



# The Intergenerational Transmission of Maladaptive Parenting and its Impact on Child Mental Health: Examining Cross-Cultural Mediating Pathways and Moderating Protective Factors

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## Abstract

Using a sample of 1338 families from 12 cultural groups in 9 nations, we examined whether retrospectively remembered Generation 1 (G1) parent rejecting behaviors were passed to Generation 2 (G2 parents), whether such intergenerational transmission led to higher Generation 3 (G3 child) externalizing and internalizing behavior at age 13, and whether such intergenerational transmission could be interrupted by parent participation in parenting programs or family income increases of > 5%. Utilizing structural equation modeling, we found that the intergenerational transmission of parent rejection that is linked with higher child externalizing and internalizing problems occurs across cultural contexts. However, the magnitude of transmission is greater in cultures with higher normative levels of parent rejection. Parenting program participation broke this intergenerational cycle in fathers from cultures high in normative parent rejection. Income increases appear to break this intergenerational cycle in mothers from most cultures, regardless of normative levels of parent rejection. These results tentatively suggest that bolstering protective factors such as parenting program participation, income supplementation, and (in cultures high in normative parent rejection) legislative changes and other population-wide positive parenting information campaigns aimed at changing cultural parenting norms may be effective in breaking intergenerational cycles of maladaptive parenting and improving child mental health across multiple generations.

**Keywords** Intergenerational transmission · Parenting · Externalizing · Internalizing · Income · Culture

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## Introduction

“The apple doesn’t fall far from the tree.” “It runs in the family.” These popular sayings reflect the idea that parenting and family environment features are passed down through generations [1]. Longitudinal research has substantiated these claims; maladaptive parenting in one generation (Generation 1, “G1”) appears to be passed down to parents of the next generation (Generation 2, “G2”) with deleterious consequences for grandchild development and mental health (Generation 3, “G3”; [1, 2]), including greater G3 externalizing behavior [3] and internalizing behavior [4]. Studies that identify protective factors that break the intergenerational transmission of maladaptive parenting are needed [2]. Additionally, most existing research on the intergenerational transmission of parenting has been conducted in predominantly white samples in the United States or Western Europe [1, 2]. Therefore, investigations of patterns of intergenerational continuity, and their detrimental effects on child mental health, are also needed in other cultures [1].

The present study fills both of these gaps in the current literature. First, it utilizes a longitudinal sample of 1338 families from 12 cultural groups in 9 nations to examine whether intergenerational transmission of parenting and its effects on child mental health persist across cultures. Second, it investigates whether such patterns of continuity are broken by two types of protective factors: (a) mother or father participation in a parenting program or (b) significant increases in family income over the past year. It investigates this “breakage” question by examining whether protective factors render the entire pathway from high G1 maladaptive parenting to high G2 maladaptive parenting to greater G3 externalizing and internalizing behavior nonsignificant by either making the association between G1 and G2 maladaptive parenting nonsignificant or making the association between G2 maladaptive parenting and G3 externalizing/internalizing behavior nonsignificant (or both).

### Intergenerational Transmission of Parenting and its Effects on Child Mental Health

Myriad maladaptive parenting behaviors, including parent coldness, inconsistent discipline, poor monitoring, aggressive parenting, and parent–child conflict have all demonstrated intergenerational transmission from G1 to G2 in prospective longitudinal studies [2]. One useful way to organize these numerous findings and holistically conceptualize the intergenerational impact of parenting emerges from Interpersonal Acceptance-Rejection Theory (IPART;

[5]). IPART posits that humans have developed an enduring, universal, emotional need for positive responses from the people closest to them, especially from parents in childhood [5]. However, if children experience parental rejection, then they are likely to experience numerous adverse mental health outcomes into adulthood (as demonstrated in IPART-based meta-analyses; [6]).

IPART posits that parent rejection emerges in four forms all over the world that include: (1) coldness (i.e., the absence of expressed affection), (2) hostility (i.e., the expression of anger), (3) neglect (i.e., a lack of concern for children’s needs), and (4) undifferentiated rejection (i.e., children’s beliefs that they are unloved by parents; [5]). Each of these four aspects of parent rejection is subject to intergenerational transmission as demonstrated in myriad prospective longitudinal studies (see [1, 2] for systematic reviews) and has been linked to increases in child externalizing behavior [3] and internalizing behavior [4].

Several mechanisms have been theorized to account for intergenerational transmission, with the two most-invoked and well-supported mechanisms being direct transmission through social learning and indirect transmission through the development of maladaptive G2 social skills and mental health [1, 2]. Direct transmission occurs when G2s observe rejecting parenting behavior modeled by G1s, learn and remember it, incorporate it into their own mental schemas of parenting, and then perpetuate such behaviors as they parent their G3s [1]. G2 learning of these behaviors is reinforced throughout childhood as they observe that G1 parent rejecting behaviors (i.e., hostility, neglect, coldness) allow G1 parents to achieve their social goals in family interactions (e.g., avoiding household chores, undesirable conversations, or activities they do not want to partake in) [1, 2]. Indirect transmission occurs when G1 parent rejection of G2s in childhood leads to the development of externalizing and internalizing psychopathology and accompanying social skill deficits in G2s that persist into adulthood and lead to the instantiation of G2 parent rejection when G2s parent their G3s. This indirect transmission could be due to G2 psychopathology and social skill deficits making it more likely for G2 parent rejection to emerge, and because G2 psychopathology and social skill deficits lead to higher-stress, under-resourced family contexts, which further promote G2 parent rejection [1, 2, 7–9]. In sum, existing evidence indicates that, perhaps via G2 social learning or the emergence of G2 psychopathology, parent rejection is passed across generations and adversely impacts G3 child mental health. Yet, it is unclear whether such intergenerational transmission of parenting occurs similarly in diverse cultures.

## Considering the Cross-Cultural Persistence of Intergenerational Parent Rejection

The most recent comprehensive review of the intergenerational transmission of parenting literature acknowledges that intergenerational transmission of parenting may differ across cultures because parenting beliefs, practices, and styles differ across cultures [1]. Therefore, these reviewers identified examination of ethnic/cultural differences in intergenerational parenting as a vital future direction [1].

Sparse preliminary evidence from prospective longitudinal studies in the United States indicates that the intergenerational transmission of parent rejection may be universal across cultures. One study found that intergenerational transmission of overall parenting quality did not differ based on ethnic minority versus majority status [8], and the other study found that the intergenerational transmission of family conflict did not differ among Latinx and non-Latinx families [9]. Additionally, one study of the intergenerational transmission of harsh discipline in 600 Chinese parents found that such transmission occurred in both Chinese mothers and fathers at levels similar to that seen in U.S. studies [10]. Moreover, single-generation longitudinal and meta-analytic work has prospectively linked parent rejection and overcontrol to child externalizing and internalizing problems with few cross-cultural differences in over 31 cultural groups [6, 11, 12]. Collectively, however, intergenerational findings are preliminary, incomplete, and non-representative of diverse cultures. Additionally, all the aforementioned research examined differences in parts of the intergenerational parent rejection transmission process across regional or country-level cultural groups. However, no investigations have moved beyond investigating these essentially geographically based cultural differences and identified what cultural characteristics might impact the intergenerational transmission of parenting behaviors [13].

One aspect of culture that might account for differences in intergenerational transmission of parenting behaviors is cultural normativeness, which has been examined in relation to associations between parenting and child outcomes but not yet in relation to associations between parenting in one generation and the next [14]. Cultural normativeness of a parenting behavior can be defined as the extent to which that parenting behavior is regularly occurring in that culture [13]. Cultural normativeness in parenting behaviors could affect both subpaths (i.e., direct transmission via social learning and indirect transmission via G2 psychopathology) of the intergenerational parent rejection pathway. First, cultural normativeness could affect whether G1 parent rejection is associated with G2 parent rejection. Culture involves the transmission of shared beliefs and practices from one generation to the next [15]. Aligning with this pattern, different cultures emphasize unique parenting behaviors that

are passed down from one generation to the next, such as *familismo* and *respeto* in Latinx cultures, or egalitarian parenting styles in Sweden [16–19]. Moreover, IPART meta-analyses have revealed that cultures vary in their levels of parent rejection worldwide [5]. Therefore, the extent to which parent rejection is passed from one generation to the next in a culture may depend on how normative that behavior is in cultural context. More normative parenting behaviors are more likely to be passed across generations because they are more frequently discussed and socialized within the family context [2] and characterize the larger culture [15].

Second, cultural normativeness could impact how G2 parent rejection is associated with G3 mental health. Specifically, the effects of positive parenting behaviors on child socioemotional development can be enhanced in cultures where such parenting behaviors are more normative [13]. However, the effects of negative parenting behaviors that enact hostility, rejection, or neglect (e.g., corporal punishment) on child outcomes (such as externalizing behavior) are attenuated (but still deleterious) in cultures with higher normative levels of those parenting behaviors [20]. Taken together, these findings suggest that parents' behaviors are generally linked to better (or less adverse) child outcomes when parents act in ways that are normative within their cultural context.

## Identifying Protective Factors That Disrupt the Intergenerational Transmission of Parent Rejection

Intergenerational researchers have urgently called for identification of protective factors that can break the intergenerational cycle of parent rejection [1]. Two classes of protective factors may show exciting potential to do so: parenting programs (where parents are taught parenting skills; [2]) and income supplements (where parents are provided with additional money beyond what they typically earn; [21]).

The social learning mechanism that facilitates intergenerational transmission of parent rejection might be broken by parenting programs. Mahrer et al. [22] demonstrated that a parenting program designed to improve G1 mothers' parenting behaviors after their divorce when their G2 children were 9–12 years old improved their own parenting and subsequently improved their G2 children's parenting attitudes 15 years later, thereby breaking intergenerational continuity in harsh discipline attitudes. Though it did not directly measure G2 parenting, this work indicates adaptive parenting modeling experienced in a parenting program may break intergenerational cycles of parent rejection.

