

Parental Psychological Control and Adolescents' Physical Aggression:
A Multinational, Longitudinal Analysis of Reciprocal Relations

by

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ABSTRACT

Parental psychological control refers to parental behaviors that intrude into children's and adolescents' psychological world and prevent youths' development of independence and autonomy. Although researchers have argued the detrimental role of parental psychological control in various youths' developmental outcomes, the association between parental psychological control and adolescents' physical aggression has been studied infrequently. In this study, I performed a secondary data analysis using data from the Parenting Across Cultures study to investigate potential bidirectional associations of maternal psychological control and paternal psychological control with adolescents' physical aggression across early- to mid-adolescence in Italy, Thailand, Sweden, the United States, and Colombia. Using a traditional cross-lagged panel model and a random-intercept cross-lagged panel model, the results indicated that across countries, adolescents' physical aggression at Time 1 (approximately 12 years old) positively predicted fathers', but not mothers', psychological control at Time 2 (approximately 14 years old). Further, individual and familial factors such as child age, puberty level, and family socioeconomic status (SES) had significant associations with maternal psychological control, paternal psychological control, and adolescents' physical aggression across countries and time points. No "maternal effect" or "paternal effect" was found of parental psychological control on adolescents' physical aggression. This study provided novel information suggestive of adolescents' role in eliciting parental behaviors, especially the responses of fathers. Suggestions for future research were provided to facilitate a better understanding of parental psychological control and child development in cross-country context.

DEDICATION

To my loving dad and mom, Hexian Xu and Jie Sun.

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CHAPTER 1

INTRODUCTION

Psychological control is broadly defined as the behaviors that parents use to intrude into children's psychological and emotional world, force children to comply with parents' agendas through manipulating the parent-child relationship, and prevent children from developing into independent individuals (Barber et al., 2005; Schaefer, 1965a; Soenens et al., 2010). It often includes parental behaviors such as love withdrawal, expressing disappointment, guilt induction, and making "parental care contingent upon the child's compliance to parental demands" (Soenens et al., 2010, p. 218). Compared with other aspects of parenting such as warmth or physical punishment, parental psychological control is less studied (Barber, 1997).

Psychological control has been said to thwart people's ability to make decisions independently, and prevent people from developing self-identity (Barber, 1996; Barber & Harmon, 2002). Perhaps because parental psychological control is thought to hinder children's autonomy development and intrude into children's emotional and psychological world (rather than to directly affect their behaviors), the majority of studies have focused on, and found consistent positive relations between parental psychological control and children's or adolescents' internalizing problems, such as anxiety and depression (e.g., Bean et al., 2006; Frazer & Fite, 2016; Garber et al., 1997; see Piquart, 2017b; Valdes et al., 2016). Associations between parental psychological control and other adjustment problems (e.g., externalizing behaviors) are less understood. A recent study by Weitkamp and Seiffge-Krenke (2019) in a cross-cultural sample of adolescents

and parents suggested that, compared with other parenting dimensions such as support and anxious rearing, parental psychological control provided the most consistent and positive prediction to adolescents' internalizing and externalizing problems, despite parental psychological control being rated as less frequent than the other two parental behaviors. Thus, parental psychological control might be of critical importance to understand as it is a potential precursor of youths' externalizing behaviors.

Aggression is an important indicator of children's and adolescents' externalizing problems and it has been documented to have long-lasting, negative effects on children's and adolescents' developmental outcomes (see Vitaro & Brendgen, 2012). Aggression has been categorized in a variety of ways (Björkqvist, 1994; Crick & Werner, 1998; Dodge & Coie, 1987). For instance, based on the forms of expression, aggression could be categorized as direct (e.g., physical) and indirect (e.g., relational) aggression (Gendreau & Archer, 2005).

Recent meta-analyses have reported a correlation between parental psychological control and children's or adolescents' relational aggression (i.e., see Kawabata et al., 2011; also see Kuppens et al., 2013). However, the field's understanding of how parental psychological control is related to adolescents' physical aggression is limited. Specifically, the relation between parental psychological control and adolescents' physical aggression has been examined in only a few studies (Albrecht et al., 2007; Kunz, 2008; Shuster et al., 2012).

In addition, many studies only have included maternal psychological control, whereas the role of paternal psychological control has been investigated less often.

Furthermore, whether maternal psychological control still contributes to youths' maladaptive behaviors after controlling for paternal psychological control, and vice versa, is not clear.

Finally, most research in which parents' and children's or adolescents' associations with each other have been examined has been conducted in fairly homogenous settings (e.g., Arnett, 2008). As a result, many findings in the developmental literature may not generalize to most of the world's families (e.g., families from developing and collectivistic countries).

In this study, I used data collected from families in multiple countries to examine the longitudinal and bidirectional associations between maternal psychological control, paternal psychological control, and adolescents' physically aggressive behaviors. Specifically, in separate models, I examined the 1) independent¹ prediction of adolescents' aggression from maternal psychological control or paternal psychological control, and 2) the prediction of maternal or paternal psychological control from adolescents' aggressive behaviors. Additionally, I examined the unique prediction of adolescents' aggression from mothers' and fathers' psychological control after accounting for the other parent's psychological control. Lastly, I planned to examine differences in these relations by country.

¹ In the following document, the phrase "independent prediction" refers to the prediction of outcome variables from the parenting variables of one parent and other control variables (e.g., Family SES), *without* controlling for the parenting variables of the other parent.

The Mothers' and Fathers' Roles in Parenting of Adolescents

According to many cultures' traditional gender stereotypes, mothers are expected to take the majority of responsibility for child rearing, whereas fathers are expected to invest less in childcare than mothers. Therefore, mothers have been investigated much more frequently than fathers by researchers studying parenting behaviors, whereas paternal parenting traditionally has been neglected (Cabrera et al., 2018). However, both theories and empirical results have suggested the necessity to include fathers in parenting research. For instance, although attachment theory was developed initially in reference to maternal parenting (Bowlby, 1969), later studies have documented that children are able to establish attachments with multiple individuals, including with fathers (Lamb, 2000). Furthermore, social learning theory indicates that children are more likely to imitate behaviors of same-sex adults; therefore, fathers could be a significant model especially for boys (Bandura, 1976; Lamb, 2000).

Studies and meta-analyses that included adolescents have documented that paternal parenting is related to, or predictive of various behaviors and developmental outcomes of adolescents, such as internalizing and externalizing behaviors, social competence, academic achievement, and self-regulation (e.g., Di Giunta et al., 2020; Hovee et al., 2009; Jaureguizar et al., 2018; Jeynes, 2015; Kawabata et al., 2011; Lee et al., 2017; Moilanen et al., 2018; Sorkhabi & Middaugh, 2019; Su et al., 2018; Verhoeven et al., 2012). Additionally, Kawabata et al. (2011) found that paternal, but not maternal psychological control, was positively related to adolescents' relational aggression, indicating the importance of including fathers in parenting research.

Discussion of the role of paternal parenting, and its similarities and differences with the role of maternal parenting is warranted given the debate in the literature. Some researchers believe that mothers and fathers are responsible for different domains of children's behaviors across childhood and adolescence. For example, evolutionary theory argues that mothers are responsible for cultivating children's sensitivity and caring because of mothers' traditionally feminine characteristics (e.g., nurturing; Bögels & Perotti, 2011; Möller et al., 2016). On the contrary, fathers show more traditionally masculine characteristics, such as competitiveness and encouraging children to explore the external world (Bögels & Perotti, 2011; Möller et al., 2016). For adolescents specifically, Bögels and Phares (2008) proposed that fathers have a more complicated role, and might be especially important for adolescents' development, compared with mothers. Based on their argument, fathers need to open "the outside world" (e.g., encourage adolescents to practice essential skills beyond the family) to the adolescents, and be close with the adolescents, while the primary role of mothers during this developmental period is to grant autonomy and "let go" of their adolescents (Bögels & Phares, 2008, p. 553). Similar arguments have been made by other researchers, that although fathers are important socialization agents through childhood to adolescence, the fathers' role in promoting youths' competence becomes more salient from middle childhood and beyond, compared with during early childhood (Block, 1978; Collins & Russell, 1991).

Researchers have investigated the types of activities in which parents engage during parent-adolescent interactions, and results of some studies have shown that

mothers are more likely to engage in caregiving-related activities, whereas fathers prefer activities that are more recreational and goal directed (e.g., promote competitiveness for future life). For instance, adolescents reported having more communications with, closer bonds with, and more support from mothers than fathers in general (Fletcher et al., 2018; Hertz & Gullone, 1999; Mastrotheodoros et al., 2018), but fathers were preferred when adolescents want to discuss topics that were considered more masculine (e.g., income, technology; Fletcher et al., 2018). When experiencing peer bullying, mothers of adolescents were found to give more prosocial and help-seeking advice, whereas fathers suggested their adolescents to fight back (Lester et al., 2017).

However, other scholars have claimed that although mothers and fathers engage themselves in different child rearing activities, their parenting qualities share more similarities than differences. Specifically, researchers have reported that fathers and mothers show similar levels in a variety of parenting behaviors, including parent-adolescent closeness, parental acceptance and rejection, and punitive responses in emotion socialization (i.e., Buehler et al., 2006; Klimes-Dougan et al., 2007; Miranda et al., 2016; Sunday et al., 2008), but these similarities did not hold in clinical families (e.g., physically abused adolescents; Sunday et al., 2008). Likewise, Tulviste (2013) reported that mothers and fathers of adolescents share more commonalities in socializing goals, such as teaching adolescents to be trustworthy, be independent, respect others, and have good manners, although mothers indicated more socialization goals such as being thrifty, or being imaginative that were not chosen by fathers. Further, similar changing patterns of maternal and paternal parenting have been found in different parenting behaviors

across adolescence (e.g., support, punishment, control; Mastrotheodoros et al., 2018; Van Heel et al., 2019). In addition, some results suggest that the relations between specific parenting behaviors (e.g., acceptance, intrusiveness, rejection) and child outcomes (e.g., anxiety, prosocial behaviors, socioemotional competence) do not differ by parents' sex (Putnick et al., 2018; Verhoeven et al., 2012; Weymouth & Buehler, 2016). Therefore, although mothers' and fathers' parenting are sometimes hypothesized to be associated with adolescents' developmental outcomes differently, this argument is not always supported by empirical evidence. Lastly, researchers have summarized mixed findings of the similar or different relations between maternal and paternal parenting with adolescents' outcomes (see Brand & Klimes-Dougan, 2010; see Möller et al., 2013; also see Steinberg & Silk, 2002). Fathers' and mothers' unique and similar roles in adolescents' development are not clear.

Something missing from the existing literature is a comprehensive understanding of the unique relations of paternal parenting to adolescents' development. Although many studies suggest that fathers' parenting "matters" for their children's outcomes, our knowledge about whether fathers "matter" for children's outcomes *beyond* mothers, and vice versa, is limited. Jeynes (2016) concluded that paternal parenting uniquely predicted a variety of developmental outcomes from childhood to early adulthood after accounting for maternal parenting. Some studies have found that maternal parenting is more strongly associated with, or predictive of adolescents' moral development than paternal parenting (e.g., prosocial behaviors; see Collins & Russell, 1991; Day & Padilla-Walker, 2009; Sorkhabi & Middaugh, 2019). On the contrary, a few studies have found that father-

adolescent relationships provided more consistent prediction to adolescents' deviant behaviors compared with mother-adolescent relationships (e.g., Internet gaming disorder; Liu et al., 2013; Su et al., 2018). Day and Padilla-Walker (2009) also reported that when mothers' and fathers' parenting were included in the same model, paternal connectedness and involvement predicted adolescents' internalizing and externalizing behaviors above and beyond maternal parenting, whereas the unique prediction of maternal parenting was not found. Lastly, when predicting adolescents' emotional regulation, paternal, but not maternal control, predicted above and beyond control of the other parent (Van Lissa et al., 2019). The unique roles of mothers and fathers in predicting adolescents' outcomes are still unclear.

It should be noted that there may be age differences in the strengths of relations between parenting and children's and adolescents' outcomes. Meta-analyses have been done to investigate potential age differences in the relations between parenting behaviors and different youths' outcomes, but their conclusions sometime vary by the parenting or child behaviors that are investigated. In meta-analyses that included both children and adolescents, parental behaviors are sometimes found to be more related to adolescents' (i.e., bullying, externalizing and internalizing behaviors, relational aggression), compared to children's, behaviors (e.g., Lereya et al., 2013; Kuppens et al., 2013; Pinquart, 2017a; Pinquart, 2017b). Nonetheless, some researchers did not find such age differences in other studies (e.g., Kawabata et al., 2011; Pinquart & Gerke, 2019), and a stronger relation was found between parenting and children's academic achievement, compared with adolescents' (Pinquart, 2016).

Meta-analyses that included only adolescents also yielded conclusions that varied by adolescent outcomes. For instance, Hoeve et al. (2009) concluded the relations between various paternal parenting behaviors (support and control) and adolescents' delinquency is stronger for early adolescents than older adolescents. However, Dittus and colleagues (2015) noted that there were no age differences in the relation between parental monitoring and adolescents' risky sexual behaviors for adolescents aged between 10- to 19-years old.

Although conclusions seem to vary depending on the particular aspects of parenting and/or the particular aspect of adolescents' adjustment examined, these meta-analyses provide important suggestions regarding the role of parenting in development. First, although adolescents are exposed to other socialization agents such as peers and romantic partners, parents are still important (Harter, 2008; Steinberg & Silk, 2002). Additionally, the frequencies and potential influence of parental behaviors might depend on features of children's and adolescents' developmental periods. For instance, parents may intrude more on adolescents', rather than children's, sexual behaviors given puberty occurs during adolescence. Likewise, parents may exert less control on adolescents' academic-related activities as adolescents have more autonomy and ability to handle their school work better compared with children. In addition, children and adolescents may become more rebellious, and show more negative responses if parental behaviors disrupt their developmental needs (e.g., adolescents may develop more maladjustment behaviors if parents do not respect adolescents' freedom and independence).

Lastly, the majority of the studies that were included in the aforementioned meta-analyses were cross-sectional, with a small number of longitudinal studies. Thus, our knowledge about the cross-lagged and longitudinal relations between parental behaviors and youth outcomes is still limited. More longitudinal studies are needed to examine the age differences in the role of parental behaviors in adolescents' behaviors.

Parental Psychological Control: History and Features

Baumrind's parenting styles theory classifies parenting behaviors into two broad dimensions: responsiveness and demandingness (Baumrind, 1996). Specifically, responsiveness consists of parental affective expression (e.g., warmth, encouragement), and understanding and supportive responses to children's requests (Baumrind, 1996; Maccoby & Martin, 1983). Demandingness reflects the extent to which parents impose rules and boundaries on children using controlling strategies (e.g., supervision, punishment, power assertion, love withdrawal; Baumrind, 1996; Maccoby & Martin, 1983).

Researchers have documented extensively the relations between parenting behaviors and children's developmental outcomes. In general, high parental responsiveness often is related to children's desirable behaviors and skills such as social competence, academic success, and emotion regulation (e.g., Altschul et al., 2016; Brenning et al., 2015; Gurdal et al., 2016; see Morris et al., 2017). However, compared with patterns for parental responsiveness, the patterns between parental demandingness and developmental outcomes are more complicated. First, Baumrind's earlier conceptualization of parental demandingness was very broad and demandingness could

be expressed in various forms, including punitive discipline, love withdrawal, reasoning and induction, autonomy granting, power assertion, firm control, and demands for socially desirable behaviors (Baumrind, 1966). Depending on the extent to which parents exhibit these controlling behaviors, some controlling behaviors (e.g., induction and reasoning; Hoffman, 2000) are beneficial, whereas others (e.g., power assertion; Mussen & Eisenberg, 2001) are detrimental for children's development. Given different parental controlling behaviors may have dissimilar implications for children's outcomes, it is important to disaggregate the broad concept of parental demandingness and study different controlling strategies independently.

In addition, differentiating the controlling behaviors that are targeted at children's external behaviors from those targeted at the internal psychological world may help clarify the understanding of parental demandingness and its associations with children's and adolescents' outcomes. Schaefer (1965a) differentiated behavioral control from psychological control. Behavioral control refers to parental behaviors that directly intrude into children's activities and behaviors, such as yelling, physical punishment, and verbal threats (Janssens et al., 2015), whereas psychological control refers to "covert, psychological methods of controlling the child's activities and behaviors that would not permit the child to develop as an individual apart from the parent" (Schaefer, 1965a, p. 555). Later, Barber (1996) expanded the idea of psychological control, and interpreted it to be a type of control that hindered child development through manipulation of the parent-child relationship, conditional regard (e.g., love withdrawal, guilt induction), excessive control (e.g., over protectiveness), and negation and criticism (e.g., shame,

disappointment). Other researchers view psychologically controlling behaviors as behaviors that intrude upon children's and adolescents' personal world, and dominate how youths think and feel (Grolnick & Pomerantz, 2009; Nucci et al., 2005). Recently, Barber and colleagues (2012) expanded the concept of psychological control to include the disrespect of children's individuality. Although variations in researchers' definitions of psychological control exist, they seem to agree that parental psychological control is "a violation of healthy and facilitative interpersonal relationships" (Barber et al., 2012, p. 276), and that it could be harmful for youths' developmental outcomes.

Researchers have argued that compared with childhood, parental psychological control may be more harmful to adolescents. First, autonomy development is a key developmental task for adolescents (Barber & Harmon, 2002). Adolescence is also the period during which adolescents start to develop their identity, thoughts, and perspectives (White et al., 1983). High levels of psychological control from parents violate adolescents' developmental needs of psychological autonomy, which might lead to maladaptation. Moreover, the puberty process and cognitive maturation may make adolescents behave, think, and want to be treated like adults (see Steinberg & Silk, 2002). Thus, compared with childhood, adolescents might view parental authority as more questionable, be less inclined to accept parental control, and have a more distant relationship with parents (Laursen & Collins, 2009; Levpušček, 2006; Smetana, 1989; Smetana et al., 2005), and thus show more rebellious behaviors in response to parental psychological control. Lastly, compared with children, adolescents engage in more activities that are unsupervised by parents (Collins & Madsen, 2003; Steinberg & Silk,

2002). Parental inability to supervise adolescents' all activities may make parents more concerned about adolescents' behavioral appropriateness, and some parents might become more restrictive and implement more psychological control. Given that parental psychological control could be especially detrimental to adolescents' developmental outcomes, studies are needed to investigate how parental psychological control is related to adolescents' behaviors.

The Relation between Parental Psychological Control and Adolescents' Physical Aggression

A developmental outcome that might be associated with parental psychological control is physical aggression. In general, physical aggression (sometimes called overt aggression) refers to behaviors intended to harm others through direct or physical threats, which include physical attacks (e.g., hitting) and overt verbal threats (Crick, 1997; Gendreau & Archer, 2005).

To my knowledge, no theory has been constructed to explicitly explain why parental psychological control might be related to youths' physical aggression. Scholars have used some general parenting theories to explain this potential association. For instance, both social learning theory and attachment theory state that youths imitate parental behaviors in their interpersonal interactions (Bandura, 1976; Bowlby, 1969). If parents commonly use psychological control, adolescents are likely to perceive psychological control as a normal strategy to use with other people. Thus, they might show more hostile and controlling behaviors, such as aggressive behaviors, during interpersonal interactions. In addition, the interpersonal acceptance and rejection theory

proposes that youths whose parents show hostility and rejection will perceive their surroundings in a negative way, which might be related to the development of maladjustment problems (e.g., Rohner, 1999; Rohner & Brothers, 1999; see Khaleque, 2017). In a recent study, Choe and Read (2019) investigated the associations between parental psychological control and adolescents' physical and verbal aggression, which may speak to the mechanism between parental psychological control and adolescents' physical aggression. Using the arguments from multiple theories such as the reactance theory (Brehm, 1966) and self-determination theory (Ryan & Deci, 2000), Choe and Read (2019) argued that adolescents might develop feelings of wanting revenge when they "believe that important things are taken away from them" (p. 2873). When parents use psychologically controlling behaviors such as invalidating feelings, inhibiting self-expression, or conditional love, adolescents might lose confidence in their competence, and adolescents might feel unfairly treated as they have to sacrifice their needs to please their parents and earn parental affection (Choe & Read, 2019). When feeling being manipulated by parents, adolescents may express their anger in rebellion to parental psychological control and to regain freedom and parental respect (Choe & Read, 2019). Thus, they may choose the overt form of aggressive behaviors, as physical aggression is more direct, and might elicit more parental attention than the covert form of aggressive behaviors (i.e., relational aggression). In addition, it is possible that adolescents of psychologically controlling parents are perceived by peers as less socially competent and less independent, given those adolescents might have a weak self-identity, and have poorer self-expression and self-confidence; this might put these adolescents at risk for

negative peer interactions (e.g., peer victimization; Cheng & Chen, 2015; Kopala-Sibley et al., 2013; Shin et al., 2016). In this situation, adolescents' physical aggression might function as a coping strategy when adolescents experience peer difficulties.

A group of studies have been done to examine the association between parental psychological control and children's or adolescents' aggression. However, compared with the literature on the relations between parental psychological control and adolescents' relational and indirect aggression, the relations between maternal psychological control and adolescents' physical aggression, and between paternal psychological control and adolescents' physical aggression have been less studied. Researchers have reported positive associations between negative parental behaviors (e.g., punishment) and adolescents' physical aggression to other people, such as peers and parents (e.g., Llorca, 2017; Pagani et al., 2004; Pagani et al., 2009; see Pinquart, 2017b). Thus, it is plausible that parental psychological control would be related to higher levels of adolescents' physical aggression, and more studies are needed to examine this association.

In the small group of studies that focused on the associations between parental psychological control and children's physical aggression, both maternal and paternal psychological control have been found to be related to children's physical aggression. However, the associations often have varied by child sex and are not consistent. First, some studies indicate an association between maternal psychological control and physical aggression for both boys and girls. For instance, a positive correlation was found between maternal psychological control and children's physical aggression across sex (Nelson et

al., 2013). In a longitudinal study that included mothers and primary schoolers, maternal psychological control for 6-year-olds positively predicted children's physical aggression throughout primary school, and this prediction did not differ by child sex (Joussemet et al., 2008). However, independent predictions from maternal psychological control to children's physical aggression sometimes have yielded different results by child sex. For instance, maternal psychological control predicted girls', but not boys' physical aggression in China and the U.S. (Casas et al., 2006; Yang et al., 2003). In contrast, Crick (2003) found longitudinal prediction of physical aggression from maternal psychological control 1 year earlier within the mother-son, but not the mother-daughter dyads.

Fewer studies have investigated paternal psychological control and children's physical aggression, and results often have suggested a significant association between the father-daughter, but not father-son dyads. Specifically, paternal psychological control has been found to be positively correlated with (Nelson et al., 2013), and independently predicted girls', but not boys' physical aggression (Casas et al., 2006; Yang et al., 2003). However, Crick (2003) reported a non-significant prediction from fathers' earlier psychological control to either boys' or girls' physical aggression one year later.

Lastly, two studies, to my knowledge, have investigated the unique prediction of children's physical aggression from maternal and paternal psychological control above and beyond the psychological control of the other parent. Specifically, Li (2007) reported that higher maternal psychological control was predictive of higher levels of boys', but not girls', physical aggression after controlling for paternal psychological control. Conversely, paternal psychological control uniquely and positively predicted girls', but

not boys', physical aggression (Li, 2007). However, Hart et al. (1998) did not find unique prediction of physical aggression from maternal or paternal psychological control in their sample of preschoolers.

