses and our own longitudinal investigation of the present sample demonstrate that broad measures of child externalizing behavior prospectively predict the emergence of subsequent parent warmth and behavioral control across childhood and adolescence (Lansford, Rothenberg, et al., 2018; Pinquart, 2017; Rothenberg et al., 2019). However, very few investigations have broken broad measures of externalizing behavior down and examined whether AGG and RB differ in their child-driven evocation of parenting. Those that have found that 6–10-year-old children's AGG behavior evoked maternal negativity to a much greater extent than their RB behavior (Klahr et al., 2014).

In the present study, we expanded this investigation of evocative child effects on subsequent parenting behavior across the transition to adolescence (i.e., ages 8–13) and in association with new parenting behavioral phenotypes (parent warmth and behavioral control). In line with prior results, we predicted that child AGG behavior would evoke low parent warmth and parent behavioral over- or under-control more frequently than RB behaviors. We also predicted that the evocative child effects of AGG would be more frequent than RB behavior in preadolescence, given that AGG behavior emerges earlier in childhood.

1.3 | Do parent and child-driven effects of AGG and RB differ across culture?

Given that prior work has demonstrated that RB is more responsive to environmental influences than AGG, associations between parenting practices and AGG/RB may differ across another environmental influencer: the larger cultural group within which such practices are embedded (Lansford, Godwin, et al., 2018). Specifically, associations between RB and parenting practices might be more variable across cultural groups than those between AGG and parenting practices. Preliminary work examining AGG and RB subscales of the Child Behavior Checklist across cultures supports this hypothesis. Investigators found that society significantly moderated the association between AGG and RB in a sample of 27,681 parent–adolescent dyads from 25 societies but could not discern an identifiable pattern in these societal differences (Burt et al., 2015). Additionally, AGG behavior has been found to demonstrate less variance across cultures than RB behavior (Yarnell et al., 2013), and effects of migrating from Mexico to the United States are weaker for AGG than RB behavior (Breslau et al., 2011; Burt, 2012). It appears that due to their greater responsiveness to environmental influences, associations between RB behavior and parenting practices may vary more across cultures than associations between AGG and parenting practices. Various mechanisms may act on the association between RB and parenting behavior to create such cross-cultural variation. For example, some cultures may place specific emphasis on a child's devotion to family, leading the effects of parenting behavior to be especially powerful or long-lasting in such cultures (Bornstein, 2015; Kapke, Grace, Gerdes, & Lawton, 2017).

Examining how parent warmth and control differentially impact AGG and RB across cultures is especially important given our own prior cross-cultural findings (Lansford, Rothenberg, et al., 2018). Specifically, utilizing the same sample examined in the present study, we found that effects of parent warmth and behavioral control on a broad measure of child externalizing behavior (that did not distinguish AGG and RB) were almost completely invariant across the 12 cultural groups that we studied (Lansford, Rothenberg, et al., 2018). We were surprised by the cross-cultural uniformity of such effects and believe it is vital to establish whether such uniformity holds across both AGG and RB behavior, given their distinct correlates and etiologies (Burt, 2012).

1.4 | The current study

In the current study, we extended the existing literature examining AGG and RB behavior by examining associations between parental warmth and control and these behavior clusters in a sample of 1,298 children followed from 8 to 13 years old across 12 cultural groups. In so doing, we made three predictions. First, we expected parent warmth and behavioral control to more often demonstrate prospective associations with subsequent RB, as opposed to AGG behavior, and we expected associations between parenting behaviors and RB to extend later into adolescence than those between parenting and AGG. Second, we expected that child AGG behavior would evoke low parent warmth and parent behavioral over- or under-control more frequently than RB behavior, and we expected such child AGG effects to be more frequent than RB effects in preadolescence. Third, we expected to see greater cross-cultural variation in associations between parenting behaviors and RB, as opposed to AGG.

2 | METHODS

2.1 | Participants

Participants included 1,298 children ($M = 8.29$ years, standard deviation [SD] = 0.66, 51% girls), their mothers ($N = 1,275$, $M = 36.93$ years, $SD = 6.27$), and their fathers ($N = 1,032$, $M = 39.96$ years, $SD = 6.52$) at wave 1 of 5 annual waves (Table 1). Families were recruited from 12 distinct ethnic/cultural groups across 9 countries comprising: Shanghai, China ($n = 121$); Medellín, Colombia ($n = 108$); Naples ($n = 100$) and Rome ($n = 103$), Italy; Zarqa, Jordan ($n = 114$); Kisumu, Kenya ($n = 100$); Manila, Philippines ($n = 120$); Trollhättan/Vänersborg, Sweden ($n = 101$); Chiang Mai, Thailand ($n = 120$); and Durham, NC, United States (split in analyses to examine $n = 111$ White, $n = 103$ Black, and $n = 97$ Latino cultural groups separately). Participants were recruited through letters sent from schools. Most parents (82%) were married and biological parents (97%); nonresidential and nonbiological parents were able to provide data. Sampling comprised families from the majority ethnic group in each country, except in Kenya where we sampled Luo (3rd largest ethnic group, 13% of population), and in the United States, where we sampled equal proportions of White, Black, and Latino families. Socioeconomic status and parental education were sampled in proportions representative of each recruitment area. Therefore, subsamples are representative of the cities from which they were recruited. This sample was designed to represent a wide range of sociocultural contexts and encompasses countries ranging from 8th to 145th in the 2015 Human Development Index Rankings. Differences in child age and gender were not statistically significant across cultural groups. Data for the present study were drawn from interviews during the first 5 study years.

2.2 | Participant retention and missing data

Five years after the initial interviews, 82% of the original sample continued to provide data, with rates ranging across culture from 63.85% of the original sample retained in Sweden to 93.00% of the original sample retained in Kenya. In all but two cultural groups (Sweden at 63.85% and China at 69.11%) retention rates exceeded 75% of the original sample at Year 5. Participants who provided follow-up data did not differ from the original sample with respect to any demographic variables. Additionally, participants who continued to provide data did not differ from the original sample with respect to parent warmth, parent behavioral control, child aggression, or child delinquency in any culture except for in Rome, Italy and Colombia.