Additionally, G2 parenting program participation might remediate G2 social skill deficits and psychopathology symptoms that serve as a second mechanism for the intergenerational transmission of parent rejection. For

instance, provision of the Fast Track Intervention, which included a parenting intervention alongside a comprehensive school-based intervention provided to families of children at high risk for conduct problems in early and middle childhood led to significantly fewer externalizing, internalizing, or substance abuse problems when those children reached age 25 [23]. Moreover, this improvement was in part due to improvements in social skills and self-regulation [24]. Similarly, the Raising Healthy Children Intervention in Seattle, Washington demonstrated that teaching G1 parents skills to promote G2 social and emotional development when G2s were in grades 2–6 led to decreases in G3 child externalizing and internalizing behavior decades later [25]. Thus, parenting programs may ameliorate G2 psychopathology symptoms, dysregulation, and skill deficits implicated as potential mechanisms of the parent rejection intergenerational pathway.

Parent income supplementation may also break intergenerational pathways to parent rejection and poor child mental health. One reason that parenting may show intergenerational continuity is that the socioeconomic contexts within which such parenting is embedded show intergenerational continuity [1]. If parents in successive generations are not able to break intergenerational cycles of economic poverty, the persistent family stress, scarce family resources, and less time for caregiving that such poverty precipitates may lead to the same maladaptive parenting behaviors across generations [1]. Indeed, several intergenerational studies have found that intergenerational cycles of socioeconomic risk co-exist alongside intergenerational cycles of maladaptive parenting when both constructs are examined simultaneously [3, 26].

Yet, existing evidence from quasi-experimental longitudinal work indicates that changes in family income in one generation lead to lasting beneficial effects on child mental health, even as they grow into adults [27]. Specifically, halfway through a longitudinal study started in 1993 that examined poor rural youth, the 25% of the families in the sample that belonged to a Native American tribe began to receive annual income supplements after a casino opened on their land. This income supplement predicted decreases in behavioral and emotional disorders for youth receiving it over the next 4 years [28] and reduced likelihood for committing crimes or having a psychiatric disorder by age 21 [29]. In sum, boosts in family income might reduce family stress and parent psychopathology that could precipitate the intergenerational transmission of parent rejection and might increase parenting resources that are key to breaking intergenerational cycles.

## Accounting for Differences Between Mothers and Fathers

Although not a central focus of the current study, it is also important to note that intergenerational pathways to parent rejection may differ by G2 parent gender. Prospective investigations of the intergenerational transmission of poor parent discipline [26] and family conflict [9] found transmission of these constructs in G2 women but not men. However, in contrast, investigations of hostile and aggressive parenting [14] found no differences in the intergenerational transmission of these parenting behaviors by parent gender. Given the current equivocal state of the literature, we examined our cross-cultural intergenerational pathways in mothers and in fathers separately.

## Considering Developmental Continuity in Parenting Across Generations

Additionally, estimates of the intergenerational transmission of parenting are enhanced when parenting is measured at the same points in child development across generations [1]. This is because the relevance of specific parenting behaviors, social contexts, and child behavior more readily align when the same child developmental age is examined across generations [1]. Yet, despite this advantage, few intergenerational studies are able to examine parenting in successive generations at similar child developmental ages [1]. We attempt to fill this gap in existing literature by examining the intergenerational transmission of parenting from G1s when their G2 children were ages 7–12 to G2 parents when their G3 children were ages 13. In so doing we align ourselves with best practice in the intergenerational transmission of parenting literature [1].

## The Current Study

Much existing evidence demonstrates that parent rejecting behaviors can be transmitted across G1-G2 generations and subsequently negatively impact G3 child development. However, scholars and interventionists have identified a need to determine (1) whether such intergenerational pathways persist across cultures and (2) whether such pathways can be disrupted by protective factors. The present study endeavors to answer both questions. In so doing, we make three directional hypotheses and offer one exploratory hypothesis.

First, we expected that the intergenerational transmission of parent rejecting behavior and its subsequent deleterious effects on G3 child mental health would persist at statistically significant levels across cultures, regardless of the cultural normativeness of parent rejection. In other words, we expected greater G1 parent rejection to be associated with greater G2 parent rejection, which would subsequently be

linked to greater G3 externalizing and internalizing behavior, across all cultures. Second, although we expected this intergenerational pathway would persist across cultures regardless of level of cultural normativeness, we estimated that the magnitude of this pathway would differ across cultures. Specifically, the intergenerational transmission of parent rejection from G1 to G2 would be greater, and the links between G2 rejection and G3 externalizing and internalizing behavior would be weaker, in cultures with higher normative rejection. Third, we expected that parenting programs and increases in income would prevent the intergenerational transmission of parent rejection and subsequent deleterious effects on G3 child externalizing and internalizing outcomes. Specifically, we expected that G2 parenting program participation and G2 increases in income would render the mediating pathways from high G1 rejection to high G2 rejection to high G3 externalizing and internalizing behaviors non-significant (as captured by a non-significant indirect mediating effect). Fourth, we explored whether associations examined in hypotheses 1–3 vary across G2 mothers and fathers.

## Method

### Participants

Participants included 1338 children ( $M = 8.59$  years; 50% girls), their mothers ( $N = 1283$ ,  $M = 37.04$  years), and their fathers ( $N = 1170$ ,  $M = 40.19$  years) who were part of the larger Parenting Across Cultures project. Families were recruited from 12 ethnocultural groups in nine countries (Supplemental Table 1) including: Shanghai, China ( $n = 123$ ); Medellín, Colombia ( $n = 108$ ); Naples ( $n = 102$ ) and Rome ( $n = 111$ ), Italy; Zarqa, Jordan ( $n = 114$ ); Kisumu, Kenya ( $n = 100$ ); Manila, Philippines ( $n = 120$ ); Trollhättan, Sweden ( $n = 129$ ); Chiang Mai, Thailand ( $n = 120$ ); and Durham, NC, United States ( $n = 110$  White,  $n = 102$  Black,  $n = 99$  Latinx). These samples were selected due to their variability across a number of important dimensions. For example, the countries rank 8–147th out of 189 countries on the United Nations' Human Development Index, an indicator of a country's health, education, and wealth [30].

Participants were recruited through schools. Response rates varied from 24 to 100%, primarily because of differences in the schools' roles in recruiting (i.e., some schools took a more active role in recruiting than in others). Data were collected annually after initial recruitment. The present study uses data through Wave 6, when 75.71% of the original sample provided data. Participants missing data on any variable reported slightly lower levels of G1 father rejection ( $M = 1.50$  vs.  $M = 1.58$ ), were more likely to be from cultures with low levels of parent rejection (52.41% vs. 43.96%), and were less likely to have had mothers or fathers who

participated in parenting programs (32.46% and 18.90% for mothers and fathers versus 42.38% and 38.53% for those with complete data). Those with missing and complete data did not differ on any other study variables. Given that data appear to be missing at random (i.e., data missingness depends on observed data), we utilized maximum likelihood estimation procedures to account for missing data, in accordance with best practices [31].

### Procedure

Measures were administered in the preferred language of each cultural group, following forward- and back-translation. Interviews lasted 2 h and were conducted after parent consent and child assent were given in participant-chosen locations. 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 appropriate by local IRBs.

### Measures

#### Demographics

Child gender, age, and maximum number of years of education either parent completed at the beginning of the study were included in analyses as covariates.

#### G1 and G2 Mother and Father Parent Rejection Behaviors

Both G1 and G2 mother and father parenting behaviors were measured using the IPART-based Parental Acceptance-Rejection Questionnaire (PARQ; [32]). The PARQ is a 24-item scale on which participants report their perceived frequency of parenting behaviors from 1 = *never* to 4 = *every day*. Eight items captured parental coldness (reverse-scored; e.g., "I make my child feel wanted and needed"), six items captured hostility (e.g., "I go out of my way to hurt my child's feelings"), six items captured neglect (e.g., "I pay no attention to my child"), and four items captured undifferentiated rejection (e.g., "I do not really love my child"). Meta-analyses have established that this measure demonstrates excellent reliability, convergent and discriminant validity, and factorial invariance in over 60 cultures worldwide [6], and these findings have been replicated in the current sample [11]. Specifically, aligning with other cross-cultural longitudinal investigations [33] we utilized the alignment method [34] to test for measurement invariance in both G1 and G2 mother and father parent rejection behaviors in all 12 cultural groups. G1 mother rejection (6.25% non-invariance), G1 father rejection (7.29% non-invariance), G2 mother rejection (5.21% non-invariance), and G2 father rejection (16.67% non-invariance) all fell below Muthén

**Table 1** Descriptive statistics for substantive study measures

	Whole sample M (SD) or %	Cultures below average in parent rejection M (SD) or %	Cultures average in parent rejection M (SD) or %	Cultures above average in parent rejection M (SD) or %
<b>Mother models</b>				
G1 mothers' parents' rejection	1.61 (0.50)	1.60 (0.50)	1.66 (0.64)	1.60 (0.42)
G2 mother rejection	1.31 (0.30)	1.20 (0.21)	1.29 (0.29)	1.47 (0.35)
G3 child externalizing behavior	7.99 (6.99)	7.49 (7.09)	10.69 (7.09)	7.52 (6.50)
G3 child internalizing behavior	8.95 (6.87)	8.45 (7.09)	11.34 (6.87)	8.61 (6.27)
G2 mother participated in parenting program	63.30% no participation 36.70% yes, participated	78.41% no participation 21.59% yes, participated	44.74% no participation 55.26% yes, participated	50.98% no participation 49.02% yes, participated
G2 mother's family experienced income change over last year	36.09% > 5% decrease 41.31% stayed the same 22.60% > 5% increase	35.35% > 5% decrease 47.27% stayed the same 17.38% > 5% increase	31.40% > 5% decrease 43.02% stayed the same 25.58% > 5% increase	39.30% > 5% decrease 32.25% stayed the same 28.46% > 5% increase
G2 mother years of education	12.77 (4.22)	13.19 (4.23)	12.20 (5.06)	12.48 (3.65)
G3 child gender	50.30% female 49.70% male	48.85% female 51.15% male	52.19% female 47.81% male	51.42% female 48.58% male
G3 child age at wave 5	13.21 (0.91)	13.60 (0.78)	12.97 (0.66)	12.78 (0.94)
<b>Father models</b>				
G1 fathers' parents' rejection	1.56 (0.44)	1.50 (0.46)	1.57 (0.42)	1.67 (0.40)
G2 father rejection	1.34 (0.32)	1.21 (0.19)	1.33 (0.34)	1.52 (0.34)
G3 child externalizing behavior	7.99 (6.99)	7.92 (7.50)	8.29 (6.55)	7.70 (6.63)
G3 child internalizing behavior	8.95 (6.87)	8.66 (7.29)	10.10 (6.80)	7.90 (5.93)
G2 father participated in parenting program	72.72% no participation 27.28% yes, participated	79.85% no participation 20.15% yes, participated	65.81% no participation 34.19% yes, participated	70.03% no participation 29.97% yes, participated
G2 father's family experienced income change	36.09% > 5% decrease 41.31% stayed the same 22.60% > 5% increase	32.62% > 5% decrease 47.28% stayed the same 20.09% > 5% increase	42.94% > 5% decrease 38.14% stayed the same 18.93% > 5% increase	32.61% > 5% decrease 36.23% stayed the same 31.16% > 5% increase
G2 father years of education	12.90 (4.26)	12.89 (4.77)	12.51 (4.18)	13.35 (3.54)
G3 child gender	50.30% female 49.70% male	49.91% female 50.09% male	51.86% female 48.14% male	49.02% female 50.98% male
G3 child age at wave 5	13.21 (0.91)	13.53 (0.75)	13.24 (0.87)	12.69 (0.94)

and Asparouhov's [34] 25% threshold for acceptable non-invariance and are therefore reasonably non-invariant across cultures in our sample.