Fewer studies have examined the relations between parental psychological control and adolescents' physical aggression, and the results are inconsistent. In the few studies that exclusively or primarily investigated maternal psychological control, only one study reported a significant association between maternal psychological control and both boys' and girls' physical aggression (Loukas et al., 2005). In other studies, relations between maternal psychological control and adolescents' physical aggression were not significant (Shuster et al., 2012). Lastly, Gaertner et al. (2010) concluded no significant prediction from parental psychological control and adolescents' overt aggression, but they collapsed maternal and paternal psychological control given the high correlation between them (.70), make it difficult to separate the prediction of maternal behaviors from paternal psychological control.

Only one study, to my knowledge, has tested the relation between paternal psychological control and adolescents' physical aggression, and the unique prediction from maternal and paternal psychological control to adolescents' physical aggression. In their study, Albrecht and colleagues (2007) reported a significant correlation between paternal psychological control and adolescents' physical aggression. Further, they found unique prediction to adolescents' physical aggression from both maternal and paternal psychological control (Albrecht et al., 2007).

Despite the relatively small group of studies available for the relation between parental psychological control and adolescents' physical aggression, studies exist that test the relation between parental psychological control and adolescents' overall aggression or concepts related to aggression. In general, a group of studies has supported a positive correlation between parental (some studies used exclusively mothers, and some studies used primary caregivers and it was not clear which parent was included) psychological control and adolescents' aggression and externalizing behaviors (Cui et al., 2014; He et al., 2019; Kunz, 2008; Taylor, 2010; Tian et al., 2019), but other studies did not find a similar association (Murray et al., 2014; Murray et al., 2010). In addition, maternal psychological control has significantly and positively predicted adolescents' aggressive behaviors or externalizing behaviors, either directly or indirectly via personal or interpersonal characteristics (e.g., deviant peer affiliation, self-regulation; Cui et al., 2014; Taylor, 2010; Tian et al., 2019). But prediction was not found in other studies (e.g., Murray et al., 2014). Additionally, in the only study that exclusively investigated fathers, the prediction of adolescents' externalizing behaviors from paternal psychological control was not significant (Buehler et al., 2006).

Longitudinal studies also have yielded mixed findings. Although some researchers found that earlier parental psychological control was predictive of adolescents' later overall aggression (He et al., 2019; parents' sex not indicated), others did not (Steeger & Gondoli, 2013; only mothers were included). When maternal and paternal psychological control were included in the same model, Nguyen and colleagues (2018) reported that maternal, but not paternal, psychological control positively and

uniquely predicted adolescents' externalizing symptoms three months later. Lastly, Chen et al. (2000) reported that paternal, but not maternal, control at 6th grade (with a subset of psychological control items) predicted adolescents' higher aggressive behaviors at 8th grade, but the prediction was only significant among adolescents who initially showed high aggressive levels at 6th grade.

Based on the aforementioned findings, we might anticipate that parental psychological control is, in general, related to youth's physically aggressive behaviors. However, given that studies that have been focused on adolescents have been rare, more studies are needed to examine this relation. Although adolescents are expected to express fewer physically aggressive behaviors compared with children, physical aggression still exists among adolescents (Rubin et al., 2006). Investigation of the role of parental psychological control in adolescents' physical aggression is warranted. To the best of my knowledge, no longitudinal study about the relation between parental psychological control and adolescents' physical aggression has been published. Although a few longitudinal studies investigated the relations between parental psychological control and children's physical aggression, or adolescents' overall aggression, most studies had two waves of data, which prevented the estimation of models that can get us closer to causal interpretations (Newsom et al., 2013). Thus, studies with more than 2 waves of data are necessary to better understand the role of parenting behaviors in shaping adolescents' physical aggression behaviors.

The Reciprocal Nature of Parenting and Child Behaviors

The above discussion emphasized parents' effects on adolescents' aggressive behaviors. Yet, the designs of the studies do not permit direction or directions of influence to be determined.

Parental behaviors often are viewed as “unidirectional determinants of children’s development” (Kuczynski et al., 2003; p. 427). However, children do not passively receive parental behaviors. Children’s behavior elicits parental behavior. Children play an active role in reinforcing or diminishing certain parenting practices, and the relations between the parent and the child are bilateral, rather than unilateral (Kuczynski, 2003). Child behaviors, which are traditionally viewed as the outcome variables of parenting behaviors, could be relabeled as predictive variables that “have consequences for adult responding” (Yarrow et al., 1971; p. 301). Furthermore, researchers have argued that the inclusion of “child effects” may unveil many important relations between parent and child characteristics; in addition, child development is a process, rather than a product of parent-child interactions (see Bell & Harper, 1977).

Different theories have been conceptualized to explain how child behaviors elicit parental behaviors. For instance, the control system model hypothesizes that child behaviors that do not meet or exceed parental expectations may elicit parental responses to redirect child behaviors to the appropriate behavioral ranges (Bell & Chapman, 1986; Bell & Harper, 1977). Additionally, Belsky (1984) discussed parenting as a process that was constructed by personal and environmental contexts, in which child characteristics were an important determinant of parental functioning. Likewise, coercion theory argues

that child's irritating behaviors (e.g., infant crying) could trigger negative parental responses, which in turn reinforce children's deviant behaviors (Patterson, 2002). Furthermore, Kuczynski (2003) proposed the bilateral model of parent-child relations. Based on this bilateral model, parent-child interaction is a relationship featured by a) bidirectional causality, that parental and child behaviors are the cause and outcome of each other; b) a long-lasting relationship, and it is developed and maintained by a close parent-child bond and continuous interactions; c) equal agency between the child and parent, such that both partners in the parent-child dyad are able to actively make and assert autonomous decisions that are independent from the other's perspective; and d) interdependent asymmetric power, that although parents might have more control over the child overall, both the parent and the child are able to use different resources to make the other comply with their demands. Specifically, children have a "taken-for-granted view of their ability to successfully make demands on parents relative to other adults" (Kuczynski, 2003, p. 17). Despite differences in terminologies and specific assumptions of the aforementioned theories, all of them acknowledge the effect of child behaviors on subsequent parenting responses.

Many studies have documented child effects on parenting behaviors. To list a few, Yarrow et al. (1971) found that children's help seeking behaviors triggered more nurturing parenting responses. Similarly, Moe et al. (2018) reported that infants' higher levels of adaptability, persistence, or regularity predicted less maternal parenting stress. Additionally, young children's responsiveness was found to be predictive of maternal supportive parenting behaviors (Smith, 2010). On the contrary, studies also have found

that children's negative characteristics or behaviors predicted negative parental responses, such that children's and adolescents' maladaptive behaviors or difficult characteristics (e.g., antisocial behaviors, aggression, delinquency, externalizing behaviors, low self-control) are predictive to various negative parenting behaviors, including harsh discipline, negative affect, and less parental involvement (e.g., Arnold & O'Leary, 1995; Hastings & Rubin, 1999; Hawkins et al., 2007; Jackson & Beaver, 2015; Kerr & Stattin, 2003; see Lytton, 1990; Rothenberg et al., 2020).

A few studies have documented child effects, or bidirectional relations between parental psychological control and children's or adolescents' behaviors. However, results are not always consistent across various child or adolescent behaviors. For instance, reciprocal effects have been found between parental psychological control with adolescents' depression, emotion regulation, or antisocial behaviors (Barber et al., 2005; Soenens et al., 2008; Van Lissa et al., 2019), and child-driven effects have been found between adolescents' internalizing problems and parental psychological control one year later (Loukas, 2009; Rogers et al., 2003). Furthermore, in a meta-analysis, Pinquart (2017a) concluded that children's initial externalizing problems predicted an increase in negative parental behaviors, including psychological control. However, Wang (2006) did not find child-driven effects; that neither adolescents' academic achievement nor emotional functioning predicted parental psychological control longitudinally.

Only a few studies have explicitly examined the prediction from youths' physical, or overall, aggression to parental psychological control. He et al. (2019) reported a child effect from earlier adolescents' overall aggression (a combination of direct and indirect

aggression) to parental psychological control one year later. Additionally, Albrecht et al. (2007) reported that adolescents' physical and relational aggression predicted both maternal and paternal psychological control (maternal and paternal psychological control were treated as outcomes in separate models), both concurrently and longitudinally. In a sample of toddlers, Hastings and Rubin (1999) did not find a significant prediction from children's aggression to maternal psychological control, which might be due to the small sample size ($n = 64$) and the low frequencies of reported maternal-reported psychological control. Lastly, some mediation processes have been found, such that adolescents' early aggression elicited more maternal psychological control at a later time via mother-adolescent conflict (Steeger & Gondoli, 2013).

Although the existing studies suggested the child effect may vary depending on parent or child sex, the effect of adolescents' aggressive behaviors on parental psychological control is plausible. The child effect might be more substantial during adolescence, compared with childhood, especially in triggering parental psychological controlling behaviors. First, the cognitive maturation and autonomy of adolescents may transfer parent-child relationship from a hierarchical to a more egalitarian relationship (Laursen & Collin, 2009; Silverberg et al., 1992), which helps adolescents to have a stronger voice and play a more important role in affecting parental behaviors. Secondly, as Kuczynski (2003) proposed in the bilateral model, children are able to use their surrounding resources to alter parental behaviors. Compared with children, adolescents have access to more social and interpersonal resources, and adolescents' reliance on other social resources might be perceived as a threat to the parents (e.g., parents may perceive

adolescents' bond with others as a threat to parent-adolescent closeness). As a result, parents might impose more control to suppress adolescents' behaviors, and psychological control might be one strategy to redirect adolescents into a behavioral trajectory that meets parental expectations.

Despite the growing awareness of investigating the bidirectional relation between parenting and child behaviors, the majority of the parenting studies still prioritize the prediction from parental behaviors to child outcomes. Studies that focus on the prediction from adolescents' aggressive behaviors to parental psychological control, and the reciprocal relation between parenting and youth behaviors are rare. Thus, this study is essential to help understand adolescents' potential influence on parental psychological control, as well as potential reciprocal effects between parental and adolescents' behaviors. Furthermore, the longitudinal design of this study will help to clarify whether parents and adolescents impact each other in a long-lasting way.

The Present Study

There are two major shortcomings of the literature. First, we have insufficient knowledge about how maternal and paternal psychological control are related to adolescents' physical aggression. Specifically, the longitudinal relations between parental psychological control and adolescents' physical aggression have not been investigated. Thus, there is not consensus regarding the non-unique and unique roles of maternal and paternal parenting as they relate to adolescents' physical aggression. Additionally, it is not clear whether parental psychological control and adolescents' aggression are associated unidirectionally or bidirectionally. Specifically, whether adolescents' earlier

aggressive behaviors predict later parental psychological control has not been sufficiently investigated.

The present study is a secondary data analysis using data from the Parenting Across Cultures (PAC) study, an international longitudinal study of child development. It consists of 1,417 children and their families from nine different countries (i.e., China, Colombia, Italy, Jordan, Kenya, Philippines, Sweden, Thailand, the U.S.).

In this study, I will use the PAC data that were collected from adolescents and their families when the adolescents were approximately 12, 14, and 15 years, respectively, to investigate the longitudinal and reciprocal associations between maternal psychological control, parental psychological control and adolescents' physical aggression. Specifically, I aimed to examine the independent prediction from maternal psychological control or paternal psychological control to adolescents' physical aggression (*not* controlling for the other parents' psychological control). Based on existing studies and theories, I hypothesized that both maternal and paternal psychological control would positively predict adolescents' physically aggressive behaviors. I also examined the prediction from adolescents' aggressive behaviors to maternal and to paternal psychological control. I hypothesized to detect a child effect in which adolescents' physically aggressive behaviors at an earlier time would predict more psychological control of both parents at later times.

Additionally, I examined the unique prediction of adolescents' aggression from mothers' and fathers' psychological control after accounting for the other parents' psychological control. Given the mixed findings, I anticipated that both mothers and

fathers would uniquely predict adolescents' aggression, after controlling for each other's levels of psychological control. However, given mothers' traditional primary caregiver role in many countries, mothers might have stronger unique contributions to adolescents' aggression, compared with fathers.

It is worth mentioning that the cross-country design of the PAC study might allow me to examine differences in these relations by country. The investigation of country differences in the associations between parental psychological control and adolescents' physical aggression is warranted. Although physical aggression has been widely viewed as an indicator of youths' maladaptive development (e.g., Lansford, 2018; Hartup, 2005), there is an ongoing debate of whether parental psychological control should be conceptualized as detrimental universally, or culturally specific parenting behavior. A relation that supports that parental psychological control may be damaging to youths' behavioral development sometimes has been found in various populations (e.g., Barber et al., 2005; Bullock et al., 2018; Cui et al., 2014; Soenens et al., 2012; Wang, 2006), whereas some researchers have argued that the association is culturally dependent. Specifically, Soenens et al. (2015) proposed that country context is an important moderator in the relation between parental psychological control and children's responses, and studies that examined participants in multiple countries sometimes found country variations in the relations between parental psychological control and youth outcomes (e.g., Fung & Lau, 2012; Güngör & Bornstein, 2010; Liga et al., 2017; Rudy et al., 2014; Sebre et al., 2015). One explanation for the different associations could be that psychological control might be more consistent with collectivistic cultural values such as

parental authority (e.g., child compliance with the parents), family obligation (e.g., individuals' belonging to the larger family), and dependence (e.g., connectedness among family members). Thus, parental psychological control might be viewed as a more common and culturally appropriate parenting behavior in collectivistic countries, and have less negative impact on youths, compared with individualistic countries where independence, autonomy, and self-freedom are emphasized (Güngör & Bornstein, 2010; Rudy et al., 2014). In this project I expected that I would find the prediction from parental psychological control to adolescents' physical aggression to be weaker in collectivistic countries (e.g., China, Thailand) compared with more individualistic countries (e.g., Italy, Sweden, the U.S.; Hofstede, 2001). Furthermore, the perceptions of psychological control might inform how parents respond to adolescents' physical aggression. Despite only a few studies have found the prediction from earlier adolescents' behaviors to later parents' psychological control in different populations (He et al., 2019; Loukas, 2009; Rogers et al., 2003; Van Lissa et al., 2019), an investigation of country variations in this potential child effect might not be achieved unless participants across countries have been assessed using the same set of measurements. I am not aware of studies that have examined the country differences of adolescents' physical aggression in predicting later parental psychological control in cross-country participants. Using the PAC data, researchers have attempted to examine whether country differences existed in predicting parental behavioral control from youths' earlier behaviors. In a study by Lansford et al. (2018a) using the earlier waves of the PAC study, they found positive prediction from children's earlier internalizing and externalizing behaviors to parental

behavioral control across countries. However, Kapetanovic et al. (2020) found some cultural differences in the predictions from 13-year-old adolescents' various behaviors (e.g., internalizing and externalizing behaviors, information disclosure) to parental behavioral control at 15 years old. Thus, I did not have firm expectations for potential country differences in the child effect predicting parental psychological control from physical aggression. However, higher levels of parental psychological control might be anticipated in response to adolescents' physical aggression, if parental control is deemed as more consistent with the cultural orientation of that specific country (e.g., in collectivistic countries). In countries where parental authority is viewed as less legitimate (e.g., in individualistic countries), parents might use behaviors that are less controlling to correct adolescents' aggressive behaviors.

In my analyses, family SES, adolescents' pubertal development, child sex, and the number of children in participating families were included as control variables.

Adolescents' ages at the first and third wave were also included as control variables².

Adolescents' age, sex, pubertal development, and family SES were chosen as existing studies have documented that these variables are related to adolescents' physical aggression. Specifically, researchers have suggested that with adolescents' physical growth and maturation, they may use more physical aggression to obtain social dominance, and this might be especially true for boys (e.g., Hemphill et al., 2010; Tremblay et al., 1998). In addition, research findings show a general pattern that boys are

² Adolescents' age at the second wave was not included because this information was not collected at this time of investigation.

more physically aggressive than girls, and this pattern persists throughout childhood to adolescence (Archer, 2004; Card et al., 2008; Côté, 2007; Scheithauer et al., 2008). Further, age has been found to be related to adolescents' physical aggression, and some researchers have concluded that adolescents' physical aggression peaks during mid-adolescence (e.g., Karriker-Jaffe et al., 2008), which corresponds to the time period that is covered in this project. In addition, adolescents from lower-SES families may have less access to educational and living resources, and live in disadvantageous situations compared with peers from higher SES families (e.g., see Letourneau et al., 2011). Compared to youths from higher SES families, adolescents from lower SES families may experience more economic hardship, more lax parenting, and more exposure to deviant peers; thus, they may be at higher risk of developing maladaptive behaviors, including aggression (e.g., Bellair et al., 2019). Lastly, we included the number of children in the families in our analysis to control for country differences in family sizes, as children with and without siblings may experience different family dynamics (i.e., children with siblings will have more peer interactions at home). Further, existing studies have documented the role of siblings in youths' physical aggressive behaviors (e.g., sibling aggression is positively associated with youths' physical aggression; Button & Gealt, 2010; King et al., 2018).

Note that researchers have used the PAC dataset to examine the predictive relations between parenting and children's or adolescents' externalizing behaviors, but the proposed study will make further contributions. Although studies using the PAC data have investigated the relations between some negative parenting behaviors (e.g., verbal or

physical punishment, behavioral control) and youths' aggression or externalizing (Anonas & Alampay, 2015; Kapetanovic et al., 2020; Lansford et al., 2005; Lansford et al., 2018a), parental psychological controlling behaviors rarely have been examined. Only one study using these data has explicitly tested psychological control as the predictor of youths' externalizing behaviors (Lansford et al., 2018b). The present study differs from Lansford et al. (2018b) because rather than examine externalizing, we are examining physical aggression. Furthermore, her investigation used 10- and 12-year-old time points, whereas this investigation will use three later time points. Thus, this study will contribute novel information. Lastly, Lansford et al. (2018b) combined maternal and paternal psychological control, thus the examination of the parental effect on youths' developmental outcomes could not be done by parent sex.

CHAPTER 2

METHOD

Participants

The present study used the secondary data from year 5, year 7, and year 8 of the PAC study, when the adolescents were approximately 12, 14, and 15 years old³, respectively. The original sample included 1,417 children and their parents (both mothers and fathers) who were recruited from nine countries. Children were tracked from 8 years old until the age of 16. Specifically, participants included 240 children and their parents from Jinan and Shanghai, China; 108 children and parents from the state of Antioquia, Colombia; 203 children and parents from Naples and Rome, Italy; 114 children and parents from Amman, Jordan; 100 children and parents from Kisumu, Kenya; 120 children and parents from Manila, Philippines; 103 children and parents from Trollhättan and Vänersborg, Sweden; 119 children and parents from Chiang Mai, Thailand; and 331 children and parents from North Carolina, United States. A detailed description of demographic information by country is presented in Table 1. Upon recruitment, 672 (50.3%) participating children were girls, mothers reported completing 12.8 years of education, and fathers reported completed 12.9 years of education, on average. At year 5 (Time 1 for current project), the participating children had an average age of 13.19 years ($SD = .90$). At year 5, 18.9% ($n = 199$) families reported having up to \$5,000 annual family income, 15.4% ($n = 162$) families reported having between \$5,000 and \$10,000

³ Across countries, the actual age of adolescents at first time point was older than 12 years old, with a mean age of 13.19 years old.

family income, and 16.6% ($n = 174$) families reported having beyond \$81,000 family income. The rest of families reported having between \$11,000 to \$70,000 annual income. The average ages of participating mothers and fathers at year 5 were 41.85 years old ($SD = 6.69$), and 44.74 years old ($SD = 6.70$), respectively.

Procedure

Participants included children and their mothers and fathers from private and public schools in the nine countries. Letters that explained the study were distributed to the parents through the assistance of schools, and parents were asked to sign and return a letter indicating whether they would like to participate. For parents who agreed to participate, the local investigators made appointments with the family to conduct the 2-hour interview annually. Parental consent and children assent were given before each interview, and the interview could be done either orally or in written questionnaires. All the interviews were administered through the predominant language of each country. To keep the interview confidential, parents and children/adolescents participated in the interviews at different times or locations, and participants were informed that there were no right or wrong answers. Participating parents and children were given monetary or other forms of compensations that were approved by the local Institutional Review Board in each country (see Gershoff et al., 2010; Kapetanovic et al., 2020). Table 2 presents all the measures used and the reporter(s) at each wave.

Measures

In the following paragraphs, reliabilities (calculated by *Cronbach Alpha*) of the key concepts (i.e., parental psychological control, physical aggression) were computed

within reporter, within wave, and within country. Two sets of reliabilities were presented. First, reliabilities of all items in the measures were presented within reporter, wave, and country. However, certain measures showed low reliabilities in some countries, waves, or reporters. To retain more countries in the analysis, some items were removed if deleting that item would increase the reliabilities across countries, reporters, and waves (composites use the same items for all countries, reporters, and waves for consistency). Some countries have very low reliabilities and removing items would not help improve reliability, which may imply the measurement inappropriateness in that country context. Under this circumstance, countries with extremely low reliabilities (e.g., $< .4$; Taber, 2018) on the key concepts were removed from the analysis. The second sets of reliabilities presented the alphas that were derived from the items that remained in the analyses after item and country deletion.

Parental Psychological Control

At each wave, mothers and fathers reported their parental psychological controlling behaviors to their adolescents using an 11-item questionnaire that was developed by the research team based on multiple existing psychological control measures (e.g., Barber, 1996; Schafer, 1965b). Sample items included “*I act cold and unfriendly if my child does something I don’t like.*” and parents were asked to rate items on a 4-point Likert scale ($1 =$ strongly disagree to $4 =$ strongly agree). A parental psychological control composite was computed by averaging all the items in the questionnaire, with item 1 (*I emphasize that every member of the family should have some say in family decisions*), item 4 (*I keep pushing my child to think independently*),

item 7 (*I let my child make his/her own plans for things he/she wants to do*), item 11 (*I say that it is important for my child to get his/her ideas across even if others don't like it*) reverse coded. A higher composite score represents a higher level of psychological control. The reliabilities of all the original items across waves, reporters, and countries were represented in Table 3. Across countries, reporters, and waves, the reliabilities for parental psychological control had a wide range of reliabilities, from .29 to .77.

As seen in Table 3, Kenya, Philippines, and Jordan had very low reliabilities on parental psychological control measure (the lowest reliabilities were .30, .29, and .32 for Kenya, Philippines, and Jordan, respectively), and deleting items did not improve the value of alphas to a satisfactory reliability (e.g., > .58; Taber, 2018). Thus, these three countries were removed from further analysis. Among the remaining six countries, some items were deleted to improve the reliabilities of parental psychological control across countries, reporters, and waves. In the first round, the results of the reliability calculation indicated that after removing the reverse-coded item 11 (*"I say that it is important for my child to get his/her ideas across even if others do not like it."*), most of the reliabilities surpassed the value of .58 across countries and waves, except for a few countries (e.g., between .55 and .57 for China and Thailand). Thus, item 11 was removed first, and a second round of item deletion was made to further improve the reliability of parental psychological control measure of China and Thailand. In the second round, the reverse-coded item 7 (*"I let my child make his/her own plans for things he/she wants to do."*) was removed, and the reliabilities of parental psychological control measure were above .58 for all the remaining countries across reporters and waves, except for father-

reported psychological control at Time 2 ($\alpha = .56$) of Chinese participants. However, no further item deletion was made to remain more items in the measure, given that .56 was close to the satisfactory reliability value of .58. Table 4 represents the reliability values of maternal and paternal psychological control after item deletion across time points of all countries except for Kenya, Philippines, and Jordan which were excluded from the analysis.