Specifically, in Rome, Italy participants with missing data had significantly ($p < .05$) higher levels of child aggression ($M_{Attrited} = 11.52$ vs. $M_{Retained} = 8.31$) and rule-breaking ($M_{Attrited} = 2.33$ vs. $M_{Retained} = 1.42$) at the first study assessment (i.e., age 8). In contrast, in Colombia, participants with missing data had significantly lower levels of child aggression ($M_{Attrited} = 8.09$ vs. $M_{Retained} = 10.80$) and rule-breaking ($M_{Attrited} = 1.87$ vs. $M_{Retained} = 2.62$) and significantly higher levels of warmth ($M_{Attrited} = 3.89$ vs. $M_{Retained} = 3.75$) at the first study assessment (i.e., age 8). Thus, there does not appear to be evidence that data missingness biases measurement of substantive study variables in any particular direction across cultures. Aligning with best practice, we estimated study models utilizing full-information maximum likelihood estimation procedures to account for data missingness when generating parameter estimates (Enders, 2010).

TABLE 1 Descriptive statistics for demographics by cultural group

Group	Mother's age at recruitment	Mother's education	Father's age at recruitment	Father's education	Child gender (% girls)	Child age at recruitment
Shanghai, China	35.42 (3.24)	13.55 (2.88)	37.98 (3.88)	14.00 (3.07)	52	8.51 (0.34)
Medellín, Colombia	37.03 (7.80)	10.64 (5.60)	40.75 (8.78)	9.91 (5.32)	56	8.22 (0.49)
Naples, Italy	38.14 (5.62)	10.14 (4.35)	41.17 (5.67)	10.73 (4.16)	52	8.31 (0.49)
Rome, Italy	40.24 (5.09)	14.14 (4.07)	43.52 (5.25)	13.75 (4.09)	50	8.34 (0.77)
Zarqa, Jordan	36.43 (6.03)	13.13 (2.18)	41.77 (5.50)	13.24 (3.16)	47	8.47 (0.50)
Kisumu, Kenya	32.45 (6.21)	10.69 (3.65)	39.28 (6.87)	12.29 (3.60)	60	8.45 (0.65)
Manila, Philippines	37.936 (6.19)	13.61 (4.07)	40.21 (7.09)	13.90 (3.84)	49	8.03 (0.35)
Trollhättan, Sweden	38.07 (4.82)	13.92 (2.48)	40.45 (5.68)	13.73 (2.98)	48	7.77 (0.42)
Chiang Mai, Thailand	37.58 (6.18)	12.30 (4.76)	39.95 (7.28)	12.76 (4.22)	49	7.71 (0.63)
U.S. Black	36.90 (8.41)	13.65 (2.36)	38.84 (8.02)	13.45 (2.66)	52	8.60 (0.61)
U.S. White	40.95 (6.33)	16.95 (2.84)	42.21 (5.81)	17.29 (3.04)	41	8.63 (0.57)
U.S. Latino	32.86 (5.59)	9.83 (4.08)	35.09 (7.05)	9.61 (3.90)	54	8.58 (0.74)

Note: Mother's and father's education = mean number of years of education completed. All numbers in parentheses are standard deviations.

2.3 | Procedure

Measures were administered in the predominant language of each country, following forward- and back-translation. Interviews (approved by all pertinent Institutional Review Boards [IRBs]) lasted 2 hours and were conducted after parent consent and child assent were given in locations chosen by the participants. At the first assessment wave for parents, and until age 10 for children, all interviews were conducted orally. Subsequently, participants were given the choice of completing the measures in writing or orally. Families were given modest monetary compensation for participating or compensated in other ways deemed acceptable by local IRBs.

2.4 | Measures

2.4.1 | Demographics

Child gender and number of years of mother and father education when children were 8 were included as covariates.

2.4.2 | Parental warmth and control

When children were ages 8–10, 12, and 13, mothers and fathers completed the Parental Acceptance-Rejection/Control Questionnaire-Short Form, a measure with excellent established reliability, convergent, and discriminant validity worldwide (Rohner, 2005). Children provided separate ratings about their mothers and fathers at ages 8–10 and 12. Eight items captured parental warmth (e.g., parents say nice things to child), and five items captured behavioral control (e.g., parents insist child do exactly as told). Behavior frequency was rated on a modified 4-point scale (1 = *never/almost never* to 4 = *every day*). We found strong internal consistency for this measure across reporters in the present sample (αs = .84 to .89). We calculated time-specific family means (i.e., average of all child and parent reports) of parental warmth and control. Higher scores indicated more warmth/control.

2.4.3 | Child RB and AGG behavior

Mothers and fathers completed the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) when children were ages 8–10 and 12–13. Children completed the Youth Self Report (YSR; Achenbach & Rescorla, 2001) at ages 8–10 and 12. Participants were asked to rate how true each item was of the child during the last 6 months (0 = *not true* to 2 = *very or often true*). AGG behavior was measured using the Aggression (20 items in the CBCL, 19 items in the YSR, e.g., "Argues a lot," αs = .92–.95 across mother, father, and child reports; αs = .76–.94 across cultures) subscale, and RB behavior was measured using the Rule-Breaking (13 items in the CBCL, 11 items in the YSR, e.g., "Lying or cheating," αs = .79–.88 across mother, father, and child reports, αs = .92–.95; αs = .66–.88 across cultures, all cultures α > .70 except Kenya) subscale. CBCL and YSR items were identical, with the exception of three items included on the CBCL ("vandalism," "thinks about sex too much," "disobedient at home") but not the YSR. These differences are standard in the Achenbach System of Empirically-Based Assessment, and ensure RB and AGG scores are comparable across parents and children (Achenbach & Rescorla, 2001). Scores on each subscale were summed to create scale scores. For this study, we calculated family means (i.e., average of all child and parent reports) for RB and AGG behavior.

2.5 | Analysis plan

Consistent with prior work (Lansford, Rothenberg, et al., 2018), we utilized an autoregressive, cross-lagged structural equation modeling framework in M*plus* Version 7 to evaluate hypotheses. Analyses proceeded in several steps. First, mean scores were computed from all available reports on parental warmth and control and child AGG and RB behavior at each time point. The decision to combine mother, father, and child reports to compute mean scores aligned with prior work investigating parenting and RB/AGG behavior (Klahr et al., 2014) and was substantively supported by significant correlations among parent and child reports of parental warmth (rs = .21–.70, p < .01), parental control (rs = .18–.62, p < .01), child AGG (rs = .24–.57, p < .01), and RB (rs = .19–.54, p < .01) across all time points. Alternative models estimating latent variables for all study constructs were explored but abandoned due to model complexity. Next, initial path analyses testing the associations of study covariates (i.e., mother and father education, and child gender) with parent warmth and control and child AGG and RB behavior at each time point were examined and statistically significant (p < .05) associations were retained in further analyses.