In the current study, G2 mothers and fathers used the PARQ to report retrospectively on their own (G1) parents' parenting behaviors when G2s were ages 7–12 and additionally used the PARQ to report on their own parenting behaviors when their child was, on average, 13.21 years old (Table 1). For G1 and G2 parenting, items on each subscale were averaged to create a subscale score. Then we averaged the four subscales to create overall measures of both G1 and G2 parent rejection behaviors [32]. These measures demonstrated high reliability in G1 mothers ( $\alpha=0.86$ – $0.95$  across cultures), G1 fathers ( $\alpha=0.80$ – $0.93$  across cultures),

G2 mothers ( $\alpha=0.77$ – $0.91$  across cultures except for Naples, Italy ( $\alpha=0.63$ ) and Sweden ( $\alpha=0.67$ )), and G2 fathers ( $\alpha=0.72$ – $0.92$  across cultures with the exception of the US White sample ( $\alpha=0.68$ )). Higher scores indicated more frequently reported perceived occurrences of parent rejection behaviors (Table 1).

Although the parenting reports regarding G1 were retrospective, emerging evidence indicates that retrospective reports may provide accurate accounts of past parenting behavior [35]. Additionally, studies of intergenerational parenting that examined G2 retrospective reports of G1 hostility and rejection [36, 37], and those that examined prospective reports of these G1 parenting behaviors found similar correlations between G1 and G2 parenting [2]. More importantly,

we were most interested in measuring how parents' understanding of their own parents' behaviors shapes their current perceived parenting. Therefore, retrospective reports of G1 parenting are valuable because they lend insight into how G2s' *current* perceptions of G1 parenting are related to their *current* perceived parenting practices.

### Creating Cultural Normativeness Groups from G2 Parent Rejection Behaviors

To test our hypotheses about whether intergenerational parent rejection pathways would persist across different levels of cultural normativeness, we used G2 parent rejection scores to create a variable capturing the cultural normativeness of G2 parent rejection. Specifically, for both G2 mothers and fathers, we first calculated average G2 parent rejection scores for all 12 cultural groups we studied, as well as an overall "grand mean" G2 parent rejection score for the entire sample (see Table 1 for reports of these averages). Utilizing a general linear modeling framework, we then compared each cultural mean to the grand mean to examine whether the cultural mean on the particular G2 parent score (i.e., either G2 father rejection or G2 mother rejection) was significantly different from the grand mean (according to conventional  $p < .05$  limits for indicating significance). Three normativeness groups were formed across all cultures for both mother and father rejection where 0 = a group of participants from cultures that fell significantly below the grand mean on G2 mother rejection (or G2 father rejection in father models), 1 = participants from cultures that did not significantly differ from the G2 grand mean, and 2 = participants from cultures that fell significantly above the grand mean on G2 mother rejection (or father rejection in father models). This scoring system aligned with previous longitudinal analyses that examined parenting and its effects across cultural contexts [33, 38].

### G3 Children's Externalizing and Internalizing Problems

Mothers and fathers completed the Child Behavior Checklist [39] to measure the externalizing and internalizing problems G3 children experienced during wave 6 of data collection, when children were 14.62 years old, on average. These measurements of child externalizing and internalizing problems occurred approximately 1 year *after* the aforementioned measure of G2 parent rejecting behaviors, therefore establishing temporal precedence in examining associations. Parents 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*). The *Externalizing Behavior* scale, summed across 33 items, assessed behaviors such as lying, vandalism, bullying, substance use, disobedience, tantrums, and physical violence. The *Internalizing*

*Behavior* scale, summed across 31 items, assessed behaviors and emotions such as loneliness, self-consciousness, nervousness, sadness, and anxiety. Mother and father raw sum scores were averaged in the current study. Averaging in this way allows easy comparison with previous longitudinal cross-cultural studies of child behavior problems [11, 12] and is justified in the current study by relatively high correlations between mother and father reports of child externalizing ( $r = 0.59$ ,  $p < 0.01$ ) and internalizing ( $r = 0.42$ ,  $p < 0.01$ ) behavior.

This measure is among the most widely used instruments in international research, with translations in over 100 languages and strong, well-documented reliability, as well as convergent and discriminant validity [39]. Measurement invariance and consistency of the factor structure have been demonstrated in numerous cultural groups [40] and such measurement invariance also held across the 12 cultures in our study. Specifically, utilizing the aforementioned Alignment Method [34], we did not find evidence of any non-invariance in G3 externalizing or internalizing behavior across any of our 12 cultural groups. Additionally, in the current study, both G3 externalizing ( $\alpha = 0.87$ – $0.98$  across cultures) and G3 internalizing ( $\alpha = 0.83$ – $0.95$  across cultures) demonstrate strong reliability. Higher scores indicated greater externalizing or internalizing problems (Table 1).

### G2 Parenting Program Participation

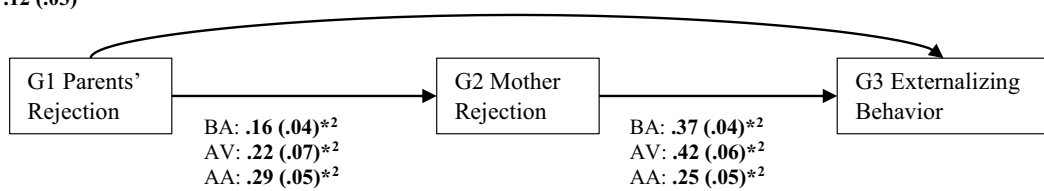
In waves 1 through 5 (when children were ages 7–13) of annual data collection, mothers and fathers were asked to indicate whether they had "Participated in any parenting programs." For the current study, a parent was counted as having ever participated in a parenting program if they responded "yes" to this question in any year through wave 5 data collection. Therefore, parent participation in a parenting program preceded both parent report on G2 parent rejection and G3 child externalizing and internalizing problems. Participation rates can be found in Table 1.

### G2 Parent Income Change

G2 parents were asked to report whether their household's annual income changed in the 12 months before wave 5 data collection. This timing ensured that income changes preceded G2 reports of rejection and G3 externalizing/internalizing problems (Table 1). Response options were 1 = yes, it decreased a lot (more than 25%); 2 = yes, it decreased a little bit (between 5 and 25%); 3 = it did not change at all or it did not significantly change (less than 5%); 4 = yes, it increased a little bit (between 5 and 25%); 5 = yes, it increased a lot (more than 25%). We collapsed responses to this survey such that responses of 1 and 2 were categorized

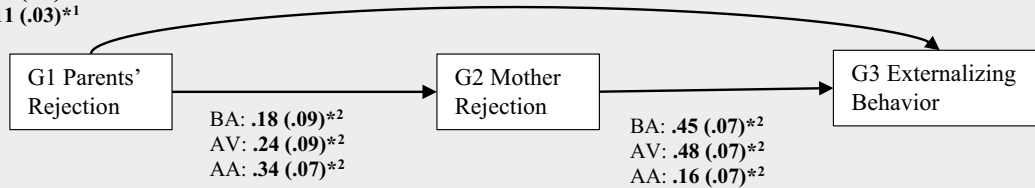
BA: .13 (.03)\*<sup>1</sup>  
 AV: .16 (.04)\*<sup>1</sup>  
 AA: .12 (.03)\*<sup>1</sup>

**(A) Intergenerational Transmission Model**



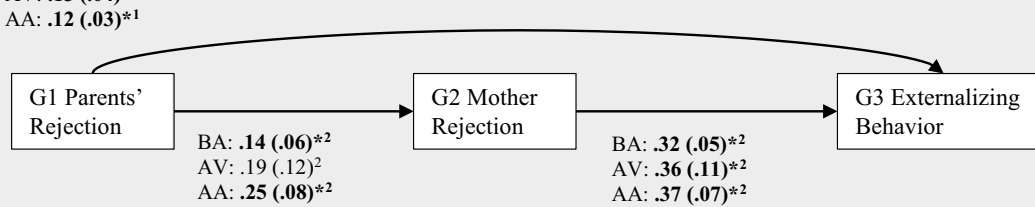
BA: .13 (.03)\*<sup>1</sup>  
 AV: .16 (.04)\*<sup>1</sup>  
 AA: .11 (.03)\*<sup>1</sup>

**(B) G2 Mothers Who Participated in Parenting Program**



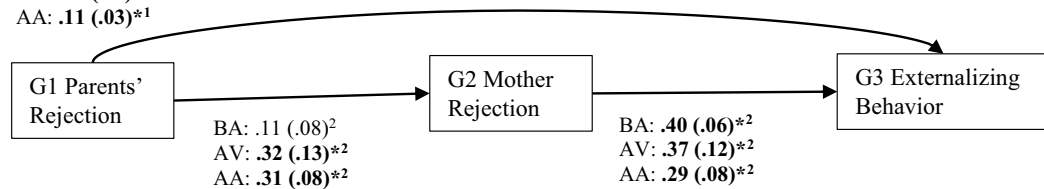
BA: .13 (.03)\*<sup>1</sup>  
 AV: .15 (.04)\*<sup>1</sup>  
 AA: .12 (.03)\*<sup>1</sup>