Adolescents' Physical Aggression

Adolescents reported their own aggressive behaviors using the aggressive behaviors subscale in the Youth Self Report at each wave (Achenbach, 1991). For the purpose of this study, only items that measured adolescents' direct and physical aggression toward others were included. We computed a physical aggression composite (e.g., *I destroy things belonging to others*, 5 items) by averaging the item scores in each subscale. Adolescents were asked to rate their own behaviors using a 3-point Likert scale (0 = not true to 2 = very true or often true). Table 3 presented the reliability scores of adolescents' physical aggression across waves and countries.

Although the reliabilities of adolescents reported of physical aggression were not ideal in some countries (e.g., $< .4$; see Table 3), I decided not to remove any country purely based on the low reliability values of physical aggression. First, the smaller number of items (i.e., 5 items) that were included may partly explain the low reliability scores of some countries (Tavakol & Dennick, 2011). In addition, although the Youth Self Report has been widely used across countries and cultural groups (e.g., Ivanova et al., 2007), this instrument was originally developed within the area of psychopathology

and was largely guided by the diagnostic reference of APA DSM-IV to assess children's and adolescents' emotional, social, and behavioral problems (Achenbach & Rescorla, 2001). Thus, it is not surprising that the reliability would be lower when the YSR was applied to participants from the nonclinical and community groups. Further, *Cronbach's* alpha provides a strategy to evaluate the internal consistency of items within a scale, and it captures the strength of correlations among the items (Tavakol & Dennick, 2011). However, it should be noted that in the current group of participants, some items showed non-significant or negative correlations with each other. Although the items within one scale are supposed to be correlated with each other positively, the negative association does not always represent poor reliability, but could rather indicate some inconsistencies of the participants' responses (Vaske et al., 2017). Lastly, some scholars have argued that when constructing a latent construct from manifest indicators, the latent construct could be either interpreted as an effect factor or cause factor (Bollen, 2002; Bollen & Lennox, 1991). When the latent construct is viewed as an effect factor, the expression of the specific indicators is impacted by the latent composite (i.e., physical aggression in the present paper). That is, adolescents express physically aggressive behaviors because these behaviors share a common underlying feature. However, physical aggression might be conceptualized as a cause factor. That is, physical aggression may take on many different unrelated forms and actions, but these forms and actions may result in similar outcomes: physically harm oneself or others (see Bradley, 2004 for detailed explanations; also see Stadler et al., 2021). Thus, adolescents who answer "yes" to one of the aggressive items do not necessarily answer "yes" to other aggressive items, and the items within the

physical aggression subscale do not have to be correlated with each other. Specifically, there are many types of physical aggression, and physically aggressive adolescents that exhibit one specific aggressive behavior may not exhibit other types of physical aggression (e.g., adolescents who physically attack others do not necessarily ruin others' things, but these adolescents can still be physically aggressive). If adolescents' physical attacking behaviors increase, their physical aggression level will also increase, even if the other types of physical aggressive behaviors stay consistent. On the contrary, increasing on the overall physical aggression does not require simultaneous increases on all five physical aggressive indicators (Bollen & Lennox, 1991; Hauser, 1973). Therefore, I argue here that the low reliability values might be partly due to that the physical aggressive composite could be perceived as a concept that is constructed through different, and not associated aggressive indicators. See Table 4 for the reliability values across countries and time points for the final reliabilities after country deletion.

Control Variables

Child Age. The interviewed parents reported adolescents' ages at the first and the third wave. Adolescents' age at the second wave was not collected. At the first wave, adolescents' age was reported by either the father or the mother, depending on which parent was interviewed. Adolescents' ages ranged between 12 to 16 years old at the first wave, with a mean age of 13.55 years old ($SD = .74$). At the third wave, both parents reported the age of their adolescents, and their answers were averaged to compute adolescents' age at the last wave. Across countries, adolescents had an age range between 13 to 19 at the third wave, with a mean age of 16.56 years old ($SD = .94$).

Child Sex. The interviewed parents reported adolescents' sex at the first wave. Originally, child sex was binary coded, female = 1, male = 2. In this study, child sex was recoded as female = 0, male = 1 to facilitate the interpretation of the results.

Family SES. At the first wave, the interviewed parents (either the mother or the father) reported the educational levels of the mother and the father. Across countries, mothers completed an average of 12.79 years of education ($SD = 4.53$), and fathers completed an average of 12.72 years of education ($SD = 4.53$). The interviewed parents also reported family annual income in the local currency. The family income was then converted to U.S. dollars by the PAC research team, with 1 = up to \$5,000, 2 = between \$5,000 and \$10,000, 3 = between \$11,000 and \$15,000, 4 = between \$16,000 and \$29,000, 5 = between \$30,000 and \$40,000, 6 = between \$41,000 and \$50,000, 7 = between \$51,000 and \$60,000, 8 = between \$61,000 and \$70,000, 9 = between \$71,000 and \$80,000, and 10 = beyond \$81,000. The modal frequencies of family income at the first wave across countries was up to \$5,000. A composite of family SES was computed by averaging the z-scores of family annual income, maternal education, and paternal education. To capture the potential country differences, the z-scores of family income and parental educational level were computed within each participating country.

Number of Children in the Family. At the first wave, the interviewed parents reported the number of children live in the household. Across countries, most families reported having two children ($n = 316$, 31.50%, 23.40% missing), 274 (27.30%) families reported having one child, and 122 (12.20%) families having three children.

Puberty. At each wave, the participating adolescents were asked to report their puberty maturation using the Pubertal Development Scale (Petersen et al., 1988). Both boys and girls were asked to report their perceived physical development of growth spurt, skin changes, and body hair. In addition, boys were also asked to report their voice changes and facial hair (e.g., beard or mustache); girls were asked to report their breast development and menarche. Adolescents reported their physical development on a 4-point Likert scale, ranging from 1 = no development to 4 = completed development. However, girls answered their onset of menarche using a binary response scale, with 1 = no and 4 = yes (Icenogle et al., 2019). A composite score for puberty development was computed by averaging all the 5 items in the questionnaire, with higher scores representing higher physical maturation. See Table 3 for the reliability information for each country by child sex. It should be noted that some countries showed low reliabilities (e.g., Philippines). However, a closer look showed that the variances of the pubertal developmental composites were always very low (e.g., around .10), which may indicate that across countries, adolescents show similar levels of pubertal development, and this measure may not capture a great variance of adolescents' physical maturation. Thus, country deletion was not done for pubertal development scale to retain more countries in the analysis.

Analytic Plan

Descriptive Analysis

Descriptive statistics such as the means, standard deviations, skewness, and kurtosis, and the zero-order correlations of all study variables were estimated among

countries and across time points in *SPSS 26*. Participation attrition was calculated to see whether families who were retained in the study differ from families who dropped out in some key demographic variables measured at Year 1 of the overall study (e.g., child sex, parent education).

General Analytical Approach

All primary analyses were estimated in *Mplus* version 8.4 (Muthén & Muthén, 1998-2017). I started with a set of regular cross-lagged panel models (CLPM) and then further explored the longitudinal and bidirectional association with a set of random-intercept cross-lagged panel models (RI-CLPM; more is discussed below). Given that the PAC data included participants from multiple countries, and existing studies have documented country differences in relations between parenting and youth behaviors (e.g., Kapetanovic et al., 2020; Lansford et al., 2018b), it is important to consider country⁴ differences in all analyses. Thus, I used a multiple-group framework, where country was the grouping variable and examined whether the predictive paths differed across countries. One drawback of using this multiple-group framework in this dataset was that it assumed measurement invariance across country, sex, and time. However, the examination of measurement invariance was not feasible to test with the sample sizes within country.

⁴ Ideally, participants should be divided by culture given multiple cultures may exist within one country. However, dividing participants by culture would result in small sample sizes (e.g., $n < 100$) and may cause model convergence problem; thus, we divide participants by their country of residence throughout the analyses.

To examine my main research questions, a hypothesized model that constrained all predictive paths to be equal across countries (i.e., a fully constrained model) was compared with a free model where all predictive paths were allowed to vary across countries (one country was used as the reference group). Model fit statistics of these two models were compared to determine if the constraints significantly worsened the model fit. If the *Chi-square* difference test indicated the fully free model fit the data significantly better than the fully constrained model, I examined which specific path(s) were different across countries by constraining sets of paths. To help determine which specific path(s) might differ across countries, I visually compared the estimated unstandardized coefficients of all predictive paths in the fully free model across the countries. A series of path constraints were tested. First, I constrained the path(s) that were unlikely to have country differences (e.g., paths that had the same significant levels and/or similar size of coefficients; set 1 paths). Then, paths that were marginally significant in some countries, but were not significant in other countries were constrained (set 2 paths). Lastly, I constrained the paths that were significant in some countries, but were not significant or marginally significant in other countries (set 3 paths). Comparisons of model fit were done between the model with more constraints vs. the less constrained model from the previous constraint step (e.g., fully free model vs. model with set 1 paths constraints; model with set 1 paths constraints vs. model with set 1 and set 2 paths constraints). If the compared models indicated similar model fit, the model with more constraints was retained for future analysis to be parsimonious. If adding another set of path constraints significantly worsened the model fit, the newly added paths were constrained one at a

time to identify which path(s) was moderated by country, and the model with the additional constraint was compared with the less constrained model from the previous step (e.g., model with set 1 path constraints vs. model with set 1 constraints and the first path in set 2 path constrained). If adding this constraint significantly worsened the model fit, this path would be freely estimated across countries in the following models.

Otherwise, this path was constrained and I continued to test the next path. The decision of testing sets of paths, rather than one path at a time was made to reduce the number of model comparisons and thus avoid inflating Type I error (Drummond & Vowler, 2012).

After this series of models was estimated with regular CLPM, I estimated a set of random-intercept cross-lagged panel models (RI-CLPM) to further explore the longitudinal and bidirectional relations. Although the regular CLPM has been widely used in investigations of longitudinal associations, it has several drawbacks that prevent a deeper understanding of the causal associations between multiple variables. First, the regular CLPM aggregates the between- and within-person variability. Thus, determining whether the findings (e.g., covariation, prediction) reflect between-person processes (e.g., differences between different adolescents' levels of aggression being associated with differences between different fathers' levels of control) or within-person processes (e.g., differences in adolescents' typical levels of aggression being associated with differences in fathers' typical levels of control) is not possible (Keijsers, 2016). In addition, the regular CLPM assumes that all the participants in the investigated group fluctuate around the same mean score of the concept of interest (e.g., physical aggression), which may not be true in reality (Hamaker et al., 2015). The RI-CLPM has advantages over the regular

CLPM because the RI-CLPM controls for time-invariant interpersonal differences by including latent, random intercept factors for all variables (Hamaker et al., 2015). This model separates within- and between-person variability and helps control for all time-invariant unmeasured variables (e.g., child sex, country of origin, family SES) that produce between-person differences. Specifically, the between-person covariance between variables are captured by the correlation between the latent, random intercept factors (e.g., how between-person differences in parental psychological control are related to the between-person differences in adolescents' physical aggression). At the same time, the RI-CLPM captures the within-person covariance with two sets of predictive paths in the model: the auto-regressive paths indicate how the individual's deviation from his/her own average score on a variable at a later time is predicted by his/her deviation from his/her own average on that variable at an earlier time point; the cross-lagged paths depict how the individual's deviation from his/her own average score of the outcome variable at a later time is predicted by the individual's deviation from his/her own average score of the predictor at an earlier time point (Hamaker et al., 2015; Keijsers, 2016). A series of RI-CLPM was estimated on the entire sample to help better understand how a parent's change in control was related to his/her child's change in aggression (i.e., the within-person reciprocal process between parental psychological control and adolescents' physical aggression).

Throughout the analyses, model fit was assessed using the following indices to evaluate the global fit: the comparative fit indices (CFI), the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), and the

Chi-square. Ideally, a CFI score equal or larger than .95, a SRMR score equal or smaller than .05, a RMSEA score equal or smaller than .05, and a non-significant *p*-value (equal or larger than .05) for the *Chi*-square model fit test indicate good model fit. However, the model fit might not be ideal with a large sample size such as that for the current project (e.g., over 1000 participants). Noteworthy, the CFI of all regular CLPM was hand-computed with an appropriate null model, given that the methodologies of calculating CFI in *Mplus* does not apply for complicated models such as multiple group analysis and for longitudinal models (Widaman & Thompson, 2003). In addition, I also used local fit indices such as residuals to facilitate model fit assessments.

Research Question 1.1: The Independent and Reciprocal Association between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression

To test the non-unique prediction between maternal and paternal psychological control with adolescents' physical aggression, maternal and paternal psychological control were entered in separate regular CLPMs, and the other parents' psychological control were not controlled. Specifically, in the maternal model, maternal psychological control at Time 1, Time 2, and Time 3 were entered as the X variables, adolescents' physical aggression at Time 1, Time 2, and Time 3 were entered as the Y variables. Control variables (i.e., child sex, age, family SES, number of children in the family, puberty) were covaried by regressing the appropriate endogenous variables on the covariates.

To test the longitudinal and reciprocal relations, paths from parental psychological control (maternal and paternal psychological control in separate models) to

adolescents' physical aggression were estimated from X1 to Y2, and from X2 to Y3. In the same model, paths from adolescents' physical aggression to parental psychological control were estimated from Y1 to X2, and from Y2 to X3. The residuals of parenting predictors (parental psychological control) and adolescents' aggression were allowed to covary within each wave. The lag-1 autoregressive paths between the same variables across time points were estimated.

Research Question 1.2: The Unique Prediction from Maternal and Paternal Psychological Control to Adolescents' Physical Aggression

To test the unique prediction of maternal and paternal psychological control to adolescents' aggressive behaviors, the same set of models from research question 1.1 were used, but both parents' psychological control were included in the same model, additional predictive paths were drawn from both parents' earlier psychological control to adolescents' later physical aggression, and vice versa.

RI-CLPM: Separating Between- and Within-dyad Relations

To further understand relations between maternal control and adolescents' aggression, as well as the relations between paternal control and adolescents' aggression, RI-CLPMs were estimated. These non-unique maternal control, non-unique paternal control, and unique maternal and paternal control were similar to the regular CLPM but omitted covariates that were time-invariant (sex, country, and perhaps SES [depending on stability]). See Figure 1 for an example.

CHAPTER 3

RESULTS

Preliminary Analysis

Attrition Analyses

Out of the 1004 initially participating families in China, Italy, Thailand, Sweden, the U.S., and Colombia, 810 parents or adolescents (80.70%) had data at the fifth year of the overall study (Time 1 in the present investigation), 738 participants (73.50%) had data at year seven (Time 2 in this study), and 735 participants (73.20%) had data at year eight (Time 3 in this study). Specifically, 779 (77.60%) mothers had data at year five, 702 (69.92%) mothers had data at year seven, and 698 (69.52%) mothers had data at year eight. In addition, 594 (59.16%), 525 (52.29%), and 515 (51.29%) fathers had data at year five, year seven, and year eight, respectively. The number of participating adolescents were 801 (79.78%), 725 (72.21%), and 703 (70.02%) at year five, seven, and eight, respectively. See Table 5 for the rates of the available data for the key variables (i.e., maternal and paternal psychological control, adolescent physical aggression) within each country across the three time points. Note that there was a sharp decrease in the number of Chinese participants after Time 1 (i.e., less than half of the participants remained after Time 1), and this small sample size prevents the investigation of the complex longitudinal model⁵. Thus, China was removed from the following analyses.

⁵ Initially, there were two participating sites in China (Jinan and Shanghai). However, only data from one site was available after the first three years of data collection, which left 120 participating families from Shanghai only. Based on the personal communication with the principal investigator of the PAC study, the large attrition rate was because the data collection in China was heavily dependent on participating children's schools. After

Attrition analyses assessed differences in demographic information between families⁶ who did versus did not have any data during Time 1 through Time 3 of the present investigation. Based on the available data, we compared the differences in maternal and paternal education level at Year 1 (the first assessment of the original project), as well as child sex collapsing across countries⁷. The results of independent t-tests indicated that families who dropped out vs. stayed in the study did not show significant differences in maternal education level, $t(830) = .54, p = .59$, as well as paternal education level, $t(725) = -.64, p = .52$. The results of *Chi-square* test indicated that attrited vs. not attrited families did not show significant differences in child sex, $\chi^2(1) = .39, p = .53$. Within country, no significant difference on maternal education, paternal education, and child sex was found in Thailand, Sweden, and the U.S. between participants who remained versus attrited the study. Colombian and Italian participants who stayed in the study did not show significant differences from people who dropped out in regard to child sex. However, Colombian mothers who maintained in the study had significant lower educational experience than mothers who dropped out the study, $t(106) = -2.08, p = .04$. In addition, Colombian fathers who maintained in the study had a significant lower educational level than attrited fathers, $t(105) = -2.94, p = .004$.

children graduated from primary school around the age of 12-13 (year 6 in the original study), it was difficult to follow the originally participating children as they attended different secondary schools or moved to a different city.

⁶ Attrition analysis was not done for mothers, fathers, and adolescents separately because I did not have enough data to identify who participated at Year 1 of the overall study.

⁷ Ideally, family income should be compared between participants who dropped out versus participants who stayed, but family income was not asked at Year 1.

Descriptive Analyses

Descriptive statistics and bivariate correlations of all study variables were computed in SPSS 26. Table 6 showed the means, standard deviations, skewness and kurtosis values, and the bivariate correlations of all study variables for all the participants across the five countries. The results are shown in Table 7 through Table 11 and depict the results for Italy, Thailand, Sweden, the U.S., and Colombia, respectively. It should be noted that adolescents self-reported physical aggression showed some high skewness and kurtosis values (see Table 6). No data transformation was done, but the MLR estimator was used throughout the analysis to account for the non-normality of the data. MLR is a Full Information Maximum Likelihood estimator that generates standard errors and a chi-square test that are robust to non-normality (Muthén & Muthén, 2017).

Mean-level differences were compared on the key variables (i.e., maternal and paternal psychological control, physical aggression) across boys and girls. Results of *t*-test indicated that mothers' psychological control did not significantly differ in the mean levels towards sons and daughters at Time 1, $t(693) = .16, p = .87$; at Time 2, $t(661) = .45, p = .66$; and at Time 3, $t(653) = -.78, p = .43$. Fathers' levels of psychological control did not significantly differ in mean levels towards boys and girls at Time 1, $t(510) = -.43, p = .67$, and Time 2, $t(486) = -.80, p = .43$. In addition, boys and girls did not show significant differences on their physical aggression levels at Time 1, $t(714) = -.58, p = .57$, and Time 2, $t(678) = -.38, p = .71$. At Time 3, however, girls reported significant lower average physical aggression than their male peers, $t(619.54) = -2.58, p = .01$.

Mean-level differences of the key constructs were also compared across countries. Results of ANOVAs indicated that across countries, there were significant differences in the means of maternal psychological control, $F(4, 690) = 55.98$, $F(4, 658) = 33.45$, and $F(4, 651) = 29.84$ from Time 1 to Time 3, respectively, $ps < .001$. Significant mean differences existed across countries in paternal psychological control, $F(4, 507) = 27.91$, $F(4, 483) = 11.69$, and $F(4, 477) = 14.48$ from Time 1 to Time 3, respectively, $ps < .001$. Adolescents' physical aggression also had significant mean differences across countries, $F(4, 911) = 4.98$, $F(4, 676) = 4.37$, and $F(4, 661) = 7.34$ from Time 1 to Time 3, respectively, $ps \leq .002$. Results of the Tukey post hoc test were inspected to determine which pairs of means differed across country. In general, mothers and fathers in Colombia always reported expressing the highest levels of psychological control towards adolescents compared with the other four countries, albeit the differences were not always statistically significant (i.e., Colombian fathers did not show significantly higher psychological control than Italian fathers at Time 1). In addition, adolescents in Thailand generally reported expressing the highest levels of physical aggression among the five countries across time points, although the differences between Thai and Colombian youths' physical aggression were not significant across Time 1 to Time 3 (Table 12).

Research Question 1.1: The Independent and Reciprocal Associations between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression
Independent and Reciprocal Association between Maternal Psychological Control and Adolescents' Physical Aggression

First, a regular CLPM that examined the non-unique prediction from maternal psychological control and adolescents' physical aggression was estimated. I started with a fully constrained multiple-group model, where country was entered as a grouping variable, and all the paths were constrained to be equal across countries. This fully constrained model successfully converged, although the model fit indices indicated a non-ideal fit according to some indices, with $\chi^2(276) = 429.86, p < .001$, RMSEA = .06, with 90% CI [.05, .07], CFI = .96⁸, and SRMR = .10.

The next step was to test whether some paths were significantly different across countries. To do this, I specified a fully free multiple-group model, where all the paths were allowed to differ across countries. This fully free model had acceptable fit according to most indices, $\chi^2(180) = 300.88, p < .001$, RMSEA = .06, with 90% CI [.05, .07], CFI = .97, and SRMR = .06. In addition, results from the *Chi-square* difference test⁹ indicated that this fully free model significantly improved the model fit compared with the fully constrained model, $\chi^2_{\text{difference}}(96) = 131.32, p = .01$. To further investigate which path(s) were different across countries, a series of partially constrained models were computed

⁸ In the following analyses, CFI for all regular cross-lagged panel models was hand computed with the appropriate null model.

⁹ In the following analyses, *Chi-square* difference tests for all models was calculated with the Satorra-Bentler correction because MLR estimation was used.

where a set of path(s) was allowed to differ across countries, I followed the steps that were described in the analytical plan section, and I constrained sets of paths to examine which path(s) needed to be released to keep the same level of model fit as the fully free model. The steps of path constraints and the *Chi-square* difference tests results were shown in Table 13.

Results of the series of model comparisons indicated that two of the predictive paths needed to be released: the predictive path from family SES to maternal psychological control at Time 1, $\chi^2_{\text{difference}}(4) = 17.06, p = .002$; the predictive path from adolescents' puberty to adolescents' physical aggression at Time 3, $\chi^2_{\text{difference}}(4) = 11.21, p = .02$. In the following paragraphs, results of the cross-lagged predictions were presented first (i.e., the associations between parental psychological control and adolescents' physical aggression across time points), then results of the auto-regressive predictions were presented (e.g., stability prediction of parental psychological control from Time 1 to Time 2), and the predictions from the control variables to the key variables (i.e., parental psychological control and adolescents' physical aggression) were presented at the last when applicable. Within each section, the associations from Time 1 to Time 2 were presented first and then results between Time 2 and Time 3 were presented.

Cross-lagged Associations between Maternal Psychological Control and Adolescents' Physical Aggression. The final model of the non-unique prediction from maternal psychological control to adolescents' physical aggression showed that, maternal psychological control at Time 1 was not associated with adolescents' physical aggression

at Time 2 ($\beta = .03, p = .11$) after controlling for the stability of physical aggression and all control variables. Adolescents' physical aggression at Time 1 was not associated with maternal psychological control at Time 2 ($\beta = .09, p = .19$). Similarly, from Time 2 to Time 3, neither of the cross-lagged paths that examined the longitudinal association between maternal psychological control and adolescents' physical aggression was significant. Maternal psychological control at Time 2 was not associated with adolescents' physical aggression at Time 3 ($\beta = .01, p = .69$); adolescents' physical aggression at Time 2 did not predict maternal psychological control at Time 3 ($\beta = -.03, p = .70$) after controlling for the appropriate variables.

Auto-regressive Predictions of Maternal Psychological Control and Adolescents' Physical Aggression. The results of the final model showed that, from Time 1 to Time 2, maternal psychological control ($\beta = .68, p < .001$) and adolescents' physical aggression ($\beta = .43, p < .001$) showed high stability across countries. Between Time 2 and Time 3, maternal psychological control ($\beta = .66, p < .001$) and adolescents' physical aggression ($\beta = .37, p < .001$) also showed high stability.