Then, four separate structural models exploring longitudinal associations between parent warmth and (a) child AGG and (b) child RB as well as identical (3–4) models for parent behavioral control were estimated utilizing full-information maximum likelihood estimation procedures (Enders, 2010). Each model was autoregressive and cross-lagged to test both parent and child effects. Contemporaneous measures were correlated and paths between different measures of each construct at nonadjacent time points were added to each model (e.g., age 8 warmth was correlated with age 10, 12, and 13 warmth in addition to predicting age 9 warmth). Once structural models were fit, multiple-group comparisons of the 12 cultural groups were conducted to examine cultural differences. All paths in each model were initially constrained to be equal across cultures. Then, paths were iteratively freed to vary across cultures if a χ^2 difference test revealed that the model fit significantly better when the path was freed. Notably, all significant associations are reported after controlling for demographic and autoregressive correlates.

3 | RESULTS

Findings from each of the four final models are discussed in turn. Skewness and kurtosis estimates for all mean scores fell in acceptable ranges (skew < 2.0, kurtosis < 7.0). Evaluation of model fit was based on recommended fit index cut-off values that indicate excellent fit (comparative fit index [CFI]/Tucker–Lewis index [TLI] > 0.95, root mean square error of approximation [RMSEA] < 0.05, standardized root mean squared residual [SRMR] < 0.08; Kline, 2011). Means and *SD*s of all variables can be found in Table 2. Standardized parameter estimates and standard errors are provided in Tables 3–6, and results are depicted in Figures 1 and 2.

Notably, effects of demographic covariates are not presented (available on request) because they were largely nonsignificant and space was limited. The few significant covariates did not display any noticeable patterns across time or culture. Child gender was occasionally associated with child behavior (but not parenting behavior) such that boys demonstrated higher levels of both AGG and RB behavior. Similarly, greater mother and father education were occasionally associated with greater warmth, less behavior control, and less child AGG and RB.

TABLE 2 Descriptive statistics for substantive measures, full sample (N = 1,298)

	Mean	*SD*
Parental warmth		
Age 8	3.57	0.36
Age 9	3.59	0.35
Age 10	3.58	0.37
Age 12	3.56	0.38
Age 13	3.61	0.39
Parental control		
Age 8	2.98	0.41
Age 9	2.94	0.42
Age 10	2.88	0.41
Age 12	2.85	0.44
Age 13	2.83	0.51
Child aggression		
Age 8	8.25	4.24
Age 9	7.72	4.39
Age 10	7.34	4.49
Age 12	7.29	4.55
Age 13	6.33	5.27
Child rule-breaking		
Age 8	1.94	1.46
Age 9	1.81	1.44
Age 10	1.67	1.41
Age 12	1.84	1.68
Age 13	1.66	2.12

Note: Parent warmth and control measured on a 1–4 scale with higher scores indicating higher warmth and control. Child aggression was measured on a 0–2 scale, and then scores on 19 items were summed (for a maximum score of 38). Child rule-breaking was measured on a 0–2 scale, and then scores on 13 items were summed (for a maximum score of 26). Higher scores on aggression or rule-breaking indicate more severe aggression or rule-breaking.
Abbreviation: *SD*, standard deviation.

3.1 | Parental warmth—Child aggressive behavior

The final model (Figure 1 and Table 3) fit the data significantly better than the initial model that was constrained to be equal across cultures (χ^2 [363] = 741.58, $p < .01$). The model fit the data well (χ^2 [377] = 510.33, $p < .01$, RMSEA = 0.06, CFI/TLI = 0.97/0.95, SRMR = 0.09). In the final model, all paths were freed to vary across cultures except for seven of the eight cross-lagged paths (i.e., the four "parent effects" paths wherein warmth one year predicts AGG behavior the next year, and the four "child effects" paths wherein AGG behavior one year predict warmth the next year). The only cross-lagged effect that was freed to vary across cultures was the path from age 12 AGG to age 13 warmth. Freeing other cross-lagged paths to vary across cultures did not significantly improve model fit. One parenting effect was significant in all cultures; higher parental warmth at age 9 predicted lower child AGG behaviors at age 10. Three child effects were significant in all cultures: higher AGG behavior at ages 8, 9, and 10 predicted lower parental warmth at ages 9, 10, and 12, respectively. Additionally, in Sweden and Colombia, higher AGG behavior at age 12 also predicted lower parental warmth at age 13.

3.2 | Parental control—Child aggressive behavior

The final model (Figure 1 and Table 4) fit the data significantly better than the initial model that was constrained to be equal across cultures (χ^2 [418] = 690.60, $p < 0.01$). The model fit the data well (χ^2 [436] = 503.16 $p < 0.01$, RMSEA = 0.04, CFI/TLI = 0.99/0.97, SRMR = 0.07). In the final model, all paths were freed to vary across cultures except for the cross-lagged paths. Freeing cross-lagged paths to vary across cultures did not significantly improve model fit. Effects were similar to the parent warmth-child AGG model. One parent effect was significant in all cultures; higher parental control at age 9 predicted higher child AGG behavior at age 10. Three child effects were significant in all cultures: higher AGG behavior at ages 8, 9, and 10 predicted higher parental control at ages 9, 10, and 12, respectively.