**(C) G2 Mothers Who Did Not Participate in Parenting Program**



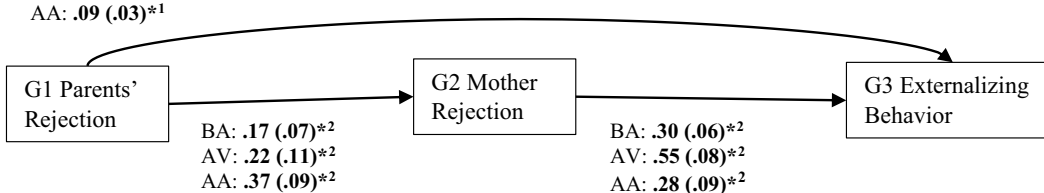
BA: .11 (.03)\*<sup>1</sup>  
 AV: .16 (.05)\*<sup>1</sup>  
 AA: .11 (.03)\*<sup>1</sup>

**(D) G2 Families Who Lost > 5% of Yearly Income**



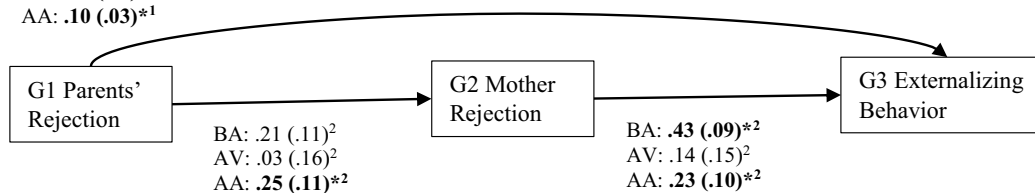
BA: .12 (.03)\*<sup>1</sup>  
 AV: .15 (.04)\*<sup>1</sup>  
 AA: .09 (.03)\*<sup>1</sup>

**(E) G2 Families Whose Yearly Income Did Not Change**



BA: .10 (.03)\*<sup>1</sup>  
 AV: .14 (.04)\*<sup>1</sup>  
 AA: .10 (.03)\*<sup>1</sup>

**(F) G2 Families Who Gained > 5% of Yearly Income**





**Fig. 1** Modeling intergenerational transmission of mother rejection and its association with Generation 3 child externalizing behavior. A demonstrates basic intergenerational transmission model. B, C Examine difference in intergenerational model based on parenting program participation. D–F Examine differences in intergenerational model based on family income gain/loss at Wave 5. BA/AV/AA=Parents from cultures below average/average/above average in mother rejection. \* and bold= $p < .05$ . 1=Paths constrained equal across groups. 2=Paths freed to vary across groups. First number is standardized parameter estimate; number in parentheses is standard error. Child gender/age and mother education effects on G2/G3 outcomes controlled for but not depicted here due to space constraints

as income decreases > 5% and response options 4 and 5 were categorized as income increases > 5%. Consequently, in our final models we examined three levels of G2 income change (> 5% loss, no change, > 5% gain).

### Analytic Plan

Consistent with standard practice in the intergenerational field [1], we utilized a series of path analyses in *Mplus* Version 7 to evaluate study hypotheses. At the core of each of our models was examination of the same basic underlying intergenerational pathway: we examined whether perceived G1 parent rejection was associated with G2 parent rejection which was associated with G3 adolescent behavior problems and did so even after controlling for direct effects of G1 parent rejection on G3 behavior problems and for the effects of child age, gender, and parent education on both G2 parent rejection and G3 behavior problems. This same basic path was tested in 4 different sets of models, 2 in which G1 and G2 mother-reported rejection was associated with G3 adolescent externalizing and internalizing behavior, and 2 in which G1 and G2 father-reported rejection was associated with G3 adolescent externalizing and internalizing behavior. Then, within each of these model sets, models were tested in an iterative process. To test our first and second hypotheses (that intergenerational pathways persisted, but at different magnitudes, across levels of cultural normativeness in parent rejection), we ran multiple group path analyses. All paths were initially constrained to be equal across normativeness groups. Then, paths were freed to vary across normativeness groups if a  $\chi^2$  difference test revealed that the model fit significantly better when a path was freed. This approach allowed for identification of G1-G2 parent rejection paths and G2 parent rejection-G3 child externalizing/internalizing paths that varied based on cultural normativeness.

Then, in accordance with best practice [41] we continued to use this multiple group framework to examine our third hypothesis (that parent programs and income changes will disrupt intergenerational pathways of parent rejection). For

parenting programs, we ran a model wherein paths were originally constrained equal across both levels of cultural normativeness and participation in a parenting program. Then, if a  $\chi^2$  difference test revealed that the model fit significantly better if a path was free to vary across one of these cultural normativeness-by-parenting program conditions, it was freed. For income changes, we ran an identical model, but paths were examined across both levels of cultural normativeness and parent income changes. Significant intergenerational pathways were indicated by significant indirect effects in *Mplus*. Evaluation of model fit was based on recommended fit index cut-off values that indicate excellent model fit (CFI/TLI > 0.90, RMSEA < 0.05, SRMR < 0.08; [31]). Unless otherwise noted, models fit the data excellently.

### Results

Zero-order correlations between key study variables in the sample as a whole can be found in Supplemental Table 2.

#### Determining Differences Across Parenting Program and Income Change Groups

Given that families were not randomly assigned to participate in G2 parenting programs or experience changes in G2 income, it is possible some other confounding variable is truly responsible for parenting program and income change effects. To mitigate this concern, we investigated whether perceived G1 parent rejection (which launches the entire intergenerational pathway under study here) and several G2 and G3 demographics (G2 education, G3 gender and age) varied depending on G2 parenting program participation and income change group. Results revealed that, vitally, perceived G1 parent rejection did not differ based on G2 parenting program participation or income change group (Supplemental Tables 3 and 4). Therefore differences in such intergenerational pathways across groups are not solely attributable to G1 parenting differences between groups prior to the emergence of protective factors.

There were some systematic differences in demographics seen across groups. G2 parents who participated in parenting programs were likely to have slightly younger children and lower levels of education and were likely to come from cultures with higher levels of normative parent rejection (Supplemental Table 3). With regards to income change, G2 parents who experienced an income loss were more likely to have lower levels of education and older children (Supplemental Table 4). Therefore, to ensure that G2 parenting program and income change effects emerged above and beyond these demographic differences, G2 parent education and G3 child age were included as control variables in all models. See Supplemental Results Section for further detail.

## Models Examining Associations With G3 Externalizing Behaviors

### Mother Models

#### Examining the Intergenerational Transmission of Parent Rejection Across Cultures (Fig. 1A)

We began our analyses by examining our first hypothesis (that the intergenerational transmission of parent rejection persists regardless of how normative parent rejection is in a culture) and our second hypothesis (that the magnitude of this pathway would differ across levels of cultural normativeness). As depicted in Fig. 1A and Table 2, our first hypothesis was supported. Higher levels of perceived rejection from G1 parents were associated with higher levels of G2 mother-reported rejection, which were associated with higher levels of G3 externalizing problems, and this pathway was significant regardless of levels of cultural normativeness. However, our second hypothesis was also partially supported. The intergenerational transmission of parent rejection pathway was stronger in cultures with average or above-average G2 mother rejection, as opposed to below-average rejection (Table 2; see Supplemental Results Section for further exploratory analyses comparing differences in magnitude of parameter estimates along specific sub-paths). As we hypothesized, this increasing strength appears to be primarily due to the fact that in cultures with higher normative G2 mother rejection, the intergenerational transmission of parent rejection from G1 to G2 was greater (Fig. 1A). However, contrary to our hypothesis, the effects of G2 mother parenting on G3 externalizing behavior did not appear to grow weaker as levels of normativeness increased.

#### Examining Parenting Program Effects (Fig. 1B and C)

Our hypothesis that G2 parenting program participation would prevent the intergenerational transmission of parent rejection was not supported in G2 mothers. For the vast majority of G2 mothers, greater G1 parent rejection was linked to greater G2 mother rejection which was linked to greater G3 child externalizing symptoms regardless of G2 program participation (Fig. 1B, C; Table 2). The only times where this intergenerational pathway was broken were in G2 mothers from cultures with average levels of rejection who did not participate in parenting programs and in G2 mothers from cultures with low levels of rejection who did participate in parenting programs (Table 2).

#### Examining Income Change Effects (Fig. 1D–F)

Our hypothesis that G2 income increases in the previous year would break the intergenerational pathway from G1 parent rejection through G2 parent rejection to G3 child externalizing problems was supported in G2 mothers. Specifically, regardless of how culturally normative parent rejection was, if G2 mothers experienced an income increase of greater than 5% over the previous year, then the intergenerational transmission pathway was broken (Table 2). This income increase broke the pathway by attenuating the association between perceived G1 mother and G2 mother-reported rejection. As seen in Figs. 1D–F, the association between G1 mother rejection and G2 mother rejection appears to be weaker and non-significant in G2 mothers whose families gained > 5% of yearly income (1F) compared to families whose income did not change or who lost > 5% of yearly income.

### Father Models

#### Examining the Intergenerational Transmission of Parent Rejection Across Cultures (Fig. 2A)

As in mothers, our first hypothesis was supported when we examined father parenting behaviors. Higher levels of perceived rejection from G1 parents was linked to higher levels of G2 father-reported rejection, which was associated with higher levels of G3 externalizing problems, and this pathway was significant regardless of cultural normativeness levels. Once again, as with mothers, our second hypothesis was partially supported. The intergenerational transmission of parent rejection pathway grew stronger the more normative G2 father rejection was in a culture (Table 2; see Supplemental Results Section for further exploratory analyses comparing differences in magnitude of parameter estimates along specific sub-paths). Furthermore, as with mothers, this increasing strength was primarily due to the fact that in cultures with higher normative G2 father rejection, the intergenerational transmission of rejection from G1 to G2 was greater (Fig. 2A). Yet, contrary to our hypothesis, the associations between G2 father parenting and G3 externalizing behavior did not appear to grow weaker as levels of normativeness increased.