Predictions from Control Variables to Key Variables. From Time 1 to Time 2, some country differences existed in the prediction from family SES to maternal psychological control at Time 1, that in all countries except for Sweden ($\beta = -.07, p = .19$), family SES negatively predicted maternal psychological control at Time 1 (β s ranged from $-.29$ to $-.10, ps < .001$). No other prediction from control variables to maternal psychological control or adolescents' physical aggression at Time 1 or Time 2 was found. From Time 2 to Time 3, significant predictions were found from control

variables to adolescents' physical aggression or maternal psychological control. Specifically, across countries, youths' puberty at Time 3 negatively predicted maternal psychological control concurrently ($\beta = -.07, p = .03$). Youths' age at Time 3 also predicted adolescents' physical aggression at Time 3 ($\beta = .02, p = .01$). In addition, youths' puberty level negatively predicted adolescents' physical aggression within Time 3 in Italy ($\beta = -.06, p = .01$), and Colombia ($\beta = -.18, p = .01$). However, this prediction was not significant in Thailand ($\beta = -.07, p = .12$), the U.S. ($\beta = -.03, p = .06$), or Sweden ($\beta = -.03, p = .34$). No other significant prediction was found (Figure 2). The estimation of unstandardized coefficients of all predictive paths were presented in Table 14.

This model explained a significant proportion of the variances of maternal psychological control from Time 1 to Time 3 for most countries ($R^2 = 6.00\% \sim 50.80\%$, $ps \leq .05$), except for maternal psychological control at Time 1 in Thailand ($R^2 = 5.10\%$, $p = .22$) and Sweden ($R^2 = 2.50\%$, $p = .50$). This model also explained a significant proportion of the variances of adolescents' physical aggression at Time 2 and Time 3 of most countries ($R^2 = 12.80\% \sim 32.30\%$, $ps \leq .04$) except for Swedish youths' physical aggression at Time 2 ($R^2 = 9.10\%$, $p = .07$). However, across countries, this final model only explained a small and non-significant proportion of adolescents' physical aggression at Time 1 ($R^2 = .20\% \sim 3.00\%$, $ps \geq .26$).

The RI-CLPM

A random-intercept cross-lagged panel model was estimated to further investigate the reciprocal associations between maternal psychological control and adolescents' physical aggression at the within-person level (i.e., controlling for the associations

between parental psychological control and adolescents' physical aggression that are related to stable individual differences such as sex and country context). The results of the model that investigated the associations between the mother-adolescent dyads indicated that the model fit was not ideal, with $\chi^2(5) = 57.11, p < .001$, RMSEA = .12, with 90% CI [.09, .14], CFI = .94¹⁰, and SRMR = .04. However, no further model adjustment was done given the modification indices suggested estimates that did not make theoretical sense (e.g., cross-loadings for physical aggression on the physical aggression latent intercept and the psychological control latent intercept).

Cross-lagged Associations between Maternal Psychological Control and Adolescents' Physical Aggression. Similar to the results of the CLPM, the cross-lagged paths indicated no significant reciprocal prediction between maternal psychological control and adolescents' physical aggression across times. Specifically, from Time 1 to Time 2, at the within-person level, the change of mothers' psychological control relative to their typical level at an earlier time point was not related to the change of adolescents' physical aggression relative to their typical level at the next time point. Similarly, no cross-lagged association was found between Time 1 adolescents' physical aggression between maternal psychological control at Time 2. Likewise, no cross-lagged and reciprocal associations were found between maternal psychological control and adolescents' physical aggression between Time 2 and Time 3.

¹⁰ The CFI generated in *Mplus* of the RI-CLPMs is not correct. However, there has not been published resource regarding the proper way to compute a proper null model to calculate the CFI for the RI-CLPM. Thus, we reported the *Mplus* generated CFI, but this value should be evaluated as a model fit index with caution.

Auto-regressive Predictions of Maternal Psychological Control and

Adolescents' Physical Aggression. Similar to the results of the CLPM, maternal psychological control at Time 2 was significantly predicted by maternal psychological control at Time 1 ($\beta = .30, p = .01$), and adolescents' physical aggression at Time 1 significantly predicted adolescents' physical aggression at Time 2 ($\beta = .25, p = .02$). From Time 2 to Time 3, maternal psychological control at Time 3 was significantly predicted by maternal psychological control at Time 2 ($.39, p < .001$), and adolescents' physical aggression at Time 2 significantly predicted adolescents' physical aggression at Time 3 ($\beta = .24, p = .004$). To interpret these autoregressive paths, when mothers exhibited higher control than they typically did, they were more likely to also exhibit higher control than they typically did at the next time point. In addition, when adolescents showed higher levels of physical aggression than they typically did, youths were more likely to also show higher levels of physical aggression than they typically did at a later time point.

Lastly, the correlation between the random intercepts of maternal psychological control and adolescents' physical aggression was not significant ($r = .15, p = .17$; this correlation was not presented in the figure). Thus, there was no significant association of between-person differences in maternal psychological control and adolescents' physical aggression. That is, the trait-like individual differences in maternal psychological control were not associated with the trait-like individual differences in adolescents' physical aggression. Overall, this RI-CLPM explained a significant proportion of the variance of maternal psychological control at Time 3 (15.60%, $p = .01$), but explained a small and

non-significant proportion of the variance of maternal psychological control at Time 2 (8.40%, $p = .17$), and the variance of adolescents' physical aggression at Time 2 (9.00%, $p = .15$) and Time 3 (11.10%, $p = .11$; Figure 3). The estimation of unstandardized and standardized coefficients of all predictive paths were presented in Table 15.

Independent and Reciprocal Association between Paternal Psychological Control and Adolescents' Physical Aggression

The second sets of models examined the non-unique prediction from paternal psychological control and adolescents' physical aggression. First, a fully constrained multiple-group model was estimated where all paths were constructed to be equal across the five countries. This fully constrained model successfully converged, but the model fit was not ideal according to some indices, with $\chi^2(276) = 489.68$, $p < .001$, RMSEA = .07, with 90% CI [.06, .08], CFI = .95, and SRMR = .11. Then, a fully free multiple-group model that allowed all paths to be differ across countries was estimated, and the model fit was acceptable according to most indices, $\chi^2(180) = 331.01$, $p < .001$, RMSEA = .07, with 90% CI [.06, .08], CFI = .96, and SRMR = .06. This fully free model provided better fit than the fully constrained model, $\chi^2_{\text{difference}}(96) = 160.50$, $p < .001$, indicating country differences existed in some of the predictive paths.

To determine which path(s) significantly differed across countries, I tested a series of path constraints following the proposed steps described in the analytical plan section. The series of model comparisons indicated that, five predictive paths needed to be released to achieve model fit that did not significantly differ from the fully free model (Table 16). These paths included the autoregressive path predicting paternal

psychological control from Time 1 to Time 2, $\chi^2_{\text{difference}}(4) = 13.78, p = .01$, and the autoregressive path predicting adolescents' physical aggression from Time 2 to Time 3, $\chi^2_{\text{difference}}(4) = 11.31, p = .02$. The predictions from family SES to paternal psychological control at Time 1, from youth puberty to paternal psychological control at Time 2, and from youth puberty to adolescents' physical aggression at Time 3 also needed to be released based on the results of *Chi-square* difference test when compared with the less constrained models from the previous step, $\chi^2_{\text{difference}}(4) = 15.03, 10.85$, and $11.67, ps = .01, .03$, and $.03$, respectively.

Thus, in the final model that examined the non-unique association between paternal psychological control and adolescents' physical aggression, the above five paths were released to be freely estimated across countries.

Cross-lagged Associations between Paternal Psychological Control and Adolescents' Physical Aggression. Results of the cross-lagged paths indicated that across countries, adolescents' physical aggression at Time 1 positively predicted paternal psychological control at Time 2 ($\beta = .18, p = .05$) after controlling for the stability of Time 1 paternal psychological control and control variables. However, paternal psychological control at Time 1 was not associated with adolescents' physical aggression at Time 2 ($\beta = .01, p = .73$). The longitudinal associations between paternal psychological control and adolescents' physical aggression showed that youths' physical aggression at Time 2 was not associated with fathers' psychological control at Time 3 after controlling for appropriate variables ($\beta = -.06, p = .35$). The prediction from paternal psychological

control at Time 2 to adolescents' physical aggression at Time 3 was not significant either ($\beta = -.01, p = .71$).

Auto-regressive Predictions of Paternal Psychological Control and Adolescents' Physical Aggression. From Time 1 to Time 2, high rank-order stability existed in adolescents' physical aggression ($\beta = .44, p < .001$). Although paternal psychological control from Time 1 to Time 2 stayed relatively stable, there were some country differences among Italy ($\beta = .61, p < .001$), Thailand ($\beta = .59, p < .001$), Sweden ($\beta = .25, p = .04$), the U.S. ($\beta = .72, p < .001$), and Colombia ($\beta = .60, p < .001$). Between Time 2 and Time 3, the results showed high stabilities of paternal psychological control across countries ($\beta = .67, p < .001$). Country differences existed in the stability of adolescents' physical aggression from Time 2 to Time 3; the unstandardized coefficients varied between .25 to .70, $ps \leq .01$.

Predictions from Control Variables to Key Variables. There were some significant predictions from the control variables to paternal psychological control or adolescents' physical aggression within Time 1 and Time 2, and country differences existed. Specifically, within Time 1, the prediction from family SES to paternal psychological control was not significant in Italy ($\beta = -.08, p = .12$) and Sweden ($\beta = .01, p = .87$), but was significant in Thailand ($\beta = -.14, p = .01$), the U.S. ($\beta = -.24, p < .001$), and Colombia ($\beta = -.15, p = .003$). Further, Colombian fathers' psychological control at Time 2 was predicted by youths' puberty level ($\beta = -.26, p = .01$), but no parallel association was found in other countries. No other prediction was found.

Across countries and within Time 3, paternal psychological control was negatively predicted by youths' puberty ($\beta = -.14, p < .001$), and adolescents' physical aggression was positively predicted by child age ($\beta = .02, p = .02$). Further, country differences existed in the prediction of adolescents' aggression from puberty level at Time 3; specifically, that the prediction was significant in Italy ($\beta = -.05, p = .02$), the U.S. ($\beta = -.04, p = .01$), and Colombia ($\beta = -.18, p = .01$) but was non-significant in Thailand and Sweden (see Figure 4). The estimation of unstandardized coefficients of all predictive paths were presented in Table 17.

This model explained a significant proportion of variances of paternal psychological control from Time 1 to Time 3 for most countries ($R^2 = 34.30\% \sim 53.70\%$, $ps \leq .002$), except for paternal psychological control at Time 1 in Italy ($R^2 = 2.10\%$, $p = .32$), Thailand ($R^2 = 7.50\%$, $p = .14$), Sweden ($R^2 = .30\%$, $p = .75$), and Colombia ($R^2 = 11.50\%$, $p = .08$). In addition, this model only accounted for a small and non-significant proportion of variance of Swedish fathers' psychological control at Time 2 ($R^2 = 10.70\%$, $p = .22$). This model also explained a significant proportion of variance of adolescents' physical aggression at Time 2 and Time 3 of most countries ($R^2 = 13.60\% \sim 55.60\%$, $ps \leq .01$) except for Swedish youths' physical aggression at Time 2 ($R^2 = 8.90\%$, $p = .08$). However, across countries, this final model only explained a small and non-significant proportion of adolescents' physical aggression at Time 1 ($R^2 = .30\% \sim 3.30\%$, $ps \geq .23$).

The RI-CLPM

The RI-CLPM of the reciprocal and non-unique association between paternal psychological control and adolescents' physical aggression showed not ideal model fit,

with $\chi^2(5) = 81.38, p < .001$, RMSEA = .14, with 90% CI [.12, .17], CFI = .88, and SRMR = .07. Thus, the model fit was not ideal.

Cross-lagged Associations between Paternal Psychological Control and Adolescents' Physical Aggression. The results of the RI-CLPM showed that across Time 1 to Time 2, no parent effect was found. However, a child effect was found between Time 1 and Time 2, which was similar with the result from the regular CLPM. Specifically, when adolescents expressed higher than normal levels of physical aggression at Time 1, fathers on average showed .39 increase of psychological control at Time 2 ($p = .03$, Figure 5). Between Time 2 and Time 3, there was no evidence that support the cross-lagged and reciprocal association between paternal psychological control and adolescents' physical aggression.

Auto-regressive Predictions of Paternal Psychological Control and Adolescents' Physical Aggression. From Time 1 to Time 2, auto-regressive paths showed significant prediction of adolescents' physical aggression ($\beta = .25, p = .03$). However, no significant auto-regressive prediction was found of paternal psychological control from Time 1 to Time 2. From Time 2 to Time 3, auto-regressive predictions were found for adolescents' physical aggression ($\beta = .25, p = .003$) and paternal psychological control ($\beta = .37, p < .001$). Therefore, adolescents who showed higher than typical levels of physical aggression at an earlier time point were also likely to show higher than typical levels of physical aggression at the next time point. Fathers who showed higher than their typical levels of psychological control at Time 2 were also likely to show higher than

their typical levels of psychological control at Time 3, but this association did not hold from Time 1 to Time 2.

The correlation between the random intercepts of maternal psychological control and adolescents' physical aggression was not significant ($r = .17, p = .14$; this correlation was not presented in the figure), indicating that the trait-like individual differences in paternal psychological control were not associated with the trait-like individual differences in adolescents' physical aggression. This RI-CLPM explained small and non-significant proportions of the variances of paternal psychological control at Time 2 (5.00%, $p = .26$), paternal psychological control at Time 3 (11.30%, $p = .08$), adolescents' physical aggression at Time 2 (7.00%, $p = .22$) and Time 3 (10.20%, $p = .13$). See Table 18 for the complete results of the estimation of unstandardized and standardized coefficients.

Research Question 1.2: The Unique Prediction from Maternal and Paternal Psychological Control to Adolescents' Physical Aggression

Results of the Traditional CLPM

To examine the unique prediction from maternal and paternal psychological control to adolescents' physical aggression, I started with a fully constrained multiple-group model, where country was used as a grouping variable, and all paths were constrained to be equal across countries. In this model, maternal and paternal psychological control were entered simultaneously to examine the additional prediction of one parent's controlling behaviors after controlling for the other parent's controlling behaviors. The fully constrained multiple-group model converged successfully, but the

model fit was not ideal according to some indices, $\chi^2(467) = 821.51, p < .001$, RMSEA = .07, with 90% CI [.06, .07], CFI = .93, and SRMR = .12. A fully free multiple-group model that allowed all the predictive paths to differ was also examined, and the model fit was acceptable based on most indices, $\chi^2(315) = 596.82, p < .001$, RMSEA = .07, with 90% CI [.06, .08], CFI = .95, and SRMR = .08. Results of the *Chi-square* difference test with Satorra-Bentler correction indicated that the fully free model significant fit the data better than the fully constrained model, $\chi^2_{\text{difference}}(152) = 229.64, p < .001$. Thus, there were country differences in some of the predictive paths.

Following the same steps in research question 1.1, model comparisons were done between a set of partially constrained models and the fully free model. The results of model comparisons indicated that six paths significantly worsened the model fit when constrained and needed to be released (Table 19). Within Time 1, the prediction from family SES to maternal psychological control, the prediction from child age to paternal psychological control, the prediction from child sex to paternal psychological control, and the prediction from family SES to paternal psychological control needed to be released, with $\chi^2_{\text{difference}}(4) = 16.02, 10.52, 9.74, \text{ and } 18.04$, respectively, $ps = .003, .03, .05, \text{ and } .001$, respectively. Further, the prediction from youths' puberty to paternal psychological control at Time 2 needed to be released, $\chi^2_{\text{difference}}(4) = 12.69, p = .01$. The prediction from youths' puberty to youths' physical aggression at Time 3 also needed to be freely estimated across countries, $\chi^2_{\text{difference}}(4) = 9.46, p = .05$. Thus, a final model was constructed to examine the unique associations between maternal and paternal

psychological control and adolescents' physical aggression, all the aforementioned predictive paths were released in the final model.

Cross-lagged Associations between Maternal Psychological Control, Paternal Psychological Control, and Adolescents' Physical Aggression. Results of the cross-lagged paths from Time 1 to Time 2 indicated that across countries, after controlling for the stability of paternal psychological control at Time 1, maternal psychological control at Time 1, and all the control variables at Time 1, adolescents' physical aggression at Time 1 significantly predicted fathers' psychological control at Time 2 ($\beta = .22, p = .02$). However, no unique prediction was found from Time 1 paternal psychological control to Time 2 adolescents' physical aggression, and no prediction was found from Time 1 adolescents' physical aggression to maternal psychological control at Time 2. No predictive association was found between maternal psychological control and adolescents' physical aggression between Time 1 and Time 2. From Time 2 to Time 3, no parent or child effect was found between adolescents' physical aggression and paternal (or maternal) psychological control.

Auto-regressive Predictions of Maternal Psychological Control, Paternal Psychological Control, and Adolescents' Physical Aggression. From Time 1 to Time 2, maternal psychological control ($\beta = .65, p < .001$) and paternal psychological control ($\beta = .58, p < .001$) showed high levels of rank-order stability across countries. Adolescents' physical aggression ($\beta = .43, p < .001$) also exhibited high stability. From Time 2 to Time 3, participants across countries showed high stability of maternal ($\beta = .65, p < .001$) and paternal ($\beta = .67, p < .001$) psychological control from Time 2 to

Time 3. Adolescents' physical aggression from Time 2 to Time 3 also stayed significantly stable, $\beta = .37, p < .001$.

Predictions from Control Variables to Key Variables. Similar to the results of the non-unique maternal and paternal model, there were country differences in the predictions from control variables to parental psychological control at Time 1 and Time 2. At Time 1, family SES was negatively associated with maternal psychological control in Italy ($\beta = -.14, p < .001$), Thailand ($\beta = -.10, p = .01$), the U.S. ($\beta = -.19, p < .001$) and Colombia ($\beta = -.29, p < .001$), but this association was not significant in Sweden ($\beta = -.08, p = .09$). Similarly, family SES was negatively associated with paternal psychological control at Time 1 in Thailand ($\beta = -.13, p = .01$), the U.S. ($\beta = -.24, p < .001$) and Colombia ($\beta = -.14, p = .02$); this association was not significant in Italy and Sweden. Further, child sex was positively associated with Italian fathers' psychological control at Time 1 ($\beta = .16, p = .04$). Lastly, Swedish and the U.S. fathers' psychological control at Time 1 was negatively predicted by child age ($\beta = -.37$ and $-.09, ps = .04$ and $.05$, for Sweden and the U.S., respectively). At Time 2, country differences existed in the prediction from adolescents' pubertal level to paternal psychological control, with significant predictions in Sweden ($\beta = .16, p = .04$) and Colombia ($\beta = -.22, p = .04$), but predictions were not significant in other countries. No other significant association was found.

Within Time 3, predictions were found from control variables to parental psychological control or adolescents' physical aggression. Specifically, puberty level negatively predicted maternal ($\beta = -.07, p = .02$) and paternal ($\beta = -.14, p < .001$)

psychological control across countries. Child age positively predicted youths' aggression level ($\beta = .02, p = .02$). There were country differences in the associations between adolescents' puberty and their physical aggression levels; specifically, the associations were negative and significant in Italy ($\beta = -.06, p = .01$), the U.S. ($\beta = -.04, p = .04$), and Colombia ($\beta = -.18, p = .01$), but were not significant in Thailand ($\beta = -.07, p = .12$) and Sweden ($\beta = -.02, p = .41$). The estimation of unstandardized coefficients of all predictive paths were presented in Table 20. See Figure 6 for a graphic presentation for this model.

This model explained a significant proportion of variances of maternal psychological control from Time 1 to Time 3 for most countries ($R^2 = 6.10\% \sim 50.00\%$, $ps \leq .05$), except for maternal psychological control at Time 1 in Thailand ($R^2 = 4.70\%$, $p = .24$) and Sweden ($R^2 = 3.90\%$, $p = .39$). This model explained a significant proportion of variances of paternal psychological control from Time 1 to Time 3 for most countries ($R^2 = 28.80\% \sim 53.10\%$, $ps < .001$), except for paternal psychological control at Time 1 in Italy ($R^2 = 6.00\%$, $p = .14$), Thailand ($R^2 = 7.00\%$, $p = .17$) and Sweden ($R^2 = 9.80\%$, $p = .15$). In addition, this model only accounted for a small and non-significant proportion of variance of Colombian fathers' psychological control at Time 2 ($R^2 = 12.20\%$, $p = .08$). This model also explained significant proportions of variances of adolescents' physical aggression at Time 2 and Time 3 of most countries ($R^2 = 12.80\% \sim 31.90\%$, $ps \leq .02$) except for Swedish youths' physical aggression at Time 2 ($R^2 = 9.40\%$, $p = .07$). However, across countries, this final model only explained small and non-significant proportions of variances of adolescents' physical aggression at Time 1 ($R^2 = .20\% \sim .70\%$, $ps \geq .25$).

The RI-CLPM

I re-examined the unique prediction from maternal and paternal psychological control to adolescents' physical aggression in the RI-CLPM. This model showed acceptable, although not ideal fit, with $\chi^2(13) = 114.89, p < .001$, RMSEA = .10, with 90% CI [.08, .12], CFI = .93, and SRMR = .06.

Cross-lagged Associations between Maternal Psychological Control, Paternal Psychological Control, and Adolescents' Physical Aggression. Results of cross-lagged paths revealed that the significant prediction from Time 1 adolescents' physical aggression to Time 2 paternal psychological control from the non-unique paternal model, became non-, but nearly, significant ($\beta = .33, p = .06$; Figure 10). No other significant association was found.

Auto-regressive Predictions of Maternal Psychological Control, Paternal Psychological Control, and Adolescents' Physical Aggression. From Time 1 to Time 2, significant auto-regressive path was found for maternal psychological control from Time 1 to Time 2 ($\beta = .28, p = .01$). Significant auto-regressive paths also existed for adolescents' physical aggression from Time 1 to Time 2 ($\beta = .24, p = .03$). However, no parallel association was found for paternal psychological control ($\beta = .09, p = .51$). From Time 2 to Time 3, significant auto-regressive paths were found for maternal psychological control ($\beta = .36, p < .001$), adolescents' physical aggression ($\beta = .24, p = .004$), and paternal psychological control ($\beta = .39, p < .001$). Therefore, mothers who showed psychological control that was higher than their typical level were also likely to show psychological control that was higher than their typical levels at the next time point.

Similarly, adolescents who showed higher than their typical levels of physical aggression were also likely to show higher than their typical levels of physical aggression at a later time point. For paternal psychological control, however, the associations differed from Time 1 to Time 2 and from Time 2 to Time 3. Fathers who showed higher than their typical levels of psychological control at Time 2 were also likely to exhibit higher than their typical levels of psychological control at Time 3, but this association did not hold from Time 1 to Time 2.

Lastly, the correlation between the random intercepts of maternal psychological control, paternal psychological control, and adolescents' physical aggression indicated that the trait-like individual differences in maternal psychological control were positively correlated with the trait-like individual differences in paternal psychological control ($r = .70, p < .001$). However, there was no significant correlation between maternal psychological control and adolescents' physical aggression on the between-person level ($r = .16, p = .14$), there was also no significant correlation between paternal psychological control and adolescents' physical aggression on the between-person level ($r = .18, p = .11$; correlations of the between-person differences were not presented in the figure). This model explained a significant proportion of variance of maternal psychological control at Time 3 (13.40%, $p = .03$) but a non-significant proportion of variance of paternal psychological control at Time 3 (13.30%, $p = .06$). In addition, this model only accounts for small and non-significant proportions of variance of maternal psychological control at Time 2 (7.50%, $p = .15$), paternal psychological control at Time 2 (4.80%, $p = .23$), adolescents' physical aggression at Time 2 (8.90%, $p = .16$) and Time 3 (10.50%,

$p = .12$). See Table 21 for the complete results of the estimation of unstandardized and standardized coefficients.