3.3 | Parental warmth—Child rule-breaking behavior

The final model (Figure 2 and Table 5) fit the data significantly better than the initial model that was constrained to be equal across cultures (χ^2 [429] = 932.38, $p < .01$). The model fit the data well (χ^2 [426] = 554.87, $p < .01$, RMSEA = 0.05, CFI/TLI = 0.97/0.93, SRMR = 0.09). In the final model, all paths were freed to vary across cultures

TABLE 3 Autoregressive cross-lagged associations between warmth and child aggressive behaviors across 12 different cultural groups

	Aggression regressed on warmth (parent effects)								Warmth regressed on aggression (child effects)							
	8 Warmth → 9 Aggression[a]		9 Warmth → 10 Aggression[a]		10 Warmth → 12 Aggression[a]		12 Warmth → 13 Aggression[a]		8 Aggression → 9 Warmth[a]		9 Aggression → 10 Warmth[a]		10 Aggression → 12 Warmth[a]		12 Aggression → 13 Warmth[b]	
Country/culture	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
China	.02	0.03	−.07†	0.03	.04	0.04	−.05	0.04	−.05*	0.02	−.06*	0.01	−.06*	0.02	−.12	0.12
Colombia	.01	0.01	−.05†	0.02	.02	0.02	−.03	0.02	−.08*	0.03	−.13*	0.03	−.08*	0.02	−.41*	0.10
Italy, Naples	.01	0.02	−.05†	0.02	.02	0.02	−.03	0.02	−.08*	0.03	−.11*	0.02	−.08*	0.03	−.10	0.09
Italy, Rome	.01	0.02	−.04†	0.02	.02	0.03	−.03	0.02	−.07*	0.02	−.09*	0.02	−.07*	0.02	.06	0.10
Jordan	.01	0.02	−.04†	0.02	.02	0.02	−.03	0.02	−.06*	0.02	−.10*	0.02	−.09*	0.03	−.12	0.09
Kenya	.02	0.03	−.08†	0.04	.04	0.03	−.02	0.02	−.05*	0.02	−.06*	0.01	−.09*	0.03	−.04	0.11
Philippines	.01	0.02	−.04†	0.02	.03	0.02	−.02	0.02	−.07*	0.02	−.10*	0.02	−.11*	0.02	0.06	0.08
Sweden	.02	0.02	−.04†	0.02	.02	0.02	−.03	0.02	−.10*	0.03	−.12*	0.03	−.09*	0.03	−.21†	0.11
Thailand	.02	0.03	−.06†	0.03	.04	0.03	−.05	0.04	−.06*	0.02	−.07*	0.02	−.06*	0.02	.02	0.09
USB	.01	0.02	−.03†	0.01	.01	0.01	−.02	0.01	−.12*	0.04	−.17*	0.04	−.12*	0.04	−.09	0.12
USL	.01	0.02	−.03†	0.01	.02	0.02	−.03	0.02	−.08*	0.03	−.11*	0.02	−.11*	0.03	−.15	0.13
USW	.01	0.01	−.03†	0.01	.01	0.01	−.02	0.02	−.12*	0.04	−.23*	0.05	−.16*	0.05	−.04	0.10

Note: Coefficients are standardized.

Abbreviations: CFI, comparative fit index; RMSEA, root mean square error of approximation; *SE*, standard error; SRMR, standardized root mean squared residual; TLI, Tucker–Lewis index; USB , U.S. Black sample; USL, U.S. Latino sample; USW, U.S. White sample.

[a]Parameter was constrained to equality across cultural groups without significantly worsening model fit; slight variation in parameter estimates across cultural groups arises in the context of standardized coefficients.

[b]Parameter was not constrained to equality across cultural groups to improve model fit.

χ^2 [377] = 510.33, $p < .01$, RMSEA = 0.06, CFI = 0.97, TLI = 0.95, SRMR = 0.09.

*$p \leq .01$.

†$p \leq .05$.

TABLE 4 Autoregressive cross-lagged associations between control and child aggressive symptoms across 12 different cultural groups

	Aggression regressed on control (parent effects)								Control regressed on aggression (child effects)							
	8 Control → 9 Aggression[a]		9 Control → 10 Aggression[a]		10 Control → 12 Aggression[a]		12 Control → 13 Aggression[a]		8 Aggression → 9 Control[a]		9 Aggression → 10 Control[a]		10 Aggressio → 12 Control[a]		12 Aggression → 13 Control[a]	
Country/culture	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
China	−.01	0.02	.04†	0.02	−.01	0.03	−.03	0.03	.11*	0.03	.09*	0.03	.13*	0.03	.02	0.03
Colombia	−.01	0.02	.04†	0.02	−.01	0.02	−.02	0.01	.12*	0.03	.10*	0.03	.13*	0.03	.02	0.03
Italy, Naples	−.01	0.02	.04†	0.02	−.01	0.02	−.03	0.02	.11*	0.03	.10*	0.03	.11*	0.03	.02	0.03
Italy, Rome	−.01	0.02	.04†	0.02	−.01	0.03	−.03	0.02	.09*	0.02	.08*	0.02	.12*	0.03	.02	0.02
Jordan	−.01	0.02	.03†	0.01	−.01	0.02	−.02	0.02	.12*	0.03	.11*	0.03	.17*	0.04	.03	0.04
Kenya	−.01	0.02	.04†	0.02	−.01	0.02	−.03	0.02	.11*	0.03	.10*	0.03	.10*	0.02	.02	0.03
Philippines	−.01	0.02	.03†	0.01	−.01	0.02	−.03	0.02	.14*	0.03	.12*	0.03	.15*	0.03	.02	0.03
Sweden	−.02	0.03	.06†	0.03	−.01	0.03	−.05	0.04	.08*	0.02	.06*	0.02	.07*	0.02	.01	0.02
Thailand	−.01	0.02	.03†	0.02	−.01	0.02	−.03	0.03	.12*	0.03	.10*	0.03	.12*	0.03	.02	0.02
USB	−.01	0.02	.03†	0.02	−.01	0.02	−.02	0.01	.13*	0.03	.10*	0.03	.15*	0.03	.02	0.03
USL	−.01	0.02	.03†	0.02	−.01	0.02	−.03	0.02	.11*	0.03	.08*	0.02	.16*	0.04	.02	0.03
USW	−.01	0.01	.04†	0.02	−.01	0.03	−.03	0.03	.11*	0.03	.09*	0.03	.12*	0.03	.02	0.03

Note: Coefficients are standardized.

Abbreviations: CFI, comparative fit index; RMSEA, root mean square error of approximation; *SE*, standard error; SRMR, standardized root mean squared residual; TLI, Tucker–Lewis index; USB , U.S. Black sample; USL, U.S. Latino sample; USW, U.S. White sample.

[a]Parameter was constrained to equality across cultural groups without significantly worsening model fit; slight variation in parameter estimates across cultural groups arises in the context of standardized coefficients.

χ^2 [436] = 503.16, p = .01, RMSEA = 0.04, CFI = 0.99, TLI = 0.97, SRMR = 0.07.

*$p \leq .01$.