#### Examining Parenting Program Effects (Fig. 2B and C)

In contrast to the largely null effects for mothers, G2 father participation in a parenting program did appear to protect against the intergenerational transmission of parent rejection and its subsequent impact on child externalizing behavior. This impact was seen in cultures where G2 father rejection was more normative. In high normative rejection cultures,

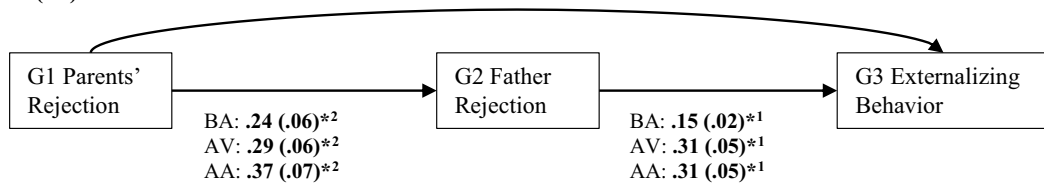
**Table 2** Examining indirect effects of intergenerational pathways across levels of cultural normativeness of rejection for mothers and fathers

		Fathers											
Mothers		No participation in parenting program $\beta$ (SE)	Yes participation in parenting program $\beta$ (SE)	Lost > 5% of yearly income in previous year $\beta$ (SE)	Did not change yearly income in previous year $\beta$ (SE)	Continuity model (no protective factors measured) $\beta$ (SE)	No participation in parenting program $\beta$ (SE)	Yes participation in parenting program $\beta$ (SE)	Lost > 5% of yearly income in previous year $\beta$ (SE)	Did not change yearly income in previous year $\beta$ (SE)	Gained > 5% of yearly income in previous year $\beta$ (SE)		
Indirect effects of G1 parent rejection $\rightarrow$ G2 parent rejection $\rightarrow$ G3 child externalizing behavior pathway													
Below average cultural rejection:		<b>0.06 (0.02)*</b>	<b>0.05 (0.02)*</b>	0.08 (0.04)	0.05 (0.03)	<b>0.05 (0.02)*</b>	0.09 (0.05)	<b>0.04 (0.01)*</b>	0.03 (0.02)	<b>0.04 (0.01)*</b>	0.03 (0.02)	<b>0.05 (0.02)*</b>	0.05 (0.03)
Average cultural rejection:		<b>0.09 (0.03)*</b>	0.07 (0.05)	<b>0.22 (0.05)*</b>	0.12 (0.06)	<b>0.12 (0.06)*</b>	0.00 (0.02)	<b>0.09 (0.02)*</b>	0.07 (0.04)	<b>0.08 (0.04)*</b>	0.05 (0.03)	0.04 (0.03)	<b>0.21 (0.05)*</b>
Above average cultural rejection:		<b>0.07 (0.02)*</b>	<b>0.09 (0.03)*</b>	<b>0.06 (0.03)*</b>	<b>0.09 (0.03)*</b>	<b>0.10 (0.04)*</b>	0.06 (0.04)	<b>0.12 (0.03)*</b>	<b>0.17 (0.04)*</b>	0.04 (0.04)	<b>0.13 (0.04)*</b>	0.05 (0.04)	<b>0.19 (0.05)*</b>
Indirect effects of G1 parent rejection $\rightarrow$ G2 parent rejection $\rightarrow$ G3 child internalizing behavior pathway													
Below average cultural rejection:		<b>0.02 (0.01)*</b>	<b>0.02 (0.01)*</b>	0.02 (0.01)	0.02 (0.01)	<b>0.03 (0.01)*</b>	0.03 (0.02)	<b>0.03 (0.01)*</b>	0.03 (0.02)	<b>0.03 (0.01)*</b>	0.02 (0.01)	<b>0.04 (0.01)*</b>	0.03 (0.02)
Average cultural rejection:		<b>0.04 (0.02)*</b>	0.05 (0.03)	<b>0.05 (0.02)*</b>	<b>0.06 (0.03)*</b>	0.04 (0.02)	0.01 (0.04)	<b>0.07 (0.02)*</b>	<b>0.05 (0.02)*</b>	<b>0.08 (0.03)*</b>	0.05 (0.03)	0.03 (0.02)	<b>0.17 (0.05)*</b>
Above average cultural rejection:		<b>0.08 (0.02)*</b>	<b>0.07 (0.03)*</b>	<b>0.09 (0.02)*</b>	<b>0.08 (0.03)*</b>	<b>0.11 (0.03)*</b>	<b>0.08 (0.04)*</b>	<b>0.11 (0.04)*</b>	<b>0.13 (0.03)*</b>	<b>0.13 (0.03)*</b>	<b>0.12 (0.04)*</b>	0.06 (0.04)	<b>0.18 (0.05)*</b>

\* and bold indicate  $p < 0.05$

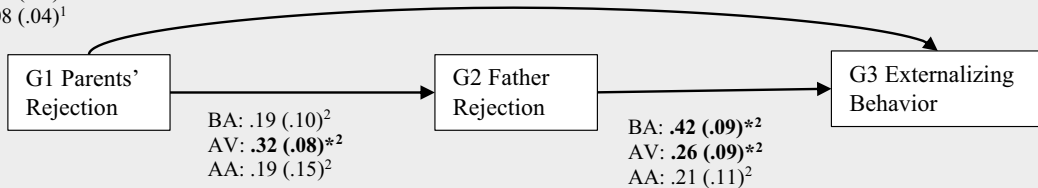
BA: .09 (.04)\*<sup>1</sup>  
 AV: .10 (.04)\*<sup>1</sup>  
 AA: .09 (.04)\*<sup>1</sup>

**(A) Intergenerational Transmission Model**



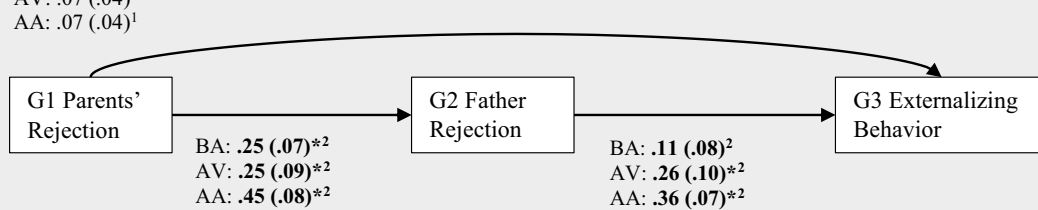
BA: .06 (.03)<sup>1</sup>  
 AV: .09 (.05)<sup>1</sup>  
 AA: .08 (.04)<sup>1</sup>

**(B) G2 Fathers Who Participated in Parenting Program**



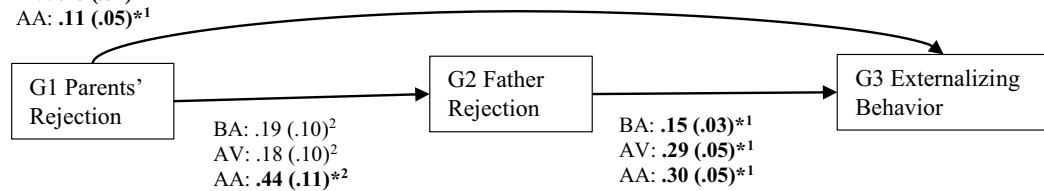
BA: .08 (.04)<sup>1</sup>  
 AV: .07 (.04)<sup>1</sup>  
 AA: .07 (.04)<sup>1</sup>

**(C) G2 Fathers Who Did Not Participate in Parenting Program**



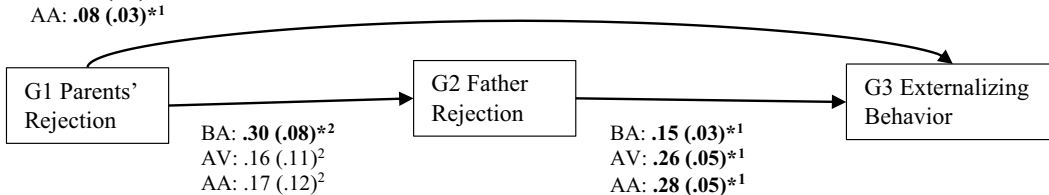
BA: .10 (.04)\*<sup>1</sup>  
 AV: .10 (.04)\*<sup>1</sup>  
 AA: .11 (.05)\*<sup>1</sup>

**(D) G2 Families Who Lost > 5% of Yearly Income**



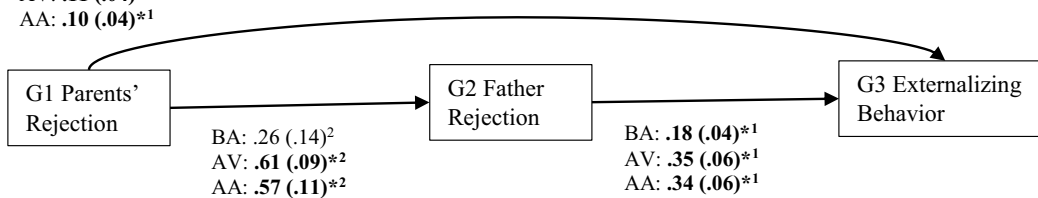
BA: .10 (.04)\*<sup>1</sup>  
 AV: .09 (.04)\*<sup>1</sup>  
 AA: .08 (.03)\*<sup>1</sup>

**(E) G2 Families Whose Yearly Income Did Not Change**



BA: .09 (.04)\*<sup>1</sup>  
 AV: .11 (.04)\*<sup>1</sup>  
 AA: .10 (.04)\*<sup>1</sup>

**(F) G2 Families Who Gained > 5% of Yearly Income**



if G2 fathers did not participate in a parenting program, then the intergenerational pathway from G1 parent rejection through G2 father rejection to G3 child externalizing

problems was statistically significant ( $\beta=0.17$ ; Table 2). However, if a G2 father from these cultures participated in a parenting program, then this intergenerational pathway was

**Fig. 2** Modeling intergenerational transmission of father rejection and its association with Generation 3 child externalizing behavior. A Demonstrates basic intergenerational transmission model. B, C Examine difference in intergenerational model based on parenting program participation. D–F Examine differences in intergenerational model based on family income gain/loss at Wave 5. BA/AV/AA=Parents from cultures below average/average/above average in father rejection. \* and bold= $p < .05$ . 1=Paths constrained equal across groups. 2=Paths freed to vary across groups. First number is standardized parameter estimate; number in parentheses is standard error. Child gender/age and father education effects on G2/G3 outcomes controlled for but not depicted here due to space constraints

broken, and the indirect effect was weak and non-significant ( $\beta = 0.04$ ; Table 2). This protective effect emerged from the effect G2 parenting programs had on the intergenerational transmission of perceived G1 parent rejection to G2 father-reported rejection (Fig. 2B and C). In high normative G2 rejection cultures, the association between G1 and G2 father rejection was nearly 3 times smaller, and non-significant, when G2 fathers participated in a parenting program.