Summary

To summarize, the CLPM and the RI-CLPM of the non-unique maternal model, the non-unique paternal model, and the unique model generated more similar than different results. In general, there was no significant association between maternal psychological control and adolescents' physical aggression across time points (no "mother effects" or "child effects" on mothers), whether fathers' psychological control was or was not controlled. "Fathers effects" were not found either. However, a positive "child effect" on fathers was found from Time 1 adolescents' physical aggression to Time 2 fathers' psychological control, and this child effect existed whether or not mothers' psychological control was controlled, although the prediction dropped to non-significant, but marginal in the unique RI-CLPM. However, no parallel child effect on fathers was found from Time 2 to Time 3. Finally, when the between-person differences were separated from the within-person differences, the autoregressive path of paternal psychological control from Time 1 to Time 2, which was positive and significant in the CLPM, became non-significant (but was still close; $p = .06$) in the non-unique paternal model and the unique model.

There were no significant country differences in the association between the key variables (i.e., maternal psychological control, paternal psychological control, adolescents' physical aggression). However, some control variables (e.g., family SES, puberty, child age) predicted parental psychological control and/or adolescents' physical

aggression, but the significance and the magnitude of the predictions differed across countries.

CHAPTER 4

DISCUSSION

There has been mounting evidence suggesting a salient role of parental psychological control in adolescents' maladaptive behaviors and social adjustment problems in recent decades (e.g., Kuppens et al., 2013; Pinquart, 2017a; Pinquart, 2017b). However, longitudinal and reciprocal associations between parental psychological control and youths' physical aggression rarely have been investigated. Using data that tracked adolescents from approximately 13 to 16 years old from the Parenting Across Cultures project, this study was the first attempt to investigate the reciprocal and longitudinal associations between maternal psychological control, paternal psychological control, and adolescents' physical aggression in Italy, Thailand, Sweden, the U.S., and Colombia with two analytical approaches: a series of regular cross-lagged panel models and a series of random-intercept cross-lagged panel models. Results indicated that the two analytical approaches generated results that were more similar than different. In general, no evidence for a "parent effect" was found for mothers or fathers. However, a "child effect" was found; specifically, youths' earlier physical aggression predicted higher levels of paternal psychological control. In addition, participants' individual and familial factors (e.g., child sex, puberty, family SES) were associated with parental psychological control and/or adolescents' physical aggression; however, some differences in these relations existed across countries.

Below, I summarized and discussed the main findings. Given the associations of parental psychological control and adolescents' physical aggression between the mother-

youth and father-youth dyads were very similar across the non-unique and the unique models (e.g., the predictions were similar whether the other parent was controlled for or not), and there was no evidence of a “maternal effect” or “paternal effect” across models, I discussed the “parent effect” first and then discussed the “child effect.” In addition, as the majority of the country differences were found in the prediction from control variables to the key variables (i.e., parental psychological control, adolescents’ physical aggression), and the country differences were largely similar across models, I consolidated the discussion of country differences into a section after discussing the “parent effect” and the “child effect.”

The Prediction from Parental Psychological Control to Adolescents’ Physical Aggression: Evidence for “Parent Effects”?

Studies regarding the association between maternal psychological control and adolescents’ physical aggression have been rare, and yielded different conclusions (Loukas et al., 2005; Shuster et al., 2012). A limited body of studies also suggests a predictive role of paternal psychological control in children’s and adolescents’ physical aggression (Albrecht et al., 2007; Casas et al., 2006; Li, 2007; Yang et al., 2003). Based on the empirical evidence, social learning theory and attachment theory (Bandura, 1976; Bowlby, 1969), and the argument that parental psychological control threatens adolescents’ developmental needs (e.g., Barber & Harmon, 2002), I hypothesized a positive relation from earlier maternal psychological control to later adolescents’ physical aggression, and a positive relation from earlier paternal psychological control to later adolescents’ physical aggression. However, the results from the non-unique maternal

model, non-unique paternal model, and the unique models did not support this hypothesis. That is, mothers' earlier psychological control was not associated with adolescents' physical aggression later, regardless of whether paternal psychological control was controlled. Similarly, fathers' earlier psychological control was not associated with adolescents' later physical aggression, regardless of whether maternal psychological control was controlled. Further, "parent effect" associations were non-significant in both the regular cross-lagged panel model and the random-intercept cross-lagged panel model frameworks. Thus, neither mothers' nor fathers' earlier psychological control was associated with adolescents' later physical aggression, regardless of whether the between-person differences and within-person differences were aggregated or segregated.

Although relevant studies are limited, a few cross-sectional studies have documented positive predictions from parental psychological control (most studies exclusively investigated maternal psychological control) to adolescents' externalizing problems (e.g., see Buehler et al., 2006 for an exception; Taylor, 2010), overall aggression (e.g., a combination of verbal, physical, and relational aggression; Cui et al., 2014; Tian et al., 2019; for an exception, see Murray et al., 2010), or physical aggression (e.g., Loukas et al., 2005). However, the results of the present study indicated that, when examined longitudinally and controlling for individual and familial factors (e.g., child sex, age, puberty, family SES), the prediction from maternal and/or paternal psychological control to adolescents' physical aggression was not significant. Although contrary to my hypothesis, a few existing longitudinal studies of adolescents also have

failed to detect a significant longitudinal association. Specifically, maternal psychological control (without including paternal psychological control) usually did not predict adolescents' later physical aggression (Murray et al., 2010; Shuster et al., 2012), overall aggression (Murray et al., 2014; Steeger & Gondoli, 2013), or change of externalizing behaviors longitudinally (Galambos et al., 2003). Further, Albrecht et al. (2007) reported that maternal psychological control and paternal psychological control, when included simultaneously, were not related to adolescents' physical aggression two years later. As an exception, He et al. (2019) tracked a group of Chinese middle schoolers across three consecutive years, and reported a positive prediction from parental psychological control (parental sex was not indicated) to youths' aggression (i.e., physical and relational aggression combined) from Year 2 to Year 3, but no significant association was found between Year 1 and Year 2. In a recent meta-analysis, Pinquart (2017a) summarized that the concurrent association between parental psychological control and externalizing problems was small (.22), and the magnitude of the cross-lagged association was even smaller (.06).

There are a few potential explanations for the absence of a “parent effect” in predicting adolescents' physical aggression. One reason could be that parental influence on children's aggression exists, but the influence is waning during adolescence. Compared with children, adolescents spend less time with parents, and develop more social relationships beyond the family setting (e.g., school friends; romantic relationships; see Hill et al., 2007; also see Steinberg, 2011). Relatedly, adolescents form their self-identity through interacting with peers and engaging in peer groups, and

adolescents' desire for social status among peers may make them more susceptible to peers' behaviors, compared with childhood (e.g., Brechwald & Prinstein, 2013; Collins & Steinberg, 2006). These changes in adolescents' social relationships, and the increasing importance of peer relationships may make peers as important or more important in youths' socialization than parents. Therefore, a "parent effect" might be not strong enough to observe.

Further, the impact of parental psychological control on adolescents' physical aggression may manifest in a more complex way. Parental psychological control was the only parenting predictor that was included in this study. However, parenting is a multifaceted concept that includes both positive and negative behaviors (Baumrind, 1996; Maccoby & Martin, 1983). The effect of one parenting behavior needs to be considered within the context of other parenting behaviors. Empirically, researchers have documented the interplay between parental psychological control and other parenting practices in predicting adolescents' behavioral outcomes. For example, Murray and colleagues (2010) reported that parental psychological control interacted with parental responses to adolescents' fighting behaviors in predicting adolescents' overt aggression a few months later. Further, although adolescents may experience decreasing closeness with parents, the positive aspects of the parent-adolescent relationship (which were not included in the present study) might buffer the negative impact of parental psychological control (see Collins & Laursen, 2004). Some parenting practices that are related to psychological control (e.g., autonomy granting) have been found to interact with positive

parental behaviors (e.g., parent-child connectedness; Oliver & Berger, 1992; Steinberg et al., 1992) when predicting child outcomes such as school achievement.

Relatedly, parental behaviors other than psychological control might have some predictive roles in adolescents' physical aggression. For instance, the associations between other types of negative parenting behaviors and parenting styles (e.g., lack of supervision, verbal and physical punishment, authoritarian parenting) and youths' physical aggression toward others (e.g., peers or parents) have been documented (e.g., Batool & Bond, 2015; Del Hoyo-Bilbao et al., 2018; Margolin & Baucom, 2014; Moreno-Ruiz et al., 2018; Smack et al., 2015; Wang, 2017). A "parent effect" on adolescents' physical aggression might be found if these aspects of parenting were captured in this study.

Likewise, family theories such as family systems theory and the bio-ecological theory have emphasized the importance of understanding child development as a function of parent-child relationships and different layers of the social environment (e.g., Bornstein & Sawyer, 2008; Bronfenbrenner, 1994; Smith & Hamon, 2012). The impact of parental psychological control to adolescents' physical aggression might depend on adolescents' or parents' personality characteristics, as well as how adolescents interact with other people in and outside the family setting. As an example, although no main effect of maternal psychological control on adolescents' later aggression was found, Murray et al. (2014) found that maternal psychological control positively predicted adolescents' overall aggression one year later, only when adolescents shared a poor relationship with their father. Likewise, in an earlier study, Chen et al. (2000) reported

that fathers' controlling behaviors (combination of behavioral and psychological control) positively and longitudinally predicted youths' aggression two years later, but the association was only significant for highly aggressive children. Similarly, Tian et al. (2019) found that the positive prediction from parental (parental sex was not indicated) psychological control to adolescents' overall aggression was mediated through children's deviant peer affiliation. That said, although a relation between parental psychological control and adolescents' physical aggression was not found in the present study, it is still possible that more complex relations exist. However, given the restrictions of the data (e.g., small sample size in some countries), I was not able to examine moderated paths in the models.

Lastly, the results could be biased as the current project utilized parents' self-reported psychological control. Although parental reports may reflect the frequencies of maternal psychological control, adolescents' *perceptions* of parental psychological control might differ from parental report. As argued by some scholars, children's perceptions of parental behaviors might be more important than the actual parental behaviors (e.g., Schaefer, 1965b), and children's perceptions of parenting might direct how children behave in response to parental behaviors (Dunn, 1993). In a recent paper where Barber et al. (2012) discussed the concept of psychological control, they explicitly argued that during adolescence, when youths experience significant cognitive development and develop a clear self-concept, adolescents' perception plays an important role in capturing the "psychological" aspect of psychological control. This might be especially true for the mother-youth, compared with the father-youth dyads. In fact, a

recent meta-analysis by Korelitz and Garber (2016) reported that throughout childhood to adolescence, youths always reported higher levels of maternal psychological control than their mothers, although the difference was smaller during adolescence than childhood. On the contrary, although youths tended to perceive their fathers as more psychologically controlling than fathers' self-report, this divergence became non-significant during adolescence (Korelitz & Garber, 2016). Likely, parents', especially mothers' report might fail to represent the perceived level of mothers' psychological control, and parents' reports might not detect important information about parenting that impacts adolescents' future well-being. It is possible that some significant associations between parental psychological control and youths' physical aggression would emerge if multiple informants reported on parental psychological control. The PAC dataset contains adolescent-reported parental psychological control, but this questionnaire was not collected for mothers and fathers separately. Thus, it was difficult to incorporate the adolescents' perspective when assessing maternal and paternal psychological control.

The Prediction from Adolescents' Physical Aggression to Parental Psychological Control: Evidence for "Child Effect"?

Although the findings from the present study did not support the "parent effect" for psychological control predicting adolescents' later physical aggression, the results indicated a significant "child effect." Adolescents' physical aggression at an earlier time predicted fathers', but not mothers', later psychological control in the traditional CLPM, and the RI-CLPM, although this association was only marginally significant in the RI-CLPM that included both maternal and paternal psychological control simultaneously.

This “child effect” for father-youth dyads was only found from approximately 13 to 15 years old, but not from 15 to 16 years old.

The most interesting finding that emerged in this study was the significant “child effect” in which fathers’ psychological control when their adolescents were about 15 was predicted from adolescents’ physical aggression when they were about 13 years old. The “child effect” is in concordance with a few existing studies where a similar association has been found (Albrecht et al., 2007; He et al., 2019). Additionally, this “child effect,” which was not evident in the mother-youth dyad, might further indicate some differences in maternal and paternal socialization roles. To be specific, researchers have argued that compared with mothers, fathers have a more active role in choosing whether, when, and what to involve in childrearing (e.g., Brown et al., 2011). Different from mothers who are anticipated to provide constant childcare and monitoring, fathers have been viewed as a parental figure that has the “discretion in defining their parental roles” (Cabrera et al., 2000, p. 131). Thus, fathers might be able to choose the extent to which they participate in parenting practices, perhaps based on child behaviors and other contextual variables. It is possible that the participating fathers chose to intervene into adolescents’ physical aggression as they saw a need to correct adolescents’ deviant behaviors. Although not examining fathers’ psychological control or adolescents’ physical aggression, in a qualitative study, Howard and Reynolds (2008) reported that one of the interviewed fathers indicated that he did not need to intervene into children’s schooling unless “something goes wrong” (p. 89). Thus, the controlling behaviors might be a parenting strategy with the aim to correct child behaviors. On the other hand, research of emotion

socialization of children has found that fathers tend to react more negatively (e.g., punitive) than mothers in response to adolescents' negative emotions (e.g., fear, anger; see Brand & Klimes-Dougan, 2010; Klimes-Dougan et al., 2007). Possibly, fathers' elevated levels of psychological control represent fathers' negative responses, rather than higher parenting investments when facing youths' maladaptive behaviors. Although the current study was not able to explore the underlying motivations of fathers' increasing levels of psychological control following adolescents' physical aggression, the results provided interesting evidence that support the role of adolescent behaviors in predicting fathers' responding behaviors, at least earlier in adolescence.

The discretionary role of paternal parenting might be supported by the different stability predictions of paternal psychological control from Time 1 to Time 2 across the regular CLPM and the RI-CLPM. Specifically, when the between-person differences and within-person differences were confounded in the regular CLPM, fathers' psychological control stayed relatively stable from Time 1 to Time 2. However, when the RI-CLPM separated between-person differences from within-person differences, stability was not supported. To interpret this difference, at the within-person level, the change of fathers' levels of psychological control from their typical levels was not related to the change of paternal psychological control from their typical levels two years later. The non-significant stability of paternal psychological control in the RI-CLPM might support the notion that paternal psychological control might vary across times within person, perhaps depending on the preceding child behaviors.

Alternatively, this “child effect” might be related to fathers’ parenting attributions regarding children’s maladaptive behaviors. Studies using an earlier stage (i.e., childhood) of the PAC data have found that in Sweden and the U.S., fathers hold a stronger attributions of child-controlled failure (e.g., children should be blamed for their negative behavioral outcomes, and children intend to misbehave on purpose), compared with mothers (differences between maternal and paternal attribution were not found in Italy, Thailand, and Colombia; Bombi et al., 2011; Di Giunta et al., 2011; Lansford et al., 2011; Sorbring & Gurdal, 2011; Tapanya, 2011). Parental attribution has been associated with parental behaviors. Generally speaking, parents are more likely to respond in a negative way if they interpret their children’s misbehaviors as directed by children’s deliberate intentions; this might be especially true during adolescence, when youths are believed to have better behavioral control and acquire better knowledge about the outcomes of their misbehaviors (Dix et al., 1986). Empirically, studies have found that fathers’ negative attribution regarding children’s and adolescents’ misbehaviors (e.g., parents believe youths behave inappropriately because they intend to do so) are positively associated with their harsh parenting behaviors (e.g., Beckerman et al., 2018; Park et al., 2018; Wang & Wang, 2018). Likely, when seeing their adolescents’ physically aggressive behaviors, some participating fathers react with elevated levels of psychological control as they see these aggressive behaviors as intentional. However, this supposition is speculative as information of parental attribution was not collected by the PAC team during adolescence. Further studies need to evaluate parental attribution, and

further explore how parental attribution is associated with parental psychological control and adolescents' physical aggression.

Why was prediction from adolescents' physical aggression to later paternal psychological control found from Time 1 to Time 2, but not from Time 2 to Time 3? Given the scarcity of relevant studies, it is difficult to compare this study with previous research. One potential explanation for the stronger association in the earlier, but not later time period in this study is that, Time 1 to Time 2 of the current study covers the stage of early adolescence (the participating youths were approximately 12-13 years old to 14-15 years), which has been viewed as a time for increasingly intense conflict between parent-adolescent dyads (Steinberg & Silk, 2002; Collins & Laursen, 2004). With the onset of puberty development and cognitive maturation, early adolescence has been described as a critical time when youths want to be treated like adults, and start to question the legitimacy of parental authority (Collins & Steinberg, 2006; Smetana, 1989; see Steinberg & Silk, 2002). Indeed, scholars have argued that the early period of adolescence represents the peak of tension between parent-youth dyads given both partners in the dyad need to renegotiate their roles in parent-child relationship (see Laursen & Collins, 2009; Youniss & Smollar, 1985). As adolescents grow older, parents are likely to use more mild positive conflict solving strategies (e.g., Van Doorn et al., 2011), adolescents are also prepared with better emotion regulatory capacities (see Riediger & Klipker, 2014), which might release the tension of parent-adolescent interactions over time. Thus, a stronger association during earlier than later adolescence might be anticipated. Replications will be needed to reexamine this time-varying "child

effect” in datasets with more than three time points, and the time intervals between each time point needs to be carefully considered to capture the potential developmental changes in parenting and adolescents’ behaviors.

The results suggested a significant child-to-father effect, but a similar association was not found in the mother-youth dyads. The lack of a child effect for mother-youth dyads was unexpected, given the bilateral nature of parent-child interactions (e.g., Kuczynski, 2003; Yallow et al., 1971), and previously documented child effects from youths’ maladaptive behaviors to parental psychological control (e.g., Barber et al., 2005; Loukas, 2009; Piquart, 2017a; Van Lissa et al., 2019; see Wang, 2006 for an exception). In the very limited work that investigated the effect from adolescents’ physical or overall aggression to maternal or parental psychological control, a positive child effect has been documented (Albrecht et al., 2007; He et al., 2019; Steeger & Gondoli, 2013). However, the current work failed to replicate the “child effect” in predicting mothers’ later psychological control. As was already discussed, mothers’ self-reported psychological control might not accurately represent adolescents’ perception of maternal psychological control. Thus, the non-existence of child effect to mothers’ psychological control in this study might be associated with method rather than a true effect.

It is also possible that mothers use strategies other than psychological control to manage adolescents’ physical aggression. For instance, when mothers are aware of their adolescents’ physical aggression, mothers may use behaviors such as reasoning, supervision, or behavioral control (e.g., set boundaries and rules) to regulate adolescents’

aggressive behaviors, but these behaviors do not necessarily diminish adolescents' autonomy or harm adolescents' individuality.

Taken together, the results did not support maternal and paternal effects in predicting adolescents' physical aggression. However, this does not mean maternal or paternal psychological control is not relevant to adolescents' physical aggression. It should be noted that when bivariate correlations were computed, maternal or paternal psychological control and adolescents' physical aggression across time points showed some significant and positive correlations across (see Table 6) and within countries (e.g., Time 1 maternal psychological control and Time 2 aggression in Italy, Time 2 maternal psychological control and Time 3 aggression in Colombia). However, the association between parental psychological control and adolescents' later physical aggression was no longer significant after accounting for stability in the outcomes as well as the control variables (e.g., puberty, family SES). It also should be noted that the physical aggression scores had low variances across countries and time points, and there was little variability to predict. These data limitations may prevent the detection of the "parent effect." Although no "parent effect" was found, the findings supported the existence of "child effect" in parent-child interactions, and indicated adolescents' role in directing fathers' parenting behaviors in response to adolescents' physical aggression.

This study utilized the regular CLPM and the RI-CLPM to explore the longitudinal associations between maternal psychological control, paternal psychological control, and adolescents' physical aggression. When comparing the results across the regular CLPM and RI-CLPM, the results were largely the same except for the differences

in the auto-regressive prediction of paternal psychological control from Time 1 to Time 2. Thus, based on the current participants, the associations between maternal psychological control, paternal psychological control, and adolescents' physical aggression were more similar than different when the between-person and within-person differences were combined or separated. Nonetheless, it should be noted that across the non-unique maternal model, non-unique paternal model, and the unique model, the unstandardized estimates of the auto-regressive paths of parental psychological control and adolescents' physical aggression across time points were always smaller in the RI-CLPM than the CLPM (when the between-person variability was removed), despite an overall positive pattern being observed across different analytical approaches. The coefficient estimates across the regular CLPM and RI-CLPM models are not essentially comparable, but the variations of the specific estimates might indicate that some traditional longitudinal models might exaggerate the associations, especially the association between two variables on the within-dyad level. Therefore, caution is needed when interpreting the results from models that aggregate between-person and within-person differences as causal associations.

Country Similarities and Differences: What Do They Tell Us About Parental Psychological Control and Adolescents' Physical Aggression?

Throughout the analyses, multiple significant associations emerged from the prediction from the individual and familial characteristics to parental and adolescents' behaviors. Further, these associations yielded more similarities than differences across countries. Below, I will discuss the associations that were the same across countries (i.e.,

constrained across countries), or associations that showed similar patterns across countries but the specific estimated coefficients and/or significance levels differed. Then, I briefly discuss the predictions that varied across countries.

Puberty and Parental Psychological Control within Time 3

Across the different models, adolescents' puberty was negatively associated with psychological control of both parents within Time 3, and this association was consistent across countries. This association was understandable. Although the results were not always consistent, studies sometimes have found that with pubertal maturation (and with age broadly), parental monitoring decreases, autonomy granting increases, and parents tended to transfer more responsibility to their youths (e.g., Alsaker, 1996; Keijsers & Poulin, 2013; Newman, 1989; Palmer et al., 2004). In a recent meta-analysis, Lionetti et al. (2019) found that throughout adolescence, the three aspects of parental monitoring (i.e., parental control, knowledge, solicitation) decreased. Although these parenting behaviors are not identical to parental psychological control, the decreasing trends of parental monitoring might indicate that parents become more aware of the importance to respect adolescents' independence, especially for older adolescents. On the other hand, lower levels of parental psychological control might signal parental attempts to keep and promote parent-youth communication, and stimulate more self-disclosure from the adolescents. Adolescents' self-disclosure has been viewed as an important resource for parents to gain knowledge of adolescents' personal and social life, as adolescents have more activities than children that are unsupervised by parents (e.g., see Smetana et al., 2014; Stattin & Kerr, 2000; Steinberg & Silk, 2002). Thus, parents might decrease their

usage of parental psychological control to encourage adolescents' more frequent self-disclosure, and make sure adolescents are behaving properly in unsupervised activities.

Although the results from this study support a negative association between puberty and parental psychological control, it should be noted that the puberty development measure that was used in this paper captures adolescents' pubertal status at the time of assessment. However, another important aspect of puberty is the pubertal timing (i.e., the pubertal status relative to the peers; Susman & Rogol, 2004). An adequate number of studies have supported that compared with on-time maturers, adolescents who experience early or late maturation experience more developmental challenges in their biological, mental, and social development (e.g., dating abuse, internalizing problems, school achievement, self-control; Benoit et al., 2013; Chaku & Hoyt, 2019; Chen et al., 2017; see Mendle et al., 2007; Savin-Williams & Small, 1986; see Susman & Dorn, 2012). Further, Arim and Shapka (2008) reported that levels of parental psychological control might vary depending on the pubertal timing of their adolescents. Specifically, maternal psychological control did not differ based on adolescents' pubertal timing, whereas fathers tended to be less psychologically controlling towards their late maturers than adolescents who experienced maturation at an earlier time (Arim & Shapka, 2008). Therefore, factors other than pubertal status (e.g., the onset or the tempo of pubertal development) might need to be included in future research that investigates the correlates of parental psychological control.