†$p \leq .05$.

TABLE 5 Autoregressive cross-lagged associations between warmth and child rule-breaking behaviors across 12 different cultural groups

	Rule-breaking regressed on warmth (parent effects)								Warmth regressed on rule-breaking (child effects)							
	8 Warmth → 9 Rule-Breaking[a]		9 Warmth → 10 Rule-Breaking[b]		10 Warmth → 12 Rule-Breaking[b]		12 Warmth → 13 Rule-Breaking[a]		8 Rule-Breaking → 9 Warmth[b]		9 Rule-Breaking → 10 Warmth[b]		10 Rule-Breaking → 12 Warmth[b]		12 Rule-Breaking → 13 Warmth[b]	
Country/culture	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
China	.02	0.10	−.09*	0.03	−.10†	0.05	.07	0.14	−.02	0.02	−.05*	0.01	−.08*	0.03	−.01	0.02
Colombia	−.19†	0.08	−.11*	0.03	−.03	0.02	−.38*	0.11	−.04	0.03	−.12*	0.03	−.07*	0.02	−.02	0.04
Italy, Naples	.09	0.08	−.10*	0.03	−.05†	0.02	.07	0.07	−.04	0.03	−.08*	0.02	−.08*	0.02	−.01	0.04
Italy, Rome	−.06	0.08	−.07*	0.02	−.05†	0.03	.07	0.09	−.03	0.02	−.08*	0.02	−.09*	0.03	−.01	0.03
Jordan	−.11	0.09	−.07*	0.02	−.04†	0.02	−.07	0.08	−.04	0.03	−.10*	0.03	−.11*	0.03	−.01	0.03
Kenya	−.25†	0.10	−.14*	0.04	−.07†	0.04	.02	0.10	−.03	0.02	−.06*	0.02	−.10*	0.03	−.01	0.03
Philippines	−.16	0.09	−.07*	0.02	−.05†	0.03	−.02	0.09	−.04	0.03	−.09*	0.02	−.11*	0.03	−.01	0.03
Sweden	−.13	0.08	−.08*	0.02	−.05	0.03	−.16	0.11	−.05	0.03	−.11*	0.03	−.09*	0.03	−.01	0.03
Thailand	−.12	0.08	−.12*	0.03	−.06†	0.03	−.06	0.10	−.03	0.02	−.06*	0.02	−.06*	0.02	−.01	0.02
USB	−.22*	0.08	−.05*	0.02	−.03	0.01	−.05	0.10	−.06	0.04	−.14*	0.04	−.13*	0.04	−.01	0.05
USL	.00	0.10	−.07*	0.02	−.05	0.03	−.30*	0.12	−.04	0.03	−.07*	0.02	−.09*	0.03	−.01	0.03
USW	.08	0.08	−.06*	0.02	−.02†	0.01	−.07	0.09	−.05	0.03	−.13*	0.04	−.14*	0.04	−.02	0.04

Note: Coefficients are standardized.

Abbreviations: CFI, comparative fit index; RMSEA, root mean square error of approximation; *SE*, standard error; SRMR, standardized root mean squared residual; TLI, Tucker–Lewis index; USB , U.S. Black sample; USL, U.S. Latino sample; USW, U.S. White sample.

[a]Parameter was not constrained to equality across cultural groups to improve model fit.

[b]Parameter was constrained to equality across cultural groups without significantly worsening model fit; slight variation in parameter estimates across cultural groups arises in the context of standardized coefficients.

χ^2 [426] = 554.87, $p < .01$, RMSEA = 0.05, CFI = 0.97, TLI = 0.93, SRMR = 0.09.

*$p \le .01$.

†$p \le .05$.

TABLE 6 Autoregressive cross-lagged associations between control and child rule-breaking behaviors across 12 different cultural groups

	Rule-breaking regressed on control (parent effects)								Control regressed on rule-breaking (child effects)							
	[a]8 Control → 9 Rule-Breaking		[a]9 Control → 10 Rule-Breaking		[a]10 Control → 12 Rule-Breaking		[a]12 Control → 13 Rule-Breaking		[a]8 Rule-Breaking → 9 Control		[a]9 Rule-Breaking → 10 Control		[a]10 Rule-Breaking → 12 Control		[a]12 Rule-Breaking → 13 Control	
Country/culture	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
China	.05†	0.03	.03	.02	−.04	0.03	.02	0.03	.07*	0.02	.04	0.02	.12*	0.04	−.01	0.02
Colombia	.04†	0.02	.04	.03	−.03	0.02	.02	0.02	.10*	0.03	.05	0.03	.08*	0.03	−.01	0.03
Italy, Naples	.06†	0.03	.05	.03	−.03	0.03	.03	0.03	.09*	0.03	.04	0.02	.07*	0.02	−.01	0.03
Italy, Rome	.05†	0.03	.04	.02	−.03	0.03	.02	0.01	.06*	0.02	.04	0.03	.09*	0.03	−.01	0.03
Jordan	.04†	0.02	.03	.02	−.02	0.02	.01	0.02	.12*	0.04	.05	0.03	.13*	0.04	−.01	0.05
Kenya	.04†	0.02	.04	.02	−.03	0.02	.02	0.02	.10*	0.03	.04	0.03	.07*	0.02	−.01	0.03
Philippines	.04†	0.02	.03	.02	−.03	0.02	.02	0.02	.12*	0.04	.05	0.03	.11*	0.03	−.01	0.02
Sweden	.08†	0.04	.06	.04	−.06	0.05	.04	0.05	.06*	0.02	.03	0.02	.05*	0.02	−.01	0.02
Thailand	.04†	0.02	.04	.02	−.03	0.02	.02	0.03	.09*	0.03	.04	0.03	.08*	0.03	−.01	0.03
USB	.05†	0.02	.03	.02	−.03	0.02	.01	0.01	.10*	0.03	.04	0.03	.11*	0.03	−.01	0.03
USL	.06†	0.03	.04	.02	−.04	0.03	.02	0.03	.08*	0.03	.03	0.02	.09*	0.03	−.01	0.03
USW	.07†	0.03	.04	.03	−.04	0.03	.03	0.03	.06*	0.02	.03	0.02	.07*	0.02	−.01	0.03

Note: Coefficients are standardized.