#### Examining Income Change Effects (Fig. 2D–F)

In contrast to mothers, it does not appear that increases in G2 income protect against the intergenerational transmission of father rejection. In fact, the path from greater perceived G1 father rejection to greater G2 father-reported rejection to greater G3 child externalizing problems was strong and significant in cultures with average or above-average levels of G2 father rejection when G2 fathers' families experienced income gains of 5% or more over the previous year (Table 2; Fig. 2F). This intergenerational pathway also remained strong and significant in G2 fathers from above-average parent rejection cultures whose families experienced income losses > 5% the previous year, and in G2 fathers from cultures with below-average parent rejection whose families experienced no income change.

## Models Examining Associations With G3 Internalizing Behaviors

### Mother Models

#### Examining the Intergenerational Transmission of Parent Rejection Across Cultures (Fig. 3A)

Just like with mothers' and fathers' models examining links to child externalizing behavior, our first hypothesis was supported when we examined internalizing behaviors. Higher levels of perceived rejection from G1 parents were associated with higher levels of G2 mother-reported rejection, which was linked to higher levels of G3 internalizing problems regardless of levels of normativeness (Table 2).

Our second hypothesis was also partially supported and followed the same pattern seen with externalizing behaviors. The intergenerational transmission of parent rejection pathway became stronger the more normative G2 mother rejection was in a culture. Once again, as with externalizing behavior, this increasing strength appeared primarily due to the fact that in cultures with higher normative G2 mother rejection, the intergenerational transmission of parent rejection from G1 to G2 was greater (Fig. 3A; see Supplemental Results Section for further exploratory analyses comparing differences in magnitude of parameter estimates along specific sub-paths). Yet, contrary to our hypothesis, the effects of G2 mother parenting on G3 internalizing behavior did not appear to grow weaker as levels of normativeness increased.

#### Examining Parenting Program Effects (Fig. 3B and C)

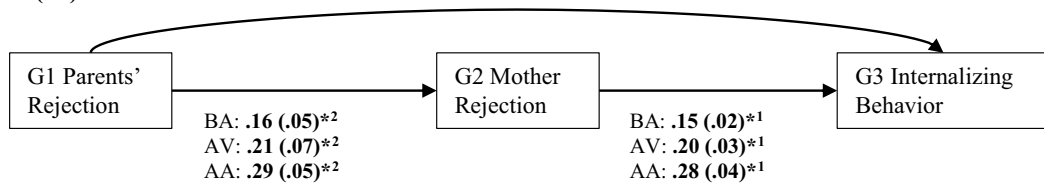
Similar to results from the mother rejection-child externalizing behavior model, it did not appear that G2 mother participation in parenting programs prevented the intergenerational transmission of parent rejection. For most G2 mothers, greater perceived G1 parent rejection was linked to greater G2 mother-reported rejection which was linked to greater G3 child internalizing symptoms regardless of G2 program participation (Fig. 3B, C). The only times this intergenerational pathway was broken were in G2 mothers from average rejection cultures who did not participate in a program and in G2 mothers from low-rejection cultures who did participate in a program (Table 2).

#### Examining Income Change Effects (Fig. 3D–F)

However, our hypothesis that G2 income increases in the previous year would break the intergenerational pathway from G1 parent rejection through G2 parent rejection to G3 internalizing problems was supported in G2 mothers. Specifically, except in cultures with above-average levels of G2 parent rejection, if G2 mothers experienced an income increase > 5% over the previous year, then the intergenerational transmission pathway was broken (Table 2). As with the G2 mother rejection-G3 externalizing model, it appears that this breakage occurred in the link between G1 parent rejection and G2 mother rejection. As seen in Fig. 3D–F, the association between perceived G1 mother rejection and G2 mother-reported rejection generally appears to be weaker in G2 mothers whose families gained > 5% of yearly income (3F) compared to families whose income did not change or who lost > 5% of yearly income.

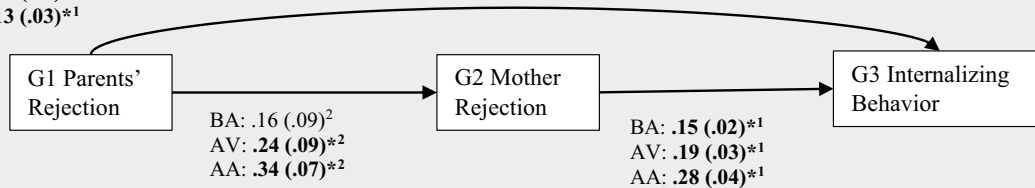
BA: .15 (.03)\*<sup>1</sup>  
 AV: .19 (.04)\*<sup>1</sup>  
 AA: .14 (.03)\*<sup>1</sup>

**(A) Intergenerational Transmission Model**



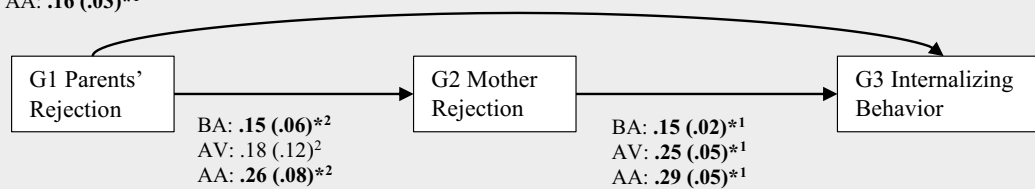
BA: .15 (.03)\*<sup>1</sup>  
 AV: .20 (.04)\*<sup>1</sup>  
 AA: .13 (.03)\*<sup>1</sup>

**(B) G2 Mothers Who Participated in Parenting Program**



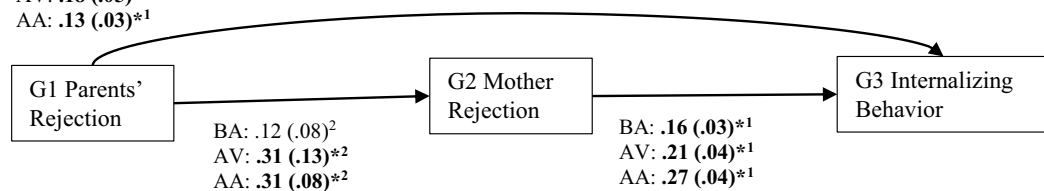
BA: .16 (.03)\*<sup>1</sup>  
 AV: .20 (.04)\*<sup>1</sup>  
 AA: .16 (.03)\*<sup>1</sup>

**(C) G2 Mothers Who Did Not Participate in Parenting Program**



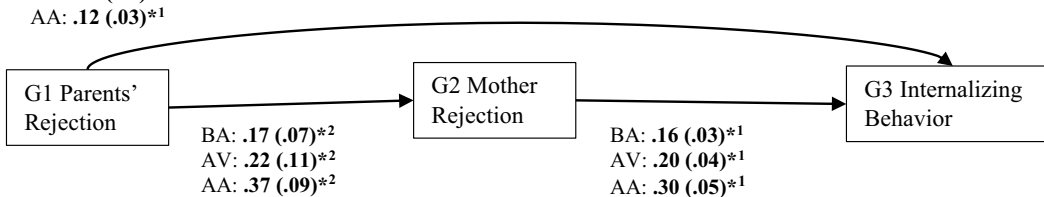
BA: .14 (.04)\*<sup>1</sup>  
 AV: .18 (.05)\*<sup>1</sup>  
 AA: .13 (.03)\*<sup>1</sup>

**(D) G2 Families Who Lost > 5% of Yearly Income**



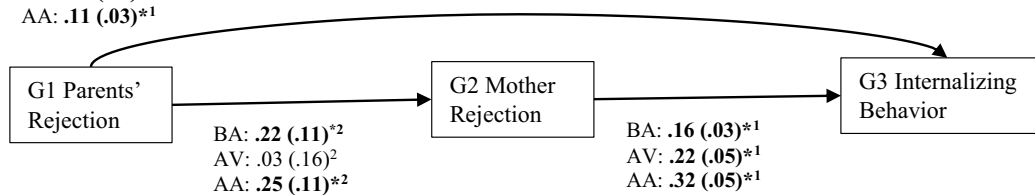
BA: .12 (.03)\*<sup>1</sup>  
 AV: .18 (.04)\*<sup>1</sup>  
 AA: .12 (.03)\*<sup>1</sup>

**(E) G2 Families Whose Yearly Income Did Not Change**



BA: .13 (.04)\*<sup>1</sup>  
 AV: .13 (.04)\*<sup>1</sup>  
 AA: .11 (.03)\*<sup>1</sup>

**(F) G2 Families Who Gained > 5% of Yearly Income**



**Fig. 3** Modeling intergenerational transmission of mother rejection and its association with Generation 3 child internalizing behavior. A Demonstrates basic intergenerational transmission model. B, C examine difference in intergenerational model based on parenting program participation. D–F examine differences in intergenerational model based on family income gain/loss at Wave 5. BA/AV/AA=Parents from cultures below average/average/above average in mother rejection. \* and bold= $p < .05$ . 1=Paths constrained equal across groups. 2=Paths freed to vary across groups. First number is standardized parameter estimate; number in parentheses is standard error. Child gender/age and mother education effects on G2/G3 outcomes controlled for but not depicted here due to space constraints

## Father Models

### Examining the Intergenerational Transmission of Parent Rejection Across Cultures (Fig. 4A)

As in all other models, our first hypothesis was supported when we examined the intergenerational father rejection pathway to G3 internalizing behavior. Higher levels of perceived rejection from G1 parents was linked to higher levels of G2 father-reported rejection, which was associated with higher levels of G3 internalizing problems, and this pathway was significant regardless of cultural normativeness levels. Once again, as with all other models, our second hypothesis was also partially supported. The intergenerational transmission of parent rejection pathway grew stronger the more normative G2 father rejection was in a culture (Table 2). Furthermore, as in all other models, this increasing strength appears to be primarily due to the fact that in cultures with higher G2 normative rejection, the intergenerational transmission of parent rejection from G1 to G2 was greater (Fig. 4A; see Supplemental Results Section for further exploratory analyses comparing differences in magnitude of parameter estimates along specific sub-paths). However, contrary to our hypothesis, the effects of G2 father parenting on G3 internalizing behavior did not appear to grow weaker as levels of normativeness increased.