Age, Puberty, and Adolescents' Physical Aggression within Time 3

Looking across models, interesting findings emerged as age and puberty level, which are conceptualized as two related concepts, showed different associations in predicting adolescents' physical aggression, especially within Time 3, the later stage of adolescence. While child age positively predicted adolescents' physical aggression, the prediction from adolescents' pubertal level was generally negative, and the magnitudes varied across countries (and varied slightly across models), with significant prediction in some (e.g., Italy and Colombia across models, U.S. in the non-unique maternal and the unique models), but not in other, countries (e.g., Thailand, Sweden). The discrepancies of the predictions from age and puberty are worth discussing from a theoretical perspective. First, it should be noted that the positive association between age and physical aggression does not imply an increasing trend of physical aggression with age. On the contrary, the mean scores of physical aggression from Time 1 to Time 3 indicated that in general, adolescents showed decreasing levels of physical aggression across countries (Table 7-11). A possible explanation for the contradictory predictions is that adolescents' chronological age may convey different information from physical development when examining the developmental trajectories of child behaviors. That is, biological age is easily calculated from the birth date of the child. However, pubertal development is impacted by many contextual factors (e.g., genetic heritage, rearing experience, nutrition conditions; see Susman & Dorn, 2012), which yields individual differences in regard to the timing and trajectories of pubertal maturation. Researchers have discussed the necessity to separate puberty and age effects (e.g., Berenbaum et al., 2015; Blakemore et

al., 2010). The results obtained from this study might be a good example. By looking at the bivariate correlations between puberty and age across countries, it is obvious that these two measures were not always closely related with each other (Table 7-11). Further, studies that measured both pubertal and chronological age have supported the distinction (e.g., Doom et al., 2015; Harden et al., 2015; Nicholls et al., 2009). Thus, chronological age and physical development might contribute additional information above and beyond each other in explaining youth development. Some of the participating adolescents might fall behind peers in their puberty development (e.g., late maturation). The mismatch between chronological age and pubertal growth might be concerning, especially during the late stage of adolescence and among adolescents who were chronological older than their peers. Adolescents who experience off-time maturation face many disadvantages (e.g., see Susman & Dorn, 2012; also see Weichold et al., 2003), and physical aggression might be one maladaptive outcome for these late maturers. Alternatively, these adolescents might use more physical aggression so that they might be viewed as more social dominant and be adult-like. Collectively, the different predictions from adolescents' age and pubertal status to adolescents' physical aggression indicate the importance of separating chronological age and physical maturation.

It is also worth noting that researchers have used additional conceptualizations when studying the age effect on youth behaviors. For example, the concept of subjective age has been used for a few decades to measure people's perception of their actual age, and people may view themselves as older, younger, or the same as their chronological age (for a detailed description, see Kotter-Grühn et al., 2016; see Hubley & Arim, 2012 for a

study of adolescents). These different approaches of age definition provide multiple ways to think about people's developmental process from chronological, physical, and subjective perspectives. In future studies, researchers might consider the varying measures of age-related concepts, decide how these different conceptualizations of age may related to the key variables of the study, and choose the age variable that best captures the feature of the research questions.

Family SES and Parental Psychological Control within Time 1

Across countries and models, negative predictions were found from Time 1 parent-reported of family SES to Time 1 maternal psychological control, however, this prediction was not significant in Sweden. A similar association was found in the prediction from Time 1 parent-reported of family SES to Time 1 paternal psychological control in Thailand, the U.S., and Colombia, but this prediction was not significant in Italy. On the contrary, among Swedish participants, there was a positive but non-significant prediction from family SES to Time 1 paternal psychological control in the non-unique paternal and the unique model (i.e., .01 and .02 in the non-unique and unique model, respectively).

Overall, there were some country similarities that families with higher SES status (i.e., higher family incomes, higher parental educational levels) tended to be less psychologically controlling towards their youths, compared with parents from lower-SES families. This finding could be explained from two perspectives. First, researchers have suggested that poorer parents might display more negative behaviors as these parents experience more psychological distress (e.g., anxiety, irritation), which might increase

their use of negative and controlling behaviors towards youths, relative to parents with higher incomes (e.g., McLoyd, 1990; Pinderhughes et al., 2000). The finding from this study is consistent with this explanation. Empirically, U.S mothers and fathers from higher income families have been found to be less psychologically controlling towards youths than parents from lower income families (e.g., Barber, 1996; Frazer & Fite, 2016; for an exception see Thompson, 2013). No relevant studies were found in Colombia, but parents from higher SES families, or who had higher education levels tended to be more authoritative towards their adolescents in Italy and Thailand (e.g., Olivari et al., 2015; Rhucharoenpornpanich et al., 2010). Possibly, higher educational level and higher family income facilitate more responsive and less controlling parental practices, and these parents are more careful in respecting their adolescents' developmental needs of individuality, compared with families of lower SES. Alternatively, it could be that parents from low SES families experience more life and work stress (e.g., see Bradley & Corwyn, 2002), and thus are likely to perceive themselves, including their parenting practices, in a negative way.

It should be noted that among Swedish participants, the association between parental psychological control and family SES was weaker than other countries. Interestingly, when the bivariate correlations across study variables were examined, Sweden was the only country that yielded no significant correlation between family SES and maternal and paternal psychological control across time points. Further, the ranges, and the variances of maternal and paternal education level and family income among Swedish participants were smaller compared with the other four countries. Likely, the

participating families in Sweden did not differ from each other in their socioeconomic status, thus the variances of family SES were too trivial to be associated with parental psychological control.

Age, Puberty, Sex, and Paternal Psychological Control at Time 1 and Time 2:

Contradictory Results Across Models

Throughout the different models, while the predictions from some control variables to maternal psychological control stayed relatively stable across the non-unique and unique models, the predictions from control variables to paternal psychological control shifted somewhat between the non-unique paternal model and the unique model, especially at Time 1 and Time 2. For instance, in the non-unique paternal model, no prediction was found from child age to paternal psychological control within Time 1, but this prediction was significant and negative in Sweden and the U.S. when maternal psychological control was taken into account. Similarly, the prediction from child sex to paternal psychological control, which was not significant in the non-unique paternal model, became significant in the unique model, but only for Italian participants. Noteworthy, although the significance levels and the specific coefficients differed between the non-unique paternal model and the unique model, the overall patterns of these predictions (e.g., the predictive direction) were very similar between these two models. Lastly, adolescents' puberty was only negatively related to Colombian fathers' psychological control within Time 2 in the non-unique paternal model. However, when maternal psychological control was included, there was an additional significant prediction among Swedish participants, but the prediction was positive.

The shifts above may indicate a few interesting points. Statistically, this tells us that, after controlling for the correlation between the outcome variables (e.g., maternal and paternal psychological control) and the rest of appropriate paths (e.g., prediction from other control variables or stability of parental control), children's individual characteristics (i.e., sex, age, puberty) still had additional prediction to fathers' psychologically behaviors in all countries except Thailand. As discussed before, fathers might have a more active role in deciding when and how much they want to involve in child rearing, compared with mothers' role of a constant caregiver (Brown et al., 2011; Cabrera et al., 2000). This argument might apply here as well. Further, this active role of paternal parenting might be more evident when maternal parenting has been taken into account. Lastly, the differences in the estimated associations might have been influenced by the constraints steps that were used in the non-unique paternal model vs. the unique model. Taken together, this set of findings might suggest including both parents when investigating the associations between parental and youth behaviors, and replications with larger numbers of participants are needed.

A Note on Parental Psychological Control: How Should We Move Forward?

Although there were only a few significant associations between parental psychological control and adolescents' physical aggression, the results of this study might warrant more discussions regarding why associations were not detected. These discussions might advance progress in the study of parental psychological control.

Measuring Parental Psychological Control

To start with, the parental psychological control measure in this study (e.g., “*I won’t let my child do things with me when he/she does something I don’t like.*”) assessed parents’ general psychologically controlling behaviors, but did not specify the target domains of the parental psychologically controlling behaviors. Potentially, parental control that is targeted at moral or conventional issues (e.g., teach about social norm, respect others) is less likely to be viewed as psychological control, compared with controlling behaviors that breaks into adolescents’ individual boundaries, such as friend selection or outfit choice (Smetana & Daddis, 2002). Although divergence exists in parents’ and adolescents’ perception of parental authority across domains, there is some agreement that parents’ efforts to control and correct adolescents on moral and conventional issues are legitimate (Smetana, 1988; Smetana & Asquith, 1994). Empirically, adolescents have viewed parental psychological control and directiveness over personal domains (i.e., friendship) as more intrusive than psychological control over prudential and conventional domains (e.g., alcohol use; Gingo et al., 2017; Hasebe et al., 2004; Kakihara & Tilton-Weaver, 2009). The lack of target domains of psychologically controlling behaviors might partly explain the lack of significant associations in the parent-youth dyads. Perhaps, one direction of future research in studying parental psychological control is to differentiate the target domains of parental control.

Researchers have attempted to divide the broader concept of parental psychological control based on the types and orientations of psychological control. When conceptualizing parental psychological control, Barber (1996) categorized parental

psychological control into six subtypes: constrain verbal expressions, invalidating feelings, personal attack, guilt induction, love withdrawal, and erratic emotional behavior. In a later empirical study that used a similar conceptualization (but different measurement), Nelson et al. (2013) found different subtypes of parental psychological control showed different bivariate correlations with male and female preschoolers' relational and physical aggression in Russia. As an example, while maternal love withdrawal and shaming/disappointment was positively related with both boys' and girls' aggression, fathers' and mothers' invalidating feelings were not related to either boys' or girls' aggression (Nelson et al., 2013). In a cross-country study of 7-10 years old that compared parental psychological control in the U.S. and China, Fung and Lau (2012) reported that certain aspects of parental psychological control (e.g., constraining expression, erratic emotional behavior) were more consistently related with youths' behavioral problems than other aspects of psychological control (e.g., invalidating feelings, guilt induction) in both countries. Although the age ranges and the measurement of parental psychological control differed, these studies suggested the importance of viewing psychological control as a multi-dimensional, rather than a uniform concept. Researchers also investigated parental psychological control from an orientation-specific perspective. Using the arguments of personality development theory (Blatt, 2004), Soenens and colleagues (2010) developed the Dependency-oriented and Achievement-oriented Psychological Control Scale (DAPCS). Rather than measuring parental psychological control as a unified concept, they categorized psychological control into two orientations: dependency-oriented psychological control (DPC), which is the "use of

psychological control as a means to keep children within close physical and emotional boundaries” (Soenens et al., 2010; p. 222); and achievement-oriented psychological control (APC), which is the “use of psychological control to make children comply with parental standards for achievement” (Soenens et al., 2010; p. 222). Based on the orientation distinction of parental psychological control, researchers found that DPC was more strongly associated with adolescents’ dependency than APC, whereas APC was more strongly associated with adolescents’ self-criticism than DPC (e.g., Gargurevich & Soenens, 2016; Pace et al., 2018; Soenens et al., 2012; Soenens et al., 2010).

Although the discussion above were different from the argument that psychological control might be less detrimental in some than other situations, these studies indicate the necessity to treat parental psychological control as an intricate concept that consists of varying motivations and goals. The taxonomy of parental psychological control based on motivations, targeting behaviors, or goals might be especially important for research of adolescence, as adolescents experience additional developmental changes other than autonomy and independence (e.g., religious development, gender role development; see Lerner & Steinberg, 2009). The complexity of adolescents’ developmental needs might elicit different levels of parental intervention, probably depending on the developmental domains or contexts of adolescents’ activities. However, the differences across controlling domains and scenarios may not be revealed by the general parental psychological control measurement in the current study. To date, I am not aware of studies that differentiate the targeted domains of parental psychological

control when predicting adolescents' physical aggression or the broader externalizing behaviors, which might be considered by future researchers.

Parental Psychological Control in the Cross-country Context

The necessity to study parental psychological control as an intricate concept might be further emphasized when country and cultural differences are considered in cross-country studies. It is still unclear whether parental psychological control should be treated as a detrimental parenting practice universally, or a culturally specific behavior. Bornstein (2012) suggested that the forms (e.g., how certain parenting practice is expressed) and functions (e.g., the goal and the effectiveness of the parenting practice) might differ across country and cultural contexts. This might be important to consider in research about parental psychological control.

Researchers have gathered cross-country data to investigate the associations between parental psychological control and children's and adolescents' varying outcomes (e.g., antisocial behaviors, emotional functioning, externalizing behaviors, self-esteem; Barber et al., 2005; Olsen et al., 2002; Wang, 2006; Weitkamp & Seiffge-Krenke, 2019). Although the core research questions differed across studies, the studies above generally indicated that parental psychological control was positively associated youths' maladaptive behaviors, and negatively associated with youths' adaptive outcomes (see Olsen et al., 2002 for an exception). These findings seem to support the country invariant and negative role of parental psychological control in child development. However, this claim needs to be interpreted with caution. When taking a closer look at the measure of parental psychological control, in the aforementioned studies, parental psychological

control was always examined as a unified (i.e., an average score of multiple subtypes of psychological control), rather than multidimensional construct. As discussed in the previous paragraphs, some important differences of the subtypes, motivations, and goals of parental psychological control might be masked by treating it as a uniform concept, this argument might be true in studies that included multiple country and cultural groups.

A few studies might support the country variation of the functions of parental psychological control. For example, Fung and Lau (2012) argued that compared with the more hostile forms of parental psychological control that suppress youths' expression (i.e., constraining expression, invalidating feelings, personal attack, erratic emotional behavior), parental psychological control that entails more relational induction (i.e., guilt induction, love withdrawal, social comparison) might show more country variance in predicting youths' outcomes, depending on the cultural orientation of individualism versus collectivism. To be specific, the hostile forms of parental psychological control transmit parental rejection and denial, but the relational induction practices might be consistent with some of the collectivistic cultural traditions, such as thinking from an other's perspective, and sacrificing self-benefit for the greater good (Fung & Lau, 2012). These traditions might be especially important in countries where filial piety is emphasized, where the usage of parental psychological control that inducing guilt of children and adolescents is normalized. Although the relevant studies are limited and the results are equivocal, there has been some indirect evidence that supports that different aspects of parental psychological control might have varying meanings across countries. For instance, Fung and Lau (2012) reported a stronger and positive bivariate correlation

between hostile parental psychological control and relational induction in participants from the U.S. than participants from China, which was explained as supporting the less detrimental role of relational induction in Chinese families. Likewise, Rudy et al. (2014) found that, while parental hostile psychological control negatively predicted Indian and U.S. adolescents' self-esteem, parental guilt induction negatively predicted U.S. adolescents', but positively predicted Indian adolescents', self-esteem. Further, Helwig and colleagues (2014) also found some country differences, that Chinese adolescents tended to evaluate parental love withdrawal, shaming, and social comparisons as less negative compared with Canadian peers. In a recent study, Chou and Chou (2020) found that while parental behavioral control was in general negatively correlated with varying aspects of parental psychological control in the U.S. (e.g., love withdrawal, disrespect, invalidating feelings, and constraining verbal expression), the bivariate correlations were positive among Chinese adolescents, although the correlations were not always statistically significant. The detection of country differences might be easier if subtypes of psychological control are used as separate variables in predicting youth outcomes. Recently, researchers have tried to capture the multidimensional feature of parental psychological control in empirical research (e.g., Nelson et al., 2013; Soenens et al., 2010). In a newly published paper, Cuzzocrea et al. (2020) summarized the dimensions of parental psychological control from existing questionnaires, based on which they developed and validated the Inventory of Parental Psychological Control (IPPC) that measured eight subdimensions of parental psychological control (i.e., guilt and anxiety induction, love manipulation, invalidating feelings and perspectives, constraining verbal

expressions and behavioral intention, erratic emotional behavior, personal attacks and shaming, intrusive and control, use of threats). Such measurement tools that operationalize and allow examining parental psychological control from a multidimensional perspective might advance our knowledge in the country differences of parental psychological control, and its association with youths' developmental outcomes.

Additional demonstration to support the “forms” and “functions” variations of parental psychological control in cross-country contexts in the current study might be the unsatisfactory reliability values across the countries, especially in the countries that were removed from the analyses due to the low reliabilities (i.e., Jordan, Kenya, Philippines). Possibly, some items in the parental psychological control questionnaire assessed behaviors that are controlling in some, but not other countries. As an illustration, in a qualitative study, Jordanian parents discussed their roles to teach children Islamic rules and beliefs, in which obeying and respecting parents and other older people are important (Oweis et al., 2012). Therefore, some items in the parental psychological control measure (e.g., *“I say that my child should not argue with adults.”*) might be perceived as an essential component of teaching children about religious beliefs, rather than parental psychological control and manipulation, as measured by other items (e.g., *“When my child gets a poor grade in school, I make him/her feel guilty.”*). It also could be that the current measure left out some behaviors that are perceived to be psychologically controlling in some participating countries. By investigating adolescents' perceptions of parental verbal abuse among a group of high school students in Philippines, Loh and colleagues (2011) summarized nine categories of verbal abuse, including put downs and

shaming, rejection, blaming, fault exaggerating, threat, invoking harm, regrets, unfair comparisons, and negative prediction. Although some forms of verbal abuse might be more hostile and severe than psychological control, these verbal abuse categories overlap some with the subtypes of parental psychological control as summarized by researchers (e.g., shaming, social comparisons, guilt induction). Likely, some other types of parental verbal abuse (e.g., parents make negative prediction about children's future) are perceived as parental psychological control in Philippines but have not been captured in existing parental psychological control measures.

The different societal context across countries might also alter the meaning and impact of parental psychological control. For example, in Kenya where risky sexual behaviors are prevalent and adolescents face relative high risk of HIV infection (e.g., Brewer et al., 2007; Ssewanyana et al., 2018; UNAIDS, n.d.), some harsh parental practices might be protective for youths from health risk. In fact, Okigbo et al. (2015) have found that in addition to parent-youth communication, some harsh parenting behaviors (e.g., physical punishment) were positively associated with Kenyan adolescents' delayed sexual debut, although the prediction from parent-youth communication was more stable than parental punishment after including control variables (e.g., child age, delinquent problems). Again, the arguments above emphasize the necessity to think about the country variations of the forms and functions in parental psychological control, empirical studies might need to distinguish the motivations, subtypes, and goals of parental psychological control in cross-country studies.

Finally, could parental psychological control be essential or even beneficial in some special historical periods? In a newly published study by Ma and Wang (2021), they found that parental psychological control positively predicted Chinese emerging adults' perspective taking and personal distress simultaneously during the initial stage of COVID-19 pandemic. The positive association between parental psychological control and personal distress is anticipated, but it is not clear why parental psychological control was positively related to participants' perspective taking capacities. When explaining this unexpected association in the Chinese cultural context, it could be that parental psychological control might have a positive role in promoting people's empathy by forcing children to think from others' perspectives, which is consistent with the collectivistic cultural values in China (Ma & Wang, 2021). Possibly, the association between parental psychological control and perspective taking abilities might not be replicated in less collectivistic countries. However, this finding might be an indication of the complicated role of parental psychological control during critical and global societal challenges. In summary, there are many unsettled conclusions regarding the forms, meaning, and impact of parental psychological control. Future research needs to move toward a direction that decomposes this concept from different aspects. Equally important, the discussion of parental psychological control might be better understood in the specific country context and historical background.

Theoretical Framework Explaining Associations between Parental Psychological Control and Different Aspects of Child Development

Last but not least, more work needs to be done to develop a comprehensive theoretical framework to explain the associations between parental psychological control and various children's and adolescents' developmental outcomes. Earlier studies have theorized behaviors such as relational aggression and internalizing problems as the most prominent child outcomes in relation with parental psychological control, as children may inhibit and internalize negative emotions, or exhibit similar manipulating behaviors with others if their parents are psychologically controlling (e.g., Barber, 1996; Barber et al., 2002; Steinberg, 2005). However, accumulating studies have demonstrated that parental psychological control is related to youth behaviors such as delinquency, externalizing problems, and peer difficulties (e.g., Hoeve et al., 2009; Lapré, 2015; Shin et al., 2016; Tian et al., 2019), indicating parental psychological control is associated with a wide range of child developmental outcomes in addition to relational aggression and internalizing problems. Despite the increasing efforts in the study of parental psychological control, there is still a lack of the theoretical foundation to explain why parental psychological control is related to different types of child behaviors. Researchers commonly use the arguments from social learning and attachment theories to explain the associations (Bandura, 1976; Bowlby, 1969), that youth internalize parental psychological control and exhibit similar behaviors in later interactions. These general parenting theories, although they help explain the associations between parental psychological control and child responses, might be too general to depict the mechanism

through which parental psychological control impacts various domains of child development in a concrete way. As consistently discussed in this section, parental psychological control needs to be interpreted as a multidimensional concept, thus, it might be essential to think about whether the different aspects/subtypes of parental psychological control would be associated with different domains of child responses. As an example, could psychologically controlling behaviors that disrespect youths' privacy predict different youths' responses from behaviors that manipulate, suppress, or constrain expression of feelings? Possibly, youths of parents who intrude their personal life would behave more rebellious as a strategy to regain their individuality and privacy (Choe & Read, 2019), but parents who use more suppression and constraining strategies might result in children and adolescents with an inhibited personality. Likewise, parents who make parental affection contingent upon children's performance may have children who feel insecure and anxious about their surroundings, whereas youths might develop strong feelings of jealousy if parents always make unfair social comparisons between the child and other peers. Researchers have explored the specific mechanism between parental psychological control and youths' developmental outcomes from a domain-specific perspective (e.g., Choe & Read, 2019; Soenens et al., 2010), but more studies will be needed to facilitate a better understanding of whether and how subtypes and subdimensions of parental psychological control have different implications for varying domains of child development. Nonetheless, it should be noted that although different subtypes of parental psychologically controlling behaviors may yield predictions to different specific behaviors, the subtypes might collectively suggest a similar, rather than

different, pattern in predicting youths' general developmental pattern (e.g., youths with less psychologically controlling parents might have fewer maladaptive problems than peers of more psychologically controlling parents, if the controlling behavior is deemed as harmful in a given country).

Limitations

This study has several limitations. First and foremost, the measurement of physical aggression is not the best assessment tool, and there were a large number of adolescents who had a score of physical aggression at the minimum value, which is not ideal for statistical analysis. Replication with a better measure of adolescents' physical aggression is desired. Furthermore, it is possible a sample in which aggressive children are oversampled will be needed to obtain necessary variability in aggression.

Likewise, although I did not find significant longitudinal associations from the predictions from maternal or paternal psychological control to adolescents' later physical aggression, it is possible that this is reflective of a measurement problem with self-reported measure of parental psychological control, the failure to include other parenting behaviors, and the appropriateness of the measurement tools in each country. If feasible, further research needs to be done with a careful consideration of a comprehensive questionnaire that captures the various dimensions of parental psychological control in varying country contexts, and multiple informants might be helpful to accurately capture parental psychological controlling levels. Relatedly, the examination of longitudinal associations was conducted with a small number of participants within each country (i.e., lower than 200 in Sweden, Thailand, Colombia), which might result in low statistical

power or imprecise estimates. Thus, these research questions should be re-examined with samples of a larger size. The small sample size per country also prevented the possibility of more complex analyses (e.g., moderation of child sex or other contextual factors). Future research is needed to explore other personal, familial, and societal factors that modify the associations between parental psychological control and adolescents' physical aggression.