Abbreviations: CFI, comparative fit index; RMSEA, root mean square error of approximation; *SE*, standard error; SRMR, standardized root mean squared residual; TLI, Tucker–Lewis index; USB , U.S. Black sample; USL, U.S. Latino sample; USW, U.S. White sample.

[a]Parameter was constrained to equality across cultural groups without significantly worsening model fit; slight variation in parameter estimates across cultural groups arises in the context of standardized coefficients.

χ^2 [376] = 448.94, $p < .01$, RMSEA = 0.04, CFI = 0.99, TLI = 0.95, SRMR = 0.07.

*$p \leq .01$.

†$p \leq .05$.

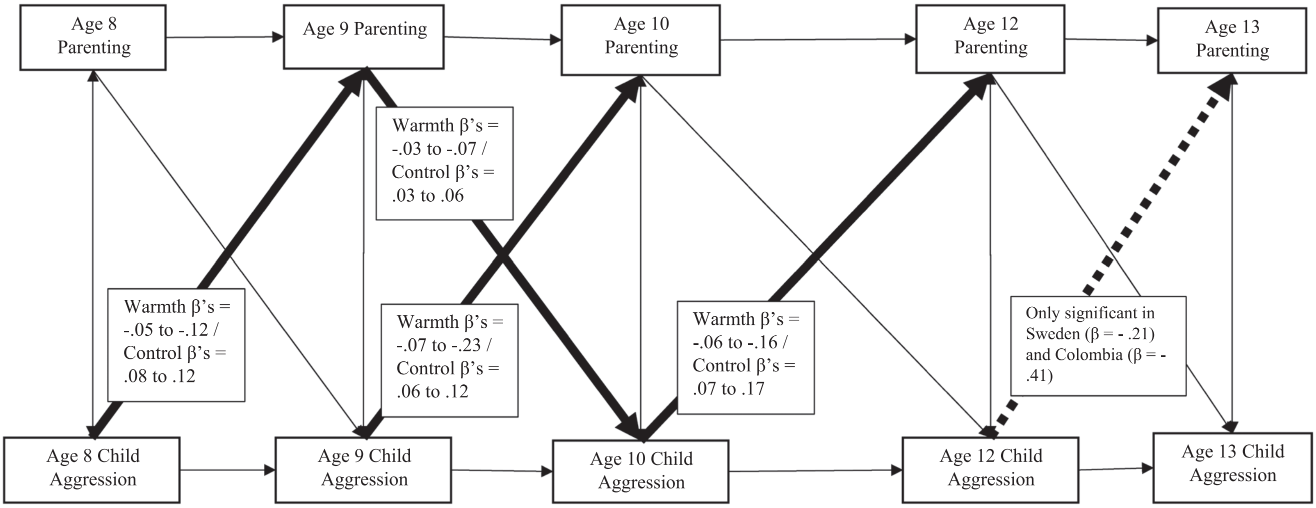

FIGURE 1 Model depicting pathways between parental warmth and control and child aggressive behavior. Larger bold lines indicate significant ($p < .05$) cross-lagged paths. Range of significant standardized effects estimates across all 12 cultural groups reported. Autoregressive paths and within time correlations are depicted here to provide more complete picture of model framework, but results for these paths are not reported due to space. Covariates (child age, child gender, mother/father education) also controlled for at every time point, but nabot depicted here due to space
▪▪▪▪▪▪▪▪▪▪▶ Path significant only for parent warmth ━━━━▶ Path significant for both parent warmth and parent control

except for six of the eight cross-lagged paths. Specifically, two parent effect paths (the paths wherein parental warmth at ages 8 and 12 predicted child RB behavior at ages 9 and 13, respectively) were allowed to freely vary across cultures, because freeing such paths improved model fit.

One parent effect was significant in all cultures; higher parental warmth at age 9 predicted lower child RB behavior at age 10. Additionally, three other parent effects were significant in specific cultures. High parental warmth at age 8 predicted lower child RB at age 9 in U.S. Black, U.S. Latino, and Colombian culture groups. Higher parental warmth at age 10 predicted lower child RB at age 12 in all groups except for U.S. Blacks, U.S. Latinos, Swedes, and Colombians. Finally, higher parental warmth at age 12 predicted lower child RB at age 13 in U.S. Latinos and Colombians. Two child effects were significant in all cultures: higher RB at ages 9 and 10 predicted lower parental warmth at ages 10 and 12, respectively.

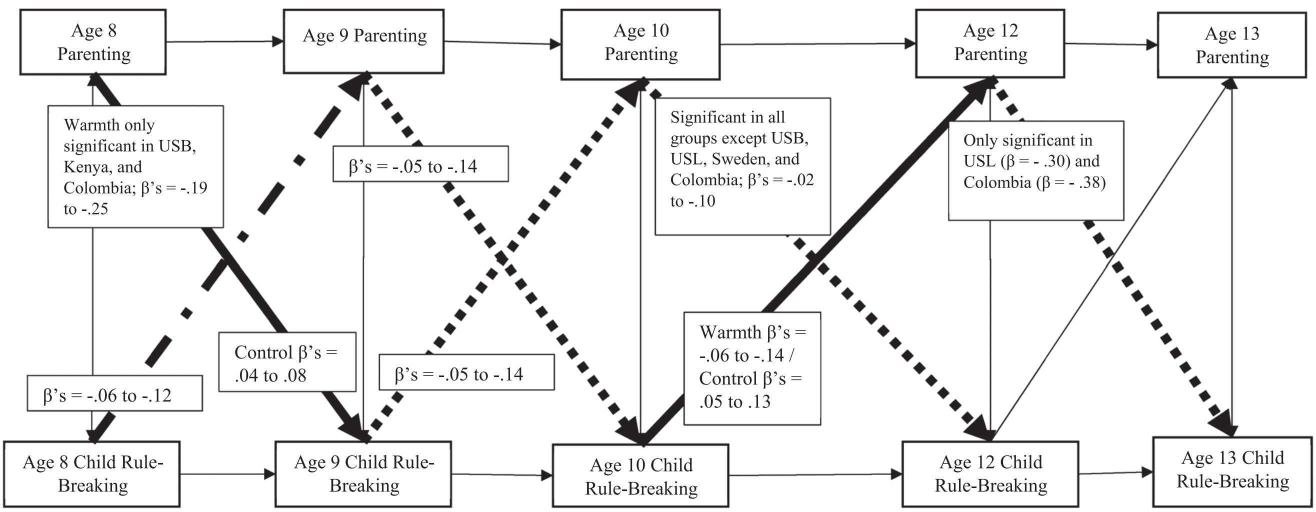

FIGURE 2 Model depicting pathways between parental warmth and control and child rule-breaking behavior. Larger bold lines indicate significant ($p < .05$) cross-lagged paths. Range of significant standardized effects estimates across all 12 cultural groups reported. Autoregressive paths and within time correlations are depicted here to provide more complete picture of model framework, but results for these paths are not reported due to space. Covariates (child age, child gender, mother/father education) also controlled for at every time point, but not depicted here due to space. USB, U.S. Black sample; USL, U.S. Latino sample
▪▪▪▪▪▪▪▪▪▪▶ Path significant only for parent warmth ━━ ▪ ━━▶ Path significant only for parent control ━━━━▶ Path significant for both parent warmth and parent control