### Examining Parenting Program Effects (Fig. 4B and C)

Once again, in contrast to the largely null effects found for mothers, G2 father participation in a parenting program protected against the intergenerational transmission of parent rejection. As with the G2 father rejection-G3 child externalizing models, this association was specifically seen in cultures where father rejection was more normative. In high normative rejection cultures, if G2 fathers did not participate in a parenting program, then the intergenerational pathway from G1 parent rejection to G3 child internalizing problems was statistically significant ( $\beta = 0.13$ ; Table 2). However, if a G2 father from a high normative rejection culture participated in a parenting program, then this intergenerational pathway was broken, and the indirect effect was weak and

statistically non-significant ( $\beta = 0.05$ ; Table 2). It appears that this protective effect emerged from the effect parenting programs had on the intergenerational transmission of G1 parent rejection to G2 father rejection (Fig. 4B and C). In high rejection cultures, the association between G1 father rejection and G2 father rejection was almost 3 times smaller, and non-significant, when G2 fathers participated in a parenting program.

### Examining Income Change Effects (Fig. 4D–F)

This model was the one model where omnibus fit indices indicated somewhat suspect model fit (CFI/TLI = 0.89/0.86, RMSEA = 0.05, SRMR = 0.06). Therefore, results from this model are interpreted with caution. Model results revealed that, again, in contrast to mothers, it does not appear that increases in income protect against the intergenerational transmission of parent rejection in G2 fathers. In fact, the path from greater perceived G1 father rejection to greater G2 father-reported rejection to greater G3 internalizing problems was significant in cultures with average or above-average levels of father rejection when G2 fathers' families experienced income gains of > 5% over the previous year (Table 2). This intergenerational pathway also remained significant in G2 fathers from cultures with above-average parent rejection whose families experienced income losses of > 5% the previous year, and in G2 fathers from cultures with below-average parent rejection whose families experienced no income change (Table 2).

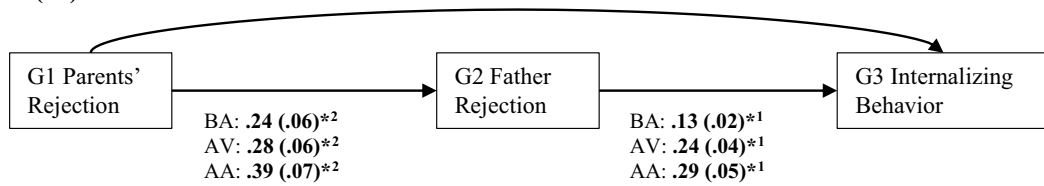
## Sensitivity Analyses

We ran several sensitivity analyses to examine the robustness of our findings in the face of potential confounders. First, to rule out the possibility that cultural-specific features other than the normativeness of parenting behaviors were associated with parent rejection intergenerational transmission pathways, we at first tried to adjust our results by controlling for clustering of participants in culture groups. However, when we attempted to do so, our models (already complex) were no longer identified and not estimable. Therefore, we examined models where we added cultural group membership as a correlate of G3 child externalizing and internalizing behavior to see if adding cultural group membership as a correlate substantively changed study results. Fortunately, no results substantively changed when we did so.

Second, we wanted to rule out the possibility that G2 mother rejection was the real driver of intergenerational parent rejection in G2 father rejection models, and vice-versa. Therefore, we ran sensitivity analyses wherein G2 mother rejection was correlated with G2 father rejection and added as an additional correlate of G3 child externalizing/internalizing behavior in G2 father models, and wherein G2 father

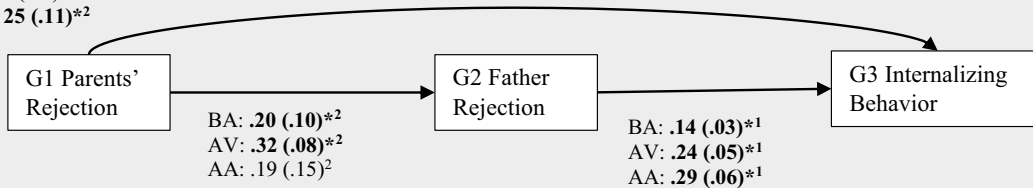
BA: .09 (.04)\*<sup>1</sup>  
 AV: .09 (.04)\*<sup>1</sup>  
 AA: .10 (.04)\*<sup>1</sup>

**(A) Intergenerational Transmission Model**



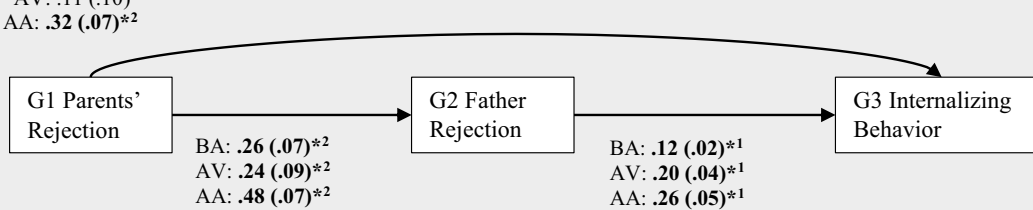
BA: .05 (.11)<sup>2</sup>  
 AV: .08 (.11)<sup>2</sup>  
 AA: -.25 (.11)\*<sup>2</sup>

**(B) G2 Fathers Who Participated in Parenting Program**



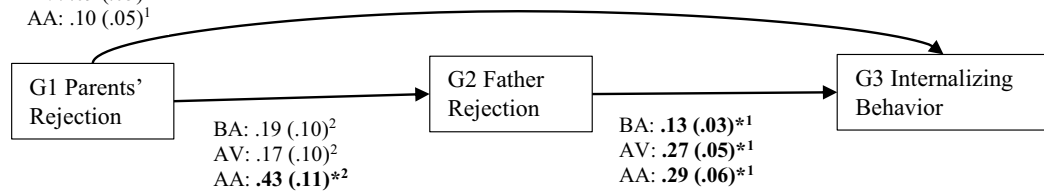
BA: .04 (.07)<sup>2</sup>  
 AV: .11 (.10)<sup>2</sup>  
 AA: .32 (.07)\*<sup>2</sup>

**(C) G2 Fathers Who Did Not Participate in Parenting Program**



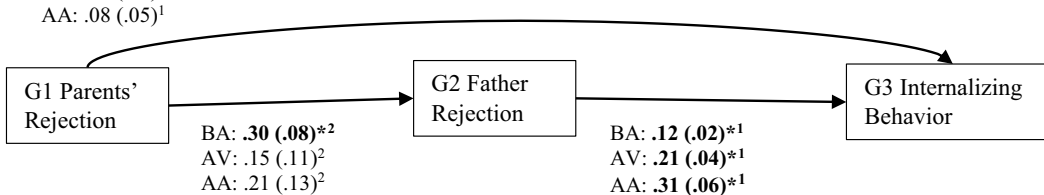
BA: .08 (.04)<sup>1</sup>  
 AV: .09 (.05)<sup>1</sup>  
 AA: .10 (.05)<sup>1</sup>

**(D) G2 Families Who Lost > 5% of Yearly Income**



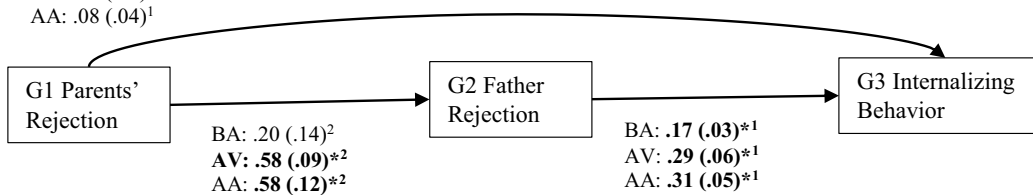
BA: .07 (.04)<sup>1</sup>  
 AV: .07 (.04)<sup>1</sup>  
 AA: .08 (.05)<sup>1</sup>

**(E) G2 Families Whose Yearly Income Did Not Change**



BA: .08 (.04)<sup>1</sup>  
 AV: .08 (.04)<sup>1</sup>  
 AA: .08 (.04)<sup>1</sup>

**(F) G2 Families Who Gained > 5% of Yearly Income**



rejection was correlated with G2 mother rejection and added as an additional correlate of G3 child externalizing/internalizing behavior in G2 mother models. These sensitivity

analyses also revealed no substantive changes in study results. However, our analyses that added cultural group membership and the other G2 parents' rejection as control



**Fig. 4** Modeling intergenerational transmission of father rejection and its association with Generation 3 child internalizing behavior. A Demonstrates basic intergenerational transmission model. B, C Examine difference in intergenerational model based on parenting program participation. D–F Examine differences in intergenerational model based on family income gain/loss at Wave 5. BA/AV/AA=Parents from cultures below average/average/above average in father rejection. \* and bold= $p < .05$ . 1=Paths constrained equal across groups. 2=Paths freed to vary across groups. First number is standardized parameter estimate; number in parentheses is standard error. Child gender/age and father education effects on G2/G3 outcomes controlled for but not depicted here due to space constraints

variables significantly degraded model fit to uninterpretable levels (e.g., CFI/TLI were both below 0.65, RMSEA = 0.09, SRMR = 0.07 in even the best fitting of these models). Consequently, we report these analyses as sensitivity analyses, and substantively interpret the aforementioned models presented in Figs. 1, 2, 3 and 4.