In addition, the decisions of constraining path(s) were made arbitrarily by comparing the unstandardized estimated coefficients across countries. For the concern of inflated Type I error, path constraints were examined by sets (i.e., multiple paths were constrained simultaneously) rather than examining individual path separately. Thus, the model results might shift depending on the steps of model comparisons and the sequences of path constraints.

I was able to examine country differences using this multinational dataset. However, it should be noted that country differences are not equivalent to cultural differences, although country and culture overlap somewhat with each other (e.g., Sawang et al., 2006; Taras et al., 2016). In the investigated countries of the current project, heterogenous cultural groups exist within country, that the citizens from the same country may vary in their ethnic backgrounds and religious beliefs (e.g., Sorbring & Lansford, 2019; The Association of Religion Data Archives, n.d., The World Factbook, n.d.). Thus, the varying associations from the individual and familial factors (e.g., child age, family SES) to parental psychological control and/or adolescents' physical aggression that were found in this study may not be used to infer differences at the

cultural level. Although information about ethnic group was available, separating participants by ethnic groups resulted in very small sample size per cultural group and did not allow the examination of a longitudinal model as proposed in this study. Similarly, the generalizability of the findings might be limited, given that the majority of the participants were recruited from the populated areas in each country, and some investigation sites might have different social and economic features when compared with other regions in that country. Therefore, the participating families in this project might not represent the general population in the investigated countries.

Conclusion

Despite these limitations, the study contributes novel information regarding the longitudinal and reciprocal associations between maternal psychological control, paternal psychological control, and adolescents' physical aggression using a cross-country dataset. Although parental psychological control has been commonly studied as an important parental factor during adolescence (e.g., Barber et al., 2012; Pinquart, 2017a, 2017b), researchers have rarely investigated adolescents' physical aggression as a correlate of both mothers' and fathers' psychological control, especially in a multinational context. Using with the regular cross-lagged panel model and the random-intercept cross-lagged panel model, the results showed that across countries, there were no "maternal effect" or "paternal effect" in predicting adolescents' physical aggression, but adolescents' earlier physical aggression was associated with higher levels of psychological control of the father, especially during the early stages of adolescence, indicating the active role of adolescents in eliciting parental subsequent behaviors. Further, this pattern of the

association was the same when the between-person differences were aggregated or segregated from the within-person differences. Additionally, factors such as adolescents' age, pubertal level, and familial SES were related to parental and youth behaviors, and these associations yielded more country similarities than differences. In addition to discussing these empirical findings, I built on existing theoretical and empirical work to provide potential suggestions to advance the study of parental psychological control. Cross-country studies provide valuable information to compare the function of the same behavior in different populations, but it may also risk losing important country-specific information or oversimplifying the associations if country differences exist in the meaning and manifestation of the behavior. When results of cross-country studies suggest a country similar rather than different conclusion, researchers need to carefully interpret the findings. The conclusions need to be interpreted cautiously about whether the results represent true country universality, or country differences are confounded by the limitations of the measurement tools or other features of the study design.

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APPENDIX A

TABLES

Table 1*Demographic Information at First Wave (Year 5) by Country*

Country	China	Colombia	Italy	Jordan	Kenya	Philippine s	Sweden	Thailand	U.S.
Child age in years	11.60 (.50)	13.40 (.59)	13.54 (.62)	12.71 (.31)	13.04 (.92)	12.57 (.44)	12.47 (.27)	13.61 (.59)	13.95 (.65)
Percent male children	49.60%	44.40%	50.70%	52.60%	40.00%	50.80%	49.60%	50.80%	51.40%
Mother years of education	13.55 (2.88)	10.64 (5.60)	12.15 (4.65)	13.13 (2.18)	10.69 (3.65)	13.61 (4.07)	13.89 (2.48)	12.30 (4.76)	13.65 (4.28)
Father years of education	14.00 (3.07)	9.91 (5.32)	12.21 (4.39)	13.24 (3.16)	12.29 (3.61)	13.90 (3.84)	13.68 (2.96)	12.76 (4.22)	13.69 (4.69)
Mother age in years	38.64 (3.28)	41.51 (7.38)	44.01 (5.43)	41.36 (5.88)	36.98 (6.61)	42.10 (6.49)	42.26 (4.19)	43.55 (6.33)	42.47 (7.92)
Father age in years	41.19 (3.70)	44.55 (7.41)	46.98 (5.86)	45.45 (5.86)	43.44 (6.77)	43.99 (7.42)	44.91 (4.56)	45.66 (8.01)	44.46 (7.35)
Mode family income in U.S. dollars	≥ 81,000	5,000 ~ 10,000	16,000 ~ 29,000	≤ 5,000	≤ 5,000	≤ 5,000	≥ 81,000	≤ 10,000	≥ 81,000
Percent parents married or cohabited	67.50%	64.80%	71.30%	86.80%	84.00%	66.60%	46.50%	65.90%	53.00%
<i>n</i>	123	108	213	114	100	120	129	120	311

Note. Means were presented and standardized deviations were presented in parentheses when appropriate.

Table 2*Study Measures and Reporters at Each Wave*

	Questionnaire name	Reporter	Wave 1 (Age 12)	Wave 2 (Age 14)	Wave 3 (Age 15)
Key Variables					
Parental psychological control	Adapted from existing questionnaire (e.g., Barber, 1996; Schafer, 1965)	M, F	X	X	X
Adolescents' physical aggression	YSR (Achenbach, 1991)	Y	X	X	X
Control Variables					
Family SES	Created by PAC team	M or F	X ¹		
Puberty	Pubertal Development Scale (Petersen et al., 1988)	Y	X	X	X ²
Youth age	Created by PAC team	M or F	X ¹		X ²
Number of children in the household	Created by PAC team	M or F	X ¹		

Note. "X" represents the measure was administered at the corresponding time point.

M = mother, F = father, Y = youth.

¹Family SES information was collected from one parent from each family. For instance, if the mother had answered demographic information of the family, the father would not be asked the same demographic questions in that year of interview.

²Information was collected from both parents from each family.

Table 3

Alphas for Parental Psychological Control, Adolescents' Physical Aggression, and Puberty by Reporter, Wave, and Country of All Items

Country	Psychological Control						Physical Aggression			Puberty		
	Time 1		Time 2		Time 3		Time 1	Time 2	Time 3	Time 1 ²	Time 2 ²	Time 3 ²
	Mother	Father	Mother	Father	Mother	Father						
China	.76	.77	.70	.59	.68	.71	.67	.52¹	.24¹	80/.75	.63 ¹ /.73	.69 ¹ /.74
Italy	.58	.60	.71	.67	.65	.70	.42	.59	.55	.67/.75	.37 ¹ /.60	.44¹/.26
Jordan	.32	.38	.58	.56	.62	.58	.75	.76	.67	.70/.66	.64/.78	.41¹/.70
Kenya	.34	.30	.37	.45	.34	.30	.76	.47	.43	.67/.70	.67/.82	.71/.84
Philippines	.43	.50	.29	.43	.44	.54	.75	.60	.43	.40/.42	.45/.27	.15¹/.42
Thailand	.58	.69	.54	.65	.63	.50	.74	.79	.76	.69/.60	.26/.45	.27/.32
Sweden	.63	.75	.57	.69	.61	.68	.02	.53	.47	.81/.73	.65/.76	.65/.48
U.S.	.61	.56	.63	.67	.62	.66	.69	.66	.56	.50/.66	.34/.55	.73/.63
Colombia	.65	.64	.68	.76	.69	.66	.61	.65	.64	.67/.53	.36¹/.54	.56¹/.48

Note. Reliabilities values that were lower than .58 were bolded.

¹*Some items had zero variance.*

²*Reliabilities for girls were presented first, reliabilities for boys were presented after the slash.*

Table 4

Final Reliability Information of Parental Psychological Control and Adolescents' Physical Aggression by Reporter, Wave, and Country After Item and Country Deletion

Country	Psychological Control						Physical Aggression		
	Time 1		Time 2		Time 3		Time 1	Time 2	Time 3
	Mother	Father	Mother	Father	Mother	Father			
China	.76	.74	.70	.56	.68	.69	.67	.52 ¹	.24 ¹
Italy	.62	.65	.74	.69	.68	.74	.42	.59	.55
Thailand	.66	.71	.59	.69	.71	.63	.74	.79	.76
Sweden	.65	.76	.65	.70	.66	.66	.02	.53	.47
U.S.	.63	.59	.66	.65	.64	.66	.69	.66	.56
Colombia	.68	.64	.71	.77	.73	.67	.61	.65	.64

Note. Reliabilities values that were lower than .58 were bolded.

¹*Some items had zero variance.*

Table 5*Number and Proportion of Participating Mothers, Fathers, and Adolescents with Data for Key Variables by Wave and Country*

	Mother			Father			Adolescent		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
China	84 (68.29%)	39 (31.70%)	42 (34.15%)	82 (66.67%)	37 (30.08%)	33 (26.83%)	85 (69.11%)	44 (35.77%)	37 (30.08%)
Italy	192 (90.14%)	187 (87.79%)	183 (85.92%)	149 (69.95%)	146 (68.54%)	143 (67.14%)	194 (91.08%)	190 (89.20%)	191 (89.67%)
Thailand	94 (78.33%)	82 (68.33%)	78 (65.00%)	76 (63.33%)	63 (52.50%)	61 (50.83%)	99 (82.50%)	85 (70.83%)	83 (69.17%)
Sweden	70 (54.26%)	78 (60.47%)	74 (57.36%)	53 (41.09%)	61 (47.29%)	60 (46.51%)	83 (64.34%)	91 (70.54%)	73 (56.59%)
U.S.	254 (81.67%)	238 (76.53%)	242 (77.81%)	160 (51.45%)	148 (47.59%)	146 (46.95%)	255 (81.99%)	237 (76.21%)	239 (76.85%)
Colombia	85 (78.70%)	78 (72.22%)	79 (73.15%)	74 (68.52%)	70 (64.81%)	72 (66.67%)	85 (78.70%)	78 (72.22%)	80 (74.07%)

Note. The proportions were computed by the participating mothers, fathers, or adolescents at the specific time point divided by the original number of participating families at year 1 of the overall study. The number of originally participating families were 123, 213, 120, 129, 311, and 108 in China, Italy, Thailand, Sweden, the U.S., and Colombia, respectively. Ideally, the denominator would have been the specific number of mothers, fathers, or adolescents at year 1 of the overall study, but these data were not available.

Table 6*Descriptive Statistics and Correlation of All Study Variables Across All Countries*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.68***	-															
3. MCon T3	.63***	.72***	-														
4. FCon T1	.46***	.41***	.40***	-													
5. FCon T2	.37***	.49***	.42***	.61***	-												
6. FCon T3	.41***	.45***	.46***	.60***	.69***	-											
7. Agg T1	.13***	.12**	.11**	.17***	.16***	.10*	-										
8. Agg T2	.15***	.18***	.11**	.11*	.15***	.09*	.42***	-									
9. Agg T3	.13***	.12**	.17***	.13**	.11*	.14**	.36***	.52***	-								
10. SES	-.29***	-.35***	-.36***	-.26***	-.30***	-.33***	-.06	-.06	-.07	-							
11. Pub T1	.12***	.08*	.14***	.11**	.07	.05	.06	.02	-.07	-.06	-						
12. Pub T2	-.03	-.02	-.04	-.03	-.01	-.06	-.04	-.01	-.15***	.04	.63***	-					
13. Pub T3	-.10**	-.12**	-.13***	-.13**	-.11*	-.19***	-.12**	-.06	-.18***	-.14***	.54***	.71***	-				
14. Age T1	.14***	.05	.12**	.13***	-.01	.06	.08*	.08*	.04	.000	.55***	.31***	.26***	-			
15. Age T3	.08	.07	.09*	.07	.01	.05	.04	.11*	.09	-.01	.50***	.35***	.29***	.84***	-		
16. NChild	.03	.02	-.03	.04	-.03	.09*	-.04	-.04	-.05	-.03	.08*	.05	.08	.19***	.09	-	
17. Sex	.004	-.02	.03	.04	.03	.09*	.04	.03	-.10**	.01	-.40***	-.53***	-.52***	.02	.05	-.02	-
<i>M</i>	2.17	2.12	2.07	2.15	2.04	1.99	.10	.10	.08	-.02	2.51	3.08	3.30	13.35	16.50	1.89	-
<i>SD</i>	.50	.52	.53	.47	.47	.50	.21	.21	.18	.85	.73	.52	.47	.94	.94	.96	-
Skew	.26	.22	.34	.09	.26	.40	2.89	2.86	2.90	.15	-.33	-.60	-.48	.42	-.32	1.04	-
Kurt	-.14	-.47	-.34	-.29	-.32	-.01	10.93	9.34	8.95	-.65	-.67	.42	-.04	-.19	.14	2.19	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Table 7

Descriptive Statistics and Correlation of All Study Variables in Italy

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.62***	-															
3. MCon T3	.56***	.73***	-														
4. FCon T1	.25**	.19*	.22**	-													
5. FCon T2	.26**	.45***	.40***	.57***	-												
6. FCon T3	.31***	.46***	.40***	.61***	.74***	-											
7. Agg T1	.19**	.09	.12	.12	.20*	.18*	-										
8. Agg T2	.11	.003	.04	-.01	.04	.09	.44***	-									
9. Agg T3	.01	-.004	.13	.09	-.03	.18*	.40***	.49***	-								
10. SES	-.25***	-.32***	-.34***	-.13	-.25**	-.23**	-.17*	-.07	-.06	-							
11. Pub T1	.05	.05	.16*	-.06	.14	-.01	.06	.04	.05	-.15*	-						
12. Pub T2	.01	-.06	-.05	-.07	.02	-.04	-.07	.01	-.03	-.02	.61***	-					
13. Pub T3	.05	-.04	-.03	-.16	-.12	-.18*	-.06	-.04	-.12	.06	.53***	.70***	-				
14. Age T1	-.02	-.04	-.02	.09	.05	.06	.06	.09	.11	-.07	.38***	.21**	.17*	-			
15. Age T3	-.05	-.15	-.20*	-.02	-.05	-.02	.01	.03	.15	.06	.34***	.15	.12	.82***	-		
16. NChild	-.01	.05	-.06	.12	.18*	.19*	-.10	-.06	-.06	.12	.004	-.01	.003	-.08	-.01	-	
17. Sex	-.03	.02	-.05	.16	.13	.17*	.10	.02	.10	.002	-.48***	-.66***	-.70***	-.04	.04	-.05	-
<i>M</i>	2.42	2.23	2.21	2.34	2.10	2.06^a	.11	.11	.09	-.0007	2.61^b	3.03^b	3.25^b	13.54	16.62	1.80	-
<i>SD</i>	.47	.56	.51	.48	.50	.54	.18	.20	.18	.86	.63	.48	.45	.62	.68	.81	-
Skew	-.09	.02	.15	-.28	.29	.22	1.80	2.48	2.32	.50	-.40	-.60	-.08	.29	.53	.44	-
Kurt	-.21	-.72	-.63	-.23	-.53	-.35	3.07	7.29	5.48	-.55	-.39	1.29	-.9	.54	-.46	1.03	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Bolded numbers represented mean scores that were different between boys and girls.

^a Mean scores for boys were significant higher than mean scores for girls.

^b Mean scores for girls were significant higher than mean scores for boys.

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

Table 8*Descriptive Statistics and Correlation of All Study Variables in Thailand*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.64***	-															
3. MCon T3	.48***	.58***	-														
4. FCon T1	.48***	.28*	.32**	-													
5. FCon T2	.23	.26*	.34**	.56***	-												
6. FCon T3	.25	.11	.09	.66***	.68***	-											
7. Agg T1	.10	.15	.20	.17	.20	.05	-										
8. Agg T2	.26*	.23*	.20	.16	.18	.07	.59***	-									
9. Agg T3	.13	.14	.17	.21	.15	.05	.56***	.78***	-								
10. SES	-.22*	-.24*	-.36**	-.28*	-.20	-.35**	.02	.02	.03	-							
11. Pub T1	-.02	.001	.06	.01	-.09	.01	-.16	-.09	-.17	-.22*	-						
12. Pub T2	.10	.02	-.09	.08	-.05	.05	-.12	-.10	-.18	-.22*	.48***	-					
13. Pub T3	-.04	-.14	-.16	-.14	-.04	-.14	-.26*	-.19	-.19	.03	.43***	.51***	-				
14. Age T1	-.08	-.09	-.18	-.07	-.26*	.01	-.01	.02	-.05	-.15	.28**	.05	.13	-			
15. Age T3	-.09	-.17	-.16	-.03	-.20	-.05	.01	.12	.16	.03	.16	-.13	-.07	.71***	-		
16. NChild	.04	-.18	-.21	-.15	-.35**	-.10	.01	.07	-.06	.20	-.14	-.01	.02	.12	.05	-	
17. Sex	.01	-.07	.000	-.001	-.04	.10	.19	.22*	.26*	.13	-.38***	-.61***	-.53***	.10	.39**	.13	-
<i>M</i>	2.16	2.13	2.06	2.14	2.03	2.06	.18	.17^a	.15^a	-.01	2.52^b	2.95^b	3.13^b	13.61	16.56^a	1.55	-
<i>SD</i>	.36	.35	.42	.40	.40	.38	.29	.28	.26	.82	.59	.46	.40	.59	.67	.60	-
Skew	.85	.30	.80	.27	-.54	.21	2.21	1.87	1.91	.03	-.11	-.14	-.14	.51	.10	.60	-
Kurt	1.51	-.15	1.25	.97	-.37	.08	6.03	2.99	2.91	-.43	-.35	-.47	.66	-.28	-.12	-.55	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Bolded numbers represented mean scores that were different between boys and girls.

^a Mean scores for boys were significant higher than mean scores for girls.

^b Mean scores for girls were significant higher than mean scores for boys.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 9*Descriptive Statistics and Correlation of All Study Variables in Sweden*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.52***	-															
3. MCon T3	.51***	.62***	-														
4. FCon T1	.49***	.31*	.26	-													
5. FCon T2	.12	.14	.12	.27	-												
6. FCon T3	.14	.22	.37**	.38*	.49***	-											
7. Agg T1	.29**	.03	.01	.19	.10	-.19	-										
8. Agg T2	.04	.11	.05	.12	.17	.04	.19	-									
9. Agg T3	.05	.24	.19	.20	.22	.17	-.15	.48***	-								
10. SES	-.15	-.10	-.08	.07	-.10	-.02	-.07	-.39**	-.30*	-							
11. Pub T1	.12	.12	.19	-.05	.23	.13	.08	.13	-.11	-.32**	-						
12. Pub T2	.09	.03	.01	-.30*	.10	-.09	.02	.25*	-.05	-.32**	.65***	-					
13. Pub T3	.10	-.04	-.06	-.33*	-.01	-.30*	.01	.06	-.05	-.11	.60***	.79***	-				
14. Age T1	-.20	-.02	.01	-.30*	-.21	.05	-.07	.14	.18	-.04	.14	.05	.17	-			
15. Age T3	-.05	-.01	-.04	-.06	-.05	.21	-.04	-.15	.05	-.19	.21	.21	.28	.35*	-		
16. NChild	-.08	.05	.003	.07	-.38**	-.01	-.12	.02	.004	.27*	-.10	-.23	-.24	-.09	-.17	-	
17. Sex	-.04	-.12	.02	.17	-.02	.13	.04	-.02	-.08	.12	-.44***	-.60***	-.52***	.09	-.20	-.04	-
<i>M</i>	1.77	1.72	1.71	1.76	1.81	1.76	.05	.06	.04	-.06	1.81^b	2.72^b	3.15^b	12.47	14.81	2.08	-
<i>SD</i>	.34	.35	.36	.39	.36	.37	.10	.15	.13	.84	.63	.62	.51	.27	.58	.84	-
Skew	-.16	.18	.62	.51	.07	.43	1.88	3.66	3.17	-.39	.44	-.36	-.83	-.31	-.40	-.61	-
Kurt	-.77	-.65	1.07	.94	-.55	.06	2.81	16.76	9.61	-.52	-.86	-.90	.73	-.94	2.45	.53	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Bolded numbers represented mean scores that were different between boys and girls.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

^aMean scores for boys were significant higher than mean scores for girls.

^bMean scores for girls were significant higher than mean scores for boys.

Table 10*Descriptive Statistics and Correlation of All Study Variables in the U.S.*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.65***	-															
3. MCon T3	.57***	.64***	-														
4. FCon T1	.27***	.46***	.40***	-													
5. FCon T2	.30***	.44***	.35***	.68***	-												
6. FCon T3	.30***	.37***	.37***	.56***	.65***	-											
7. Agg T1	.10	.10	.04	.15	.08	.08	-										
8. Agg T2	.09	.23***	.01	.12	.21**	.10	.39***	-									
9. Agg T3	.10	.11	.10	-.05	.07	.10	.22***	.39***	-								
10. SES	-.38***	-.46***	-.40***	-.49***	-.40***	-.46***	-.02	-.05	-.10	-							
11. Pub T1	.05	.03	.01	.14	.07	.02	.08	-.05	-.09	-.05	-						
12. Pub T2	-.05	-.05	-.10	.01	-.08	-.15	-.03	-.05	-.13	.23***	.61***	-					
13. Pub T3	-.16*	-.14*	-.23***	-.10	-.14	-.22**	-.15*	-.05	-.11	.27***	.52***	.71***	-				
14. Age T1	.03	.02	-.10	-.08	-.09	-.13	-.08	.04	.06	.03	.25***	.26***	.28***	-			
15. Age T3	.07	.06	.03	-.02	-.03	-.12	-.15	.10	.05	-.20*	.29***	.14	.22**	.81***	-		
16. NChild	.08	.11	-.04	.07	.06	.17*	.01	.02	.08	-.12	-.08	.03	.04	.04	.06	-	
17. Sex	.04	-.05	.07	-.10	-.02	.01	-.05	.01	.07	-.02	-.58***	-.64***	-.52***	-.02	-.003	-.07	-
<i>M</i>	2.05	2.05	2.02	2.07	1.98	1.81	.10	.08	.04	-.03	2.88^b	3.33^b	3.48^b	13.95	17.20	2.24	-
<i>SD</i>	.44	.48	.47	.41	.45	.45	.22	.20	.13	.88	.56	.41	.44	.65	.65	1.14	-
Skew	.31	.24	.28	.22	.18	.52	3.32	3.51	4.09	.08	-.35	-.19	-.84	-.27	.24	.88	-
Kurt	.17	-.30	-.18	.35	-.65	.84	13.56	14.77	20.26	-1.01	-.30	-.91	.60	-.14	.01	1.42	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Bolded numbers represented mean scores that were different between boys and girls.

^a Mean scores for boys were significant higher than mean scores for girls.

^b Mean scores for girls were significant higher than mean scores for boys.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 11*Descriptive Statistics and Correlation of All Study Variables in Colombia*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. MCon T1	-																
2. MCon T2	.58***	-															
3. MCon T3	.55***	.67***	-														
4. FCon T1	.20	.31**	.30***	-													
5. FCon T2	.36**	.51***	.33**	.57***	-												
6. FCon T3	.31**	.29**	.36**	.45***	.57***	-											
7. Agg T1	-.09	.14	.08	.24*	.10	-.08	-										
8. Agg T2	.08	.24*	.17	.13	.12	-.09	.25*	-									
9. Agg T3	.16	.25*	.24*	.22	.22	-.02	.33**	.38***	-								
10. SES	-.58***	-.59***	-.57***	-.34**	-.37**	-.40***	.01	-.09	-.12	-							
11. Pub T1	-.30**	-.29**	-.24*	-.35**	-.38***	-.34**	.05	.07	-.25*	.41***	-						
12. Pub T2	-.40***	-.46***	-.32**	-.09	-.33**	-.28*	-.05	.001	-.29**	.37***	.59***	-					
13. Pub T3	-.34**	-.36***	-.30**	-.03	-.22	-.18	-.01	.11	-.31**	.40***	.61***	.64***	-				
14. Age T1	-.22*	-.34**	-.30**	-.22	-.37**	-.32**	.14	.08	-.11	.39***	.41***	.24*	.28**	-			
15. Age T3	-.17	-.34**	-.30**	-.30*	-.38***	-.34**	.13	.12	.02	.36**	.40***	.23	.18	.89***	-		
16. NChild	.07	.15	.03	.05	-.09	.09	-.06	-.12	-.07	-.20	-.01	-.08	-.10	-.04	-.13	-	
17. Sex	.03	.02	.09	-.04	.07	.09	-.14	-.18	.10	-.04	-.53***	-.46***	-.53***	-.11	-.11	-.07	-
<i>M</i>	2.60	2.55	2.49	2.45	2.32	2.32	.11	.14	.10	-.02	2.58^b	3.11^b	3.24^b	13.40	16.50	1.89	-
<i>SD</i>	.45	.47	.53	.43	.51	.54	.22	.25	.21	.88	.65	.44	.43	.59	.65	.94	-
Skew	-.11	-.46	-.26	-.07	-.11	.05	2.25	2.49	2.55	.73	-.15	-.74	-.59	.17	.24	1.01	-
Kurt	.40	.10	-.34	-.62	-.33	-.63	4.60	6.84	6.33	-.20	-.93	1.04	.08	1.06	-.08	1.44	-

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3; Skew = skewness; Kurt = Kurtosis; child sex was binary coded 0 = female, 1 = male.

Bolded numbers represented mean scores that were different between boys and girls.

^aMean scores for boys were significant higher than mean scores for girls.

^bMean scores for girls were significant higher than mean scores for boys.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 12*Mean Scores of Maternal Psychological Control, Paternal Psychological Control, and Adolescents' Physical Aggression by Country*

	Maternal Psychological Control			Paternal Psychological Control			Adolescents' Physical Aggression		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
Italy	2.42 ^{b c d e}	2.23 ^{c d e}	2.21 ^{c d e}	2.34 ^{b c d}	2.10 ^{c e}	2.06 ^{c d e}	.11	.11	.09 ^d
Thailand	2.16 ^{a c e}	2.13 ^{c e}	2.06 ^{c e}	2.14 ^{a c e}	2.03 ^e	2.06 ^{c e}	.18 ^{a c d}	.17 ^{c d}	.15 ^{c d}
Sweden	1.77 ^{a b d e}	1.72 ^{a b d e}	1.71 ^{a b d e}	1.76 ^{a b d e}	1.81 ^{a e}	1.76 ^{a b e}	.05 ^b	.06 ^b	.04 ^b
U.S.	2.05 ^{a c e}	2.05 ^{a c e}	2.02 ^{a c e}	2.07 ^{a c e}	1.98 ^e	1.71 ^{a e}	.10 ^b	.08 ^b	.04 ^{a b}
Colombia	2.60 ^{a b c d}	2.55 ^{a b c d}	2.49 ^{a b c d}	2.45 ^{b c d}	2.32 ^{a b c d}	2.32 ^{a b c d}	.11	.14	.10

Note. Comparisons were significant at the .05 level.

^a Significant mean level differences when compared with Italy

^b Significant mean level differences when compared with Thailand

^c Significant mean level differences when compared with Sweden

^d Significant mean level differences when compared with the U.S.

^e Significant mean level differences when compared with Colombia

Table 13

Results of Model Comparisons for Model Testing the Non-unique Association between Maternal Psychological Control and Adolescents' Physical Aggression

Path Constrained	χ^2	$\chi^2_{\text{difference}}$ value	$df_{\text{difference}}$	$\chi^2_{\text{difference}}$ <i>p</i> value	Comparison Model
Fully Free (Model 1.1)	300.88	-	-	-	-
<i>Set 1 (Model 1.2)</i>	350.92	53.65	44	.15	Model 1.1
MCon T2 on MCon T1					
MCon T3 on MCon T2					
Agg T3 on Agg T2					
Agg T2 on MCon T1					
Agg T1 on Pub T1					
Agg T1 on Age T1					
Agg T1 on NChild					
MCon T1 on Pub T1					
MCon T1 on Sex					
MCon T1 on NChild					
MCon T3 on Age T3					
<i>Set 2 (Model 1.3)</i>	375.49	24.69	20	.21	Model 1.2
MCon T2 on Agg T1					
MCon T3 on Agg T2					
Agg T1 on Sex					
Agg T1 on SES					
Agg T3 on Age T3					
<i>Set 3 (Model 1.4)</i>	429.86	54.50**	32	.01	Model 1.3
Agg T2 on Agg T1 (Model 1.5)	376.63	3.50	4	.48	Model 1.3
Agg T3 on MCon T2 (Model 1.6)	381.52	4.72	4	.32	Model 1.5
MCon T1 on Age T1 (Model 1.7)	386.85	5.25	4	.26	Model 1.6
MCon T1 on SES (Model 1.8)	401.35	17.06**	4	.002	Model 1.7
Agg T2 on Pub T2 (Model 1.9)	392.83	5.96	4	.20	Model 1.7
MCon T2 on Pub T2 (Model 1.10)	399.05	6.24	4	.18	Model 1.9
Agg T3 on Pub T3 (Model 1.11)	409.18	11.21*	4	.02	Model 1.10
MCon T3 on Pub T3 (Model 1.12)	404.82	5.74	4	.22	Model 1.10

Note. MCon = maternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3.

Country was used as the grouping variable. Sets of path(s) were constrained from Set 1 to Set 3. When constraining a set of paths significantly worsen the model fit, the individual paths in the set was constrained one at a time to determine which path needed to be released. The released path was bolded. The paths that significantly worsen the model fit were freely estimated in the following models. The last column indicated the compared model from which the *Chi*-square difference test was computed.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 14*Model Results of Non-unique Association between Maternal Psychological Control and Adolescents' Physical Aggression*

Outcome Predictors	Maternal Psychological Control			Adolescents' Physical Aggression		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
<i>Key Variables</i>						
MCon T1	-	.68***	-	-	.03	-
MCon T2	-	-	.66***	-	-	.01
Agg T1	-	.09	-	-	.43***	-
Agg T2	-	-	-.03	-	-	.37***
<i>Control Variables</i>						
Pub T1	.004	-	-	.02	-	-
Age T1	-.02	-	-	-.01	-	-
Sex	-.001	-	-	.02	-	-
SES	-.14***/- .10**/- .07/- .19***/- .29**** ^a			-	-	-
NChild	.01	-	-	-.01	-	-
Pub T2	-	-.04	-	-	.02	-
Pub T3	-	-	-.07*	-	-	-.06**/- .07/- .03/- .03/- .18*** ^a
Age T3	-	-	-.03	-	-	.02*

Note. MCon = maternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3.

Unstandardized coefficients were presented. Standardized coefficients were not presented because the path constraints did not apply for standardized estimates.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 15*RI-CLPM Results of Non-unique Associations between Maternal Psychological Control and Adolescents' Physical Aggression*

Predictors \ Outcome	Maternal Psychological Control		Paternal Psychological Control		Adolescents' Physical Aggression	
	Time 2	Time 3	Time 2	Time 3	Time 2	Time 3
MCon T1	.30*(.28**)	-	-	-	.09(.15)	-
Agg T1	.11(.06)	-	-	-	.25*(.25*)	-
MCon T2	-	.39***(.39***)	-	-	-	.03(.06)
Agg T2	-	.03(.01)	-	-	-	.24**(.32**)

Notes. MCon = maternal psychological control; Agg = adolescents' physical aggression; T1= Time 1; T2 = Time 2; T3 = Time 3.

Unstandardized coefficients were presented, and standardized coefficients were presented in the parentheses.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 16

Results of Model Comparisons for Model Testing the Non-unique Associations between Paternal Psychological Control and Adolescents' Physical Aggression

Path Constrained	χ^2	$\chi^2_{\text{difference}}$ value	$df_{\text{difference}}$	$\chi^2_{\text{difference}}$ p value	Comparison Model
Fully Free (Model 2.1)	331.01	-	-	-	-
<i>Set 1 (Model 2.2)</i>	393.82	65.67	40	.01	Model 2.1
FCon T2 on FCon T1 (Model 2.3)	343.08	13.78**	4	.01	Model 2.1
FCon T3 on FCon T2 (Model 2.4)	335.96	5.28	4	.26	Model 2.1
Agg T3 on Agg T2 (Model 2.5)	355.14	11.31*	4	.02	Model 2.4
FCon T3 on Agg T2 (Model 2.6)	339.17	3.07	4	.55	Model 2.4
Agg T2 on FCon T1 (Model 2.7)	345.06	5.53	4	.24	Model 2.6
Agg T3 on FCon T2 (Model 2.8)	349.24	4.78	4	.31	Model 2.7
Agg T1 on Pub T1 (Model 2.9)	352.67	3.53	4	.47	Model 2.8
Agg T1 on Age T1 (Model 2.10)	356.22	.76	4	.94	Model 2.9
Agg T1 on NChild (Model 2.11)	358.20	1.32	4	.86	Model 2.10
Agg T3 on Age T3 (Model 2.12)	359.29	1.63	4	.80	Model 2.11
<i>Set 2 (Model 2.13)</i>	369.65	10.41	8	.24	Model 2.12
Agg T1 on Sex					
Agg T1 on SES					
<i>Set 3 (Model 2.14)</i>	451.72	81.95**	48	.002	Model 2.13
Agg T2 on Agg T1 (Model 2.15)	368.87	3.22	4	.52	Model 2.12
FCon T2 on Agg T1 (Model 2.16)	372.89	3.90	4	.42	Model 2.15
FCon T1 on Pub T1 (Model 2.17)	381.55	8.25	4	.08	Model 2.16
FCon T1 on Age T1 (Model 2.18)	389.04	7.39	4	.12	Model 2.17
FCon T1 on Sex (Model 2.19)	397.52	8.49	4	.08	Model 2.18
FCon T1 on SES (Model 2.20)	412.45	15.03**	4	.01	Model 2.19
FCon T1 on NChild (Model 2.21)	401.67	4.27	4	.37	Model 2.19
Agg T2 on Pub T2 (Model 2.22)	407.92	6.14	4	.19	Model 2.21
FCon T2 on Pub T2 (Model 2.23)	418.47	10.85*	4	.03	Model 2.22
Agg T3 on Pub T3 (Model 2.24)	418.39	11.67*	4	.02	Model 2.22
FCon T3 on Pub T3 (Model 2.25)	410.84	2.36	4	.67	Model 2.22
FCon T3 on Age T3 (Model 2.26)	415.71	5.24	4	.26	Model 2.25

Note. FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1 = Time 1; T2 = Time 2; T3 = Time 3.

Country was used as the grouping variable. Sets of path(s) were constrained from Set 1 to Set 3. When constraining a set of paths significantly worsen the model fit, the individual paths in the set was constrained one at a time to determine which path needed to be

released. The released path was bolded. The paths that significantly worsen the model fit were freely estimated in the following models. The last column indicated the compared model from which the *Chi*-square difference test was computed.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 17

Model Results of Non-unique Association between Paternal Psychological Control and Adolescents' Physical Aggression

Predictors \ Outcome	Paternal Psychological Control			Adolescents' Physical Aggression		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
<i>Key Variables</i>						
FCon T1	-	.61***/.59***/.25*/.72 ***/.60*** ^a	-	-	.01	-
FCon T2	-	-	.67***	-	-	-.01
Agg T1	-	.18*	-	-	.44***	-
Agg T2	-	-	-.06	-	-	.42***/.70***/.68**/ .25***/.33*** ^a
<i>Control Variables</i>						
Pub T1	.002	-	-	.02	-	-
Age T1	-.05	-	-	-.01	-	-
Sex	.02	-	-	.02	-	-
SES	-.08/-.14**/.01/ -.24***/-.15*** ^a	-	-	-.01	-	-
NChild	.004	-	-	-.01	-	-
Pub T2	-	.06/-.07/.10/-.07/-.26** ^a	-	-	.02	-
Pub T3	-	-	-.14***	-	-	-.05*/-.03/-.02/-.04** /-.18*** ^a
Age T3	-	-	.02	-	-	.02*

Note. FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3.

Unstandardized coefficients were presented. Standardized coefficients were not presented because the path constraints did not apply for standardized estimates.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 18*RI-CLPM Results of Non-unique between Paternal Psychological Control and Adolescents' Physical Aggression*

Predictors	Outcome	Maternal Psychological Control		Paternal Psychological Control		Adolescents' Physical Aggression	
		Time 2	Time 3	Time 2	Time 3	Time 2	Time 3
FCon T1		-	-	.004(.003)	-	.04(.06)	-
Agg T1		-	-	.39*(.22*)	-	.25*(.25*)	-
FCon T2		-	-	-	.37***(.34***)	-	-.01(-.02)
Agg T2		-	-	-	-.06(-.03)	-	.25**(.32**)

Notes. FCon = paternal psychological control; Agg = adolescents' physical aggression; T1= Time 1; T2 = Time 2; T3 = Time 3. Unstandardized coefficients were presented, and standardized coefficients were presented in the parentheses.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 19

Results of Model Comparisons for Model Testing the Unique Associations between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression

Path Constrained	χ^2	χ^2 difference value	df difference	χ^2 difference p value	Comparison Model
Fully Free (Model 3.1)	596.82	-	-	-	-
<i>Set 1 (Model 3.2)</i>	679.44	88.99	72	.09	Model 3.1
FCon T2 on FCon T1					
FCon T3 on FCon T2					
MCon T2 on MCon T1					
MCon T3 on MCon T2					
Agg T3 on Agg T2					
FCon T3 on Agg T2					
Agg T2 on FCon T1					
Agg T3 on FCon T2					
Agg T2 on MCon T1					
Agg T3 on MCon T2					
Agg T1 on Pub T1					
Agg T1 on Age T1					
Agg T1 on NChild					
MCon T1 on Pub T1					
MCon T1 on Sex					
MCon T1 on NChild					
Agg T2 on Pub T2					
MCon T3 on Age T3					
<i>Set 2 (Model 3.3)</i>	703.36	23.94	19	.09	Model 3.2
MCon T2 on Agg T1					
MCon T3 on Agg T2					
Agg T1 on Sex					
Agg T1 on SES					
<i>Set 3 (Model 3.4)</i>	821.51	117.76***	64	< .001	Model 3.3
Agg T2 on Agg T1 (Model 3.5)	703.72	3.60	4	.46	Model 3.3
FCon T2 on Agg T1 (Model 3.6)	710.28	6.53	4	.16	Model 3.5
MCon T1 on Age T1 (Model 3.7)	715.36	4.98	4	.29	Model 3.6
MCon T1 on SES (Model 3.8)	729.67	16.02**	4	.003	Model 3.7
FCon T1 on Pub T1 (Model 3.9)	724.30	8.62	4	.07	Model 3.7
FCon T1 on Age T1 (Model 3.10)	734.94	10.52*	4	.03	Model 3.9
FCon T1 on Sex (Model 3.11)	734.34	9.74*	4	.05	Model 3.9
FCon T1 on SES (Model 3.12)	741.64	18.04***	4	.001	Model 3.9
FCon T1 on NChild (Model 3.13)	730.58	6.37	4	.17	Model 3.9
MCon T2 on Pub T2 (Model 3.14)	737.12	6.52	4	.16	Model 3.13
FCon T2 on Pub T2 (Model 3.15)	749.81	12.69**	4	.01	Model 3.14
Agg T3 on Pub T3 (Model 3.16)	746.42	9.68*	4	.05	Model 3.14
Agg T3 on Age T3 (Model 3.17)	737.82	2.20	4	.70	Model 3.14
MCon T3 on Pub T3 (Model 3.18)	743.60	5.70	4	.22	Model 3.17
FCon T3 on Pub T3 (Model 3.19)	746.49	2.36	4	.67	Model 3.18
FCon T3 on Age T3 (Model 3.20)	751.76	5.47	4	.24	Model 3.19

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3.

Country was used as the grouping variable. Sets of path(s) were constrained from Set 1 to Set 3. When constraining a set of paths significantly worsen the model fit, the individual paths in the set was constrained one at a time to determine which path needed to be released. The released path was bolded. The paths that significantly worsen the model fit were freely estimated in the following models. The last column indicated the compared model from which the *Chi*-square difference test was computed.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 20*Model Results of Unique Association between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression*

Outcome Predictors	Maternal Psychological Control			Paternal Psychological Control			Adolescents' Physical Aggression		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
MCon T1	-	.65***	-	-	-	-	-	.04	-
MCon T2	-	-	.65***	-	-	-	-	-	.003
FCon T1	-	-	-	-	.58***	-	-	-.01	-
FCon T2	-	-	-	-	-	.67***	-	-	-.02
Agg T1	-	.08	-	-	.22*	-	-	.43***	-
Agg T2	-	-	-.01	-	-	-.04	-	-	.37***
<i>Control Variables</i>									
Pub T1	-.004	-	-	-.01	-	-	.02	-	-
Age T1	-.01	-	-	.09/-.02/-.37*/-.09*/-.08 ^a	-	-	-.01	-	-
Sex	-.01	-	-	.16*/.04/.09/-.10/-.07 ^a	-	-	.02	-	-
SES	-.14***/-.10**/-.08/-.19***/-.29*** ^a	-	-	-.08/-.13**/.02/-.24***/-.14**	-	-	-.01	-	-
NChild	.01	-	-	-.001	-	-	-.01	-	-
Pub T2	-	-.04	-	-	.06/-.08/.16*/-.10/-.22**	-	-	.02	-
Pub T3	-	-	-.07*	-	-	-	-.14***	-	-.06**/-.07/-.02/ -.04*/-.18***
Age T3	-	-	-.03	-	-	.02	-	-	.02*

Note. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; Pub = puberty; NChild = number of children in the family; T1= Time 1; T2 = Time 2; T3 = Time 3.

Unstandardized coefficients were presented. Standardized coefficients were not presented because the path constraints did not apply for standardized estimates.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 21

RI-CLPM Results of the Unique Associations between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression

Predictors \ Outcome	Maternal Psychological Control		Paternal Psychological Control		Adolescents' Physical Aggression	
	Time 2	Time 3	Time 2	Time 3	Time 2	Time 3
MCon T1	.28**(.26**)	-	-	-	.08(.14)	-
FCon T1	-	-	.09(.09)	-	.03(.05)	-
Agg T1	.09(.05)	-	.33(.19)	-	.24*(.23*)	-
MCon T2	-	.36***(.36***)	-	-	-	.02(.05)
FCon T2	-	-	-	.39***(.37***)	-	-.01(-.03)
Agg T2	-	.03(.01)	-	-.05(-.03)	-	.24**(.32**)

Notes. MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression; T1= Time 1; T2 = Time 2; T3 = Time 3.

Unstandardized coefficients were presented, and standardized coefficients were presented in the parentheses.

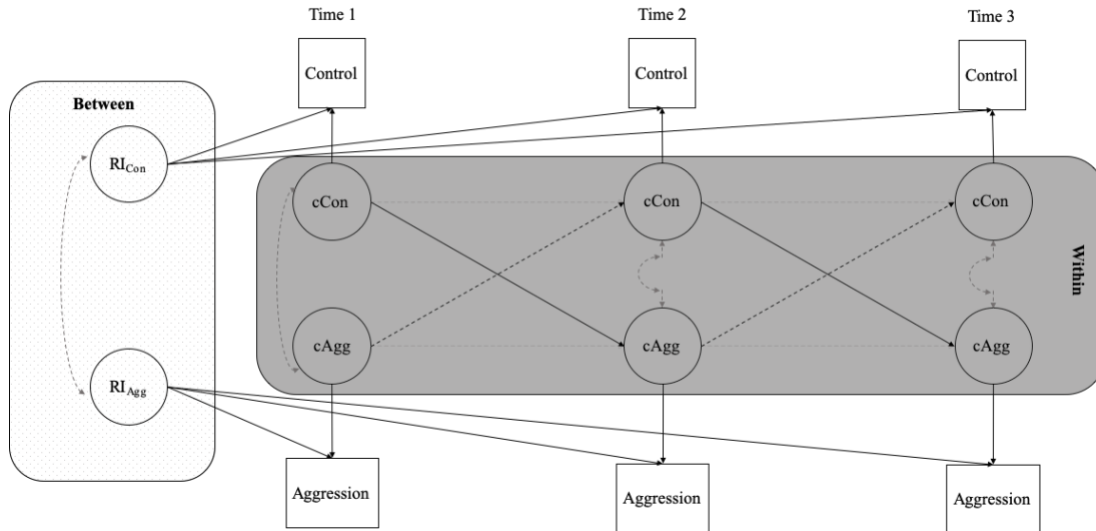
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

APPENDIX B

FIGURES

Figure 1

A RI-CLPM Illustration of Longitudinal and Reciprocal Prediction between Parental Psychological Control and Adolescents' Physical Aggression

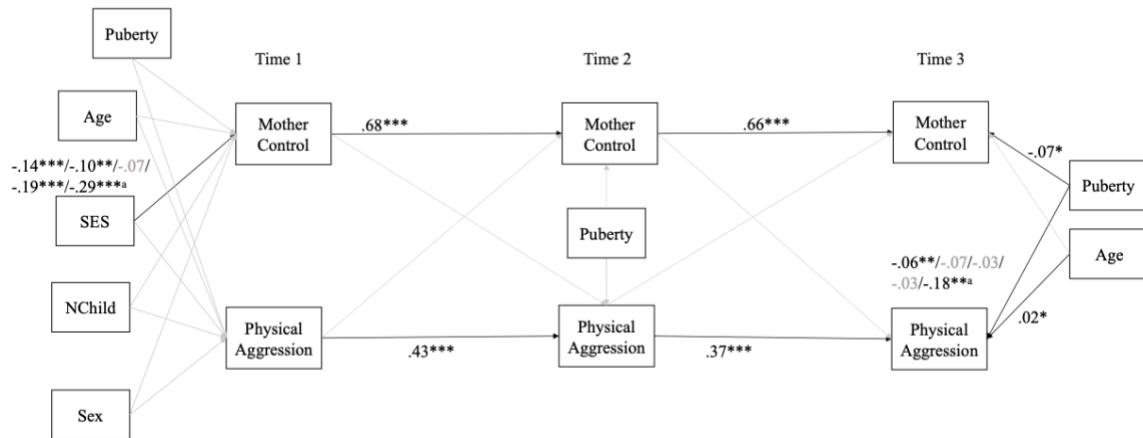


Note. Within the grey rounded rectangle, paths from parental behavior to adolescents' aggression are presented in solid lines, paths from adolescents' aggression to parental behavior are presented in dashed lines. Autoregressive paths, covariances between the within-person centered variables, and the residual covariances of the within-person centered variables are presented in grey dashed lines. The grey rounded rectangle models the within-person differences. The dotted rounded rectangle models the between-person differences. Squares represent observed variables. Circles represent latent variables. RI = random intercepts; Con = parental psychological control; Agg = adolescents' physical aggression; cCon = within-person centered parental psychological control; cAgg = within-person centered physical aggression.

Figure 2

Model Results of Longitudinal and Bidirectional Prediction between Maternal

Psychological Control and Adolescents