3.4 | Parental control—Child rule-breaking behavior

The final model (Figure 2 and Table 6) fit the data significantly better than the initial model that was constrained to be equal across cultures (χ^2 [473] = 830.23, $p < .01$). The model fit the data well (χ^2 [376] = 448.94 $p < .01$, RMSEA = 0.04, CFI/TLI = 0.98/0.95, SRMR = 0.07). In the final model, all paths were freed to vary across cultures except for the cross-lagged paths. One parent effect was significant in all cultures; higher parental control at age 8 predicted higher child RB behavior at age 9. Two child effects were significant in all cultures: higher RB behavior at ages 8 and 10 predicted higher parental control at ages 9 and 12, respectively.

3.5 | Sensitivity analyses: Separating within- and between-person effects

Recent critiques of autoregressive, cross-lagged models argue that if constructs modeled are more trait-like in nature, then significant effects found in these models could be spurious (Hamaker, Kuiper, & Grasman, 2015). One solution is to include random intercepts in the model to separate stable between-person processes from within-person processes (Hamaker et al., 2015). We initially attempted to do so in our study models, but omnibus measures of model fit degraded such that models were not reliably interpretable (e.g., CFI/TLIs < 0.90, RMSEA > 0.10), probably due to the sheer complexity of estimating models including random intercepts across 12 different cultural groups. Therefore, we decided to report the results of these random intercept models in sensitivity analyses instead of as main study results. These sensitivity analyses (available from the first author) revealed large replication of the study results reported above. Ten of fourteen cross-culturally significant pathways retained their significance. The only pathways that were nonsignificant in these sensitivity analyses were the evocative child-driven effects of age 10 AGG (a) and RB (b) on subsequent child warmth, and the parent-driven effects of age 8 behavioral control on age 9 AGG (c) and age 9 behavioral control on age 10 RB (d). These nonsignificant paths did not change the substantive conclusions we drew about our study.

4 | DISCUSSION

4.1 | Hypothesis 1: Effects of parent warmth and control on subsequent RB and AGG

Our first hypothesis, that parent warmth and behavioral control would be more often associated with subsequent RB, as opposed to AGG behavior and that these parenting effects on RB would extend into adolescence, was largely supported. The effects of parent warmth and behavioral control each only impacted child AGG at one time point: age 9 warmth and control were each prospectively associated with age 10 AGG behavior in all cultures. These parenting effects may emerge at age 10 (and not earlier) for many children because aggressive behavior in many children begins to decrease at approximately age 10 and remain low after 10 (Campbell, Spieker, Vandergrift, Belsky, & Burchinal, 2010), so effects of parenting may be especially pronounced at, and specific to, this age.

In contrast to the age-limited effects on AGG, the effects of these parenting behavior on child RB spanned all ages examined in the current study, with behavioral control at age 8 and warmth at ages 8 (in three cultures), 9 (in all cultures), 10 (in eight cultures), and 12 (in two cultures) all associated with subsequent RB behavior in at least some cultures. Moreover, in all but two cultural groups (Sweden and U.S. Black groups), the prospective associations of warmth extended into adolescence, with greater warmth at ages 10 or 12 predicting less severe RB behavior at ages 12 or 13 in 10 cultural groups. Importantly, in both the Swedish and U.S. Black samples greater age 10 warmth predicted less severe age 12 RB behavior as well, but the results were barely statistically nonsignificant ($p = .055$ in both groups), suggesting that these two samples generally (if not statistically significantly) conformed to these wider sample-wide trends. One possible explanation for this difference in effects between RB and AGG behavior emerges from existing developmental and behavioral genetics research that indicates RB behaviors emerge in adolescence and are more susceptible to environmental influences than AGG behavior (Burt, 2012, 2013). Indeed, initial work examining another parenting behavior (maternal negativity) demonstrated that associations between maternal negativity and child RB were largely environmental in origin (Klahr et al., 2014).

The current investigation adds to this existing literature by demonstrating a similar pattern of RB environmental responsivity to other parenting behaviors (especially parent warmth), across a wide age range (i.e., ages 8–13), and in many different cultural groups around the world. These results also have implications for existing parenting interventions. Currently, evidence suggests parent training interventions that teach parents to reduce negativity, demonstrate warmth, and establish effective behavioral control are especially effective in preventing preadolescent (i.e., <age 10) child externalizing problems (i.e., AGG and RB; Kaminski & Claussen, 2017). Our results suggest that interventions that teach parents this suite of skills might be effective in decreasing early adolescent RB behaviors across some cultures.

Additionally parent behavioral over-control predicted greater subsequent rule-breaking (at age 9) and aggression (at age 10) across cultures. Therefore, in our sample we only detected deleterious effects of parent behavioral over-control, as opposed to deleterious effects of both over-control and under-control. We suspect this may be because our behavioral control questionnaire items were more likely to pick up effects of behavioral over-control as opposed to under-control. For instance "parents insist children do exactly as they are told" and "parents want to control whatever I do," were items on our questionnaire that indicated over-control if scored higher. If these items were reworded to say "parents do not insist child follows directions" or "parents avoid controlling my actions" they may indicate under-control more readily.