## Discussion

Our first hypothesis was supported. Across all levels of cultural normativeness, in both G2 mothers and fathers, and for both G3 externalizing and internalizing symptoms, the intergenerational parent rejection pathway persisted. Greater perceived G1 parent rejection was linked to greater G2 parent-reported rejection which was linked to greater G3 externalizing and internalizing problems. Our second hypothesis was partially supported; the magnitude of this intergenerational pathway strengthened in both mothers and fathers in cultures with higher normative levels of rejection. This strengthening appeared to be due to the stronger associations between perceived G1 parent rejection and G2 parent-reported rejection (as hypothesized), but there appeared to be no notable differences in associations between G2 parent-reported rejection and G3 externalizing and internalizing behavior in these cultures (contrary to our hypothesis). Finally, participation in parenting programs appeared to halt the intergenerational transmission of parent rejection, and its deleterious effects on G3 child externalizing and internalizing behavior, in G2 fathers, but not mothers, from cultures with high normative levels of parent rejection. In contrast, previous year income increases appeared to halt this intergenerational transmission pathway in G2 mothers but not fathers and this effect emerged largely regardless of levels of cultural normativeness.

### A Universal Intergenerational Parent Rejection Pathway

Our findings of an intergenerational parent rejection pathway that persists across cultures aligns with limited prior evidence that intergenerational transmission of parenting

behaviors may persist across ethnic groups in the United States [8, 9] and in China [10]. Our results substantially broaden this body of evidence by identifying the persistence of the intergenerational parent rejection pathway regardless of the cultural normativeness of parent rejection in 12 diverse cultural groups in 9 nations.

This intergenerational pathway may demonstrate similarity across cultures because the mechanisms purported to precipitate this pathway might be universal in nature. The social learning process wherein children observe, remember, and eventually enact their parents' parenting behaviors in adulthood is identified by psychologists and anthropologists as a universal learning mechanism used by all humans to build cultural knowledge and practices [42]. Similarly, development of child externalizing and internalizing problems as a result of rejecting parenting behaviors occurs across a wide variety of cultures [11, 12] and often persists into adulthood [6] where these problems may impact parenting and subsequent externalizing and internalizing behavior in the next generation [2]. Therefore, both the direct (via social learning) and indirect (via G2 psychopathology) pathways to the intergenerational transmission of parent rejection may be universal and enable such intergenerational effects to persist across culture.

Consequently, interventions that target both of these mediating mechanisms simultaneously may be especially effective in breaking this deleterious intergenerational parent rejection pathway across cultural contexts. Behavioral parent training interventions wherein parents are taught positive parenting skills and appropriate discipline techniques may be especially promising in this regard [2, 25]. These interventions target social learning mechanisms by teaching parents new positive parenting skills that they can use in daily play with their child that both build the parent–child relationship and allow the child to observe effective parenting [43]. These interventions also ameliorate deleterious child externalizing and internalizing behaviors and thus may short-circuit this indirect intergenerational transmission process before it begins [2, 43]. Behavioral parent training programs have also been demonstrated in meta-analyses to be equally effective across a wide variety of cultures [43], which further supports the hypothesis that these programs target such universal intergenerational transmission mechanisms.

### Cross-Cultural Differences in Magnitude of Intergenerational Parent Rejection Pathway

Despite universality in the intergenerational pathway from perceived G1 parent rejection to G3 child externalizing and internalizing problems, the magnitude of this pathway differed across cultures. Cultures with the highest normative levels of G2 mother- and father-reported rejection had stronger intergenerational pathways. We suspect that parent

rejection is more likely to be passed from one generation to the next in cultures where parent rejection is more normative because in such cultures, rejecting behaviors are likely to be more readily observable in everyday life in the broader culture [15] and more frequently discussed and socialized within the family context [2]. Both of these conditions make intergenerational transmission of parent behaviors via the social learning mechanism more likely.

Our results suggest that population-level interventions in high-rejection cultures to change norms around parenting might impact child health. One such intervention is country-wide laws banning corporal punishment. For example, after one nation with elevated levels of corporal punishment (Kenya) enacted laws banning corporal punishment, not only did parent levels of corporal punishment decrease [44], but child externalizing problems began to decrease over time, and child internalizing problems were no longer elevated compared to those in other nations [45]. Therefore, legislative actions and other public health interventions that aim to alter cultural parenting norms may be effective in promoting child mental health and preventing the intergenerational transmission of parent rejection.

### Response to Parenting Programs in Fathers

Fathers, but not mothers, from cultures with high normative levels of parent rejection appeared to benefit from participation in parenting programs in our sample. We do not believe this result indicates mothers do not respond to parenting programs; that flies in the face of existing evidence and is a consequence of our limited, single item participation measure. However, it is worth exploring why, despite these measure limitations, father effects persisted. Notably, father parenting practices appear especially malleable to the opinions and behaviors surrounding fathers, and therefore may be especially responsive to programs [1]. We see this in our current data. In the absence of program participation, G2 fathers' rejection (Fig. 2C) is strongly associated with their own perceived G1 parents' rejection. Moreover, this effect is largest in high-rejection cultures where fathers are especially likely to be surrounded by rejection behavior in their daily environments (Fig. 2C). Yet, in the presence of program participation, such culturally normative effects dissipate. In high-normativeness cultures, the contrast between prevailing parenting practices and those taught in programs is greatest, so father behavior in these cultures changes the most. Overall, our findings speak to the multi-generational importance of including fathers in parenting programs.

### Response to Income Change in Mothers

Whereas fathers responded to parenting programs, mothers in the current study appeared to break the intergenerational

parent rejection pathway when their families gained more than 5% of their yearly income in the previous year. This effect held regardless of the cultural normativeness of parenting behaviors (with one exception) and regardless of whether child externalizing or internalizing behavior was examined. Extant research demonstrates that due to financial strain and resource deprivation, economically distressed families experience more family stress which leads to greater parent externalizing and internalizing behaviors, depleted parent cognitive resources, and consequent elevations in family conflict and maladaptive parenting [21] and that financial stress and its consequences can be passed across generations [3, 23]. Obtaining more income may break both of these intergenerational cycles simultaneously by reducing the family stress that precipitates negative parenting and parent and child psychopathology, and freeing parent time and cognitive capacity to positively interact with their children [21]. Given that mothers are still the primary child caregivers in most societies, the effects of such income boosts may be especially apparent in mothers, who may consequently be especially likely to apply newly freed cognitive resources and time to interactions with their children.

### Limitations and Future Directions

Our study has numerous notable strengths, including its use of rigorous, developmentally informed quantitative methods, its examination of a diverse large-*N* cultural sample with a prospective, longitudinal design, and its examination of intergenerational cultural and protective factor effects. An especially laudable strength is our study's examination of G1 and G2 parent rejection when children in the G1–G2 and G2–G3 families were at similar ages (i.e., 7–12 and 13). Measuring parenting at the same point in child development across generations in this way is consistently advocated by intergenerational transmission methodologists [1], but rarely seen in practice. However, our study also has several notable limitations. First, parent reports of G1 parenting behaviors were retrospective in nature, which introduces the possibility for bias and inaccuracy in remembering G1 parenting. We argue that existing work somewhat mitigates concerns about such biases [30] and that examining G2s' current perceptions of G1 parenting are most informative of their current parenting practices (regardless of the accuracy of such perceptions). However future studies would strengthen existing literature by examining prospective reports of parenting. Additionally, future measures of parenting program participation must improve upon the single, non-time-specific item available to us and investigate intergenerational treatment effects of evidence-based parenting interventions in randomized control trials with known content, dosage, and efficacy. This is especially true because our current crude parenting program participation measure in many cases does

not seem to alter associations between G2 parent rejection and G3 child outcomes (an alteration typically demonstrated in numerous evidence-based behavioral parent training programs). Additionally, our treatment of income decreases of 5% or more captures income changes in the last year that may be more difficult for low-income than high-income families. Thus, future research would benefit from attending to both income level and income change. Additionally, the subsamples examined in the current study are representative of the regions, but not nations, from which they are derived. Future work that examines these intergenerational processes in nationally representative samples is needed. Finally, the current study may be subject to monoreporter bias, as both G1 parent rejection and G2 parent rejection were reported by the same reporter. These concerns are somewhat mitigated by the fact that the same intergenerational pathway from parent rejection to child psychopathology emerged when mother and father reports were examined separately. Nevertheless, future studies that can examine observational measures of G1 parenting, G2 parenting, and G3 mental health would be welcome.

## Summary

Using a sample of 1338 families from 12 cultural groups in 9 nations, we examined whether retrospectively remembered Generation 1 (G1) parent rejecting behaviors were passed to Generation 2 (G2 parents), whether such intergenerational transmission led to higher Generation 3 (G3 child) externalizing and internalizing behavior at age 13, and whether such intergenerational transmission could be interrupted by parent participation in parenting programs or family income increases of > 5%. The current study contributes to existing literature in several ways. It demonstrates that the intergenerational transmission of parent rejection that is linked with higher child externalizing and internalizing problems appears to occur across a variety of cultural contexts. However, the magnitude of this transmission is greater in cultures with higher normative levels of parent rejection, primarily because transmission of parent behaviors from G1 to G2 is more likely in such cultures. Parenting program participation appears to break this intergenerational cycle in fathers from cultures high in normative parent rejection. Income increases appear to break this intergenerational cycle in mothers from a variety of cultures, regardless of normative levels of parent rejection. These results tentatively suggest that bolstering protective factors such as parenting program participation, income supplementation, and (in cultures high in normative parent rejection) legislative changes and other population-wide positive parenting information campaigns aimed at changing cultural parenting norms may be effective in breaking intergenerational cycles of maladaptive

parenting and improving child mental health across multiple generations.

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## Declarations

**Conflict of interest** The authors have no conflicts of interest to declare.

**Ethical Approval** The research protocols were approved by local Institutional Review Boards (IRBs) at universities in each participating country.

**Informed Consent** At each data collection point, participants provided informed consent.

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