4.2 | Hypothesis 2: Evocative child effects of RB and AGG on parent warmth and control

Our second hypothesis, that child AGG behavior would evoke low parent warmth and parent behavioral over- or under-control more frequently than RB behavior, and that this would be especially true in preadolescence, was largely supported. Child AGG behavior was significantly associated with subsequent parental warmth or control on six out of eight possible developmental paths across all cultures, whereas child RB behavior only did so on four of eight possible paths. Moreover, in preadolescence (before age 10), this was true in four out of four possible AGG paths, whereas it was only true in two of four possible RB paths. Prior cross-sectional work in preadolescent children ages 6–10 revealed that AGG behavior evoked maternal negativity to a greater extent than RB behavior (Klahr et al., 2014). The present work demonstrates these child-driven effects across two more seminal types of parenting behavior (warmth and behavioral control) in a longitudinal context across a variety of different cultures. We suspect these early-emerging, child-driven effects for AGG behavior may occur because AGG behavior emerges earlier in childhood compared to RB behavior (Burt, 2012, 2013) and because stability in these types of behavior over ontogeny may be more greatly indicative of a chronic, persistent course of antisocial behavior (Burt, 2012). Thus, children who are more consistently aggressive across ontogeny and therefore difficult to deal with might also be more likely to bring about frustrated, maladaptive responses from their parents over ontogeny (Dishion & Patterson, 2006; Klahr et al., 2014). We believe these results may have important clinical implications. Specifically, parenting interventions in families where children demonstrate elevations in AGG behavior should place special emphasis on teaching parents how to maintain their levels of warmth and appropriate behavioral control even when their child's AGG behavior leave them increasingly frustrated and dysregulated (Klahr et al., 2014).

4.3 | Hypothesis 3: Examining differences in parent and child-driven effects across cultures

Our third hypothesis, that we expected to see greater cross-cultural variation in associations between parenting behavior and RB, as opposed to AGG behavior, was partially supported. Specifically, this hypothesis was especially well-supported with regard to the effects of parental warmth on subsequent RB, as opposed to AGG. Whereas the effects of parent warmth on RB demonstrated cultural variation at three of four possible time points, no such cultural differences emerged when examining the effects of warmth on AGG. We suspect that these cultural variations may emerge due to a combination of etiological differences in RB versus AGG behavior, and cultural differences in the emphasis and impact of parental warmth. Specifically, prior work has demonstrated that the greater relative susceptibility of RB behavior to environmental influences (Burt, 2012, 2013) can lead to greater variation in RB behavior across cultures (Breslau et al., 2011; Yarnell et al., 2013). Yet, for parental warmth to impact such cross-cultural variation, there must also be differences across cultural groups in how warmth is deployed. We believe community risk, cultural emphasis on devotion to one's family, and cultural normativeness might account for such variations in warmth in our sample.

Parent warmth protected against child RB at age 8 in three of the four cultural groups (U.S. Blacks, Kenyans, and Colombians) that ranked highest for neighborhood danger in our sample (Skinner et al., 2014). Given that exposure to rule-breaking behavior in high-crime communities increases risk for externalizing behavior (Dishion & Patterson, 2006), it may be that parents in these communities compensate for such risk by emphasizing strong, warm relationships with their children from a young age to ensure they do not succumb to the rule-breaking models around them. Additionally, parent warmth also protected against child RB at age 13 in two Latino samples (U.S. Latinos and Colombians). *Familism* is a Latino cultural value that emphasizes deep devotion, belonging to, and connection with one's family, and has been demonstrated to protect against early adolescent externalizing problems (Kapke et al., 2017). We suspect that the presence of familism as a cultural value leads protective effects of parental warmth against RB to extend into early adolescence in Latino families. Because Latino children, on average, value relationships with their parents especially highly, parental warmth may be protective over longer periods of time in these cultural groups.

An additional mechanism that may play a role in driving cultural differences in the effects of warmth on rule-breaking is cultural normativeness of warmth. Specifically, two of the three cultures (i.e., U.S. Black and Colombian samples) that demonstrated protective effects of age 8 warmth on age 9 rule-breaking had mean levels of age 8 parent warmth that were significantly higher than the sample average, and both cultures (i.e., U.S. Latino and Colombian samples) that demonstrated protective effects of age 12 warmth on age 13 rule-breaking also had levels of age 12 warmth that were significantly higher than the sample average. In cultures where warmth is more normative, the protective effects of warmth on rule-breaking behavior may be enhanced (as was found for other child adjustment measures in Lansford, Godwin, et al., 2018).

4.4 | Strengths and limitations

Investigators examining the distinct etiologies of AGG and RB behavior have called for future investigations to examine associations between these types of behavior and parental warmth and control (Klahr et al., 2014), to ensure such investigations are longitudinal in nature and expand investigation of phenomena beyond age 10 (Klahr et al., 2014) and to examine such associations across cultures (Burt, 2012). The present study is a strong contribution to existing literature because it meets all of these objectives. However, the current investigation also has several limitations. First, parenting and externalizing behavior were reported, as opposed to observed in vivo. Second, cultural subsamples were representative of the cities, but not nations, in which they were embedded. Therefore, results should not be generalized to reflect country-wide effects. Third, and relatedly, although samples were ethnically and educationally representative of the cities from which they came, it is less clear whether they were representative in terms of family structure. Most parents in our study were married (82%) and biological parents (97%) and retention rates were high (82%). These high rates may be a product of cultural phenomena (e.g., divorce being illegal in the Philippines, very few children born outside of marriage in several cultures studied including the Philippines, Jordan, Kenya, and China). However, these high rates may also indicate that family structures in our study are highly stable, and therefore families are at lower risk for maladaptive parenting and child externalizing behavior. Our findings may be accentuated in samples with families whose structures are less stable. Fourth, the present investigation only follows children through age 13, and the extent to which effects endure in later adolescence is unknown. Fifth, unlike prior behavioral genetics investigations (Burt, 2013; Klahr et al., 2014), the present study was not conducted with twins, and therefore could not directly parse variance due to genetic and environmental components.

Despite these limitations, the present study generates several important insights that can guide understanding of the differing associations between parenting behavior and RB and AGG behavior in many cultural groups. It appears associations between parent warmth and subsequent RB behavior are more frequent across ontogeny, last longer into adolescence, and demonstrate greater variability across different cultures, than associations between warmth and subsequent AGG behavior. In contrast, evocative effects of child AGG behavior on subsequent parent warmth and behavioral control are much more common, especially before age 10, than those of RB. Overall, findings suggest that considering the type of externalizing behavior, developmental time point, and cultural context is essential to understanding how parenting and child behavior reciprocally affect one another.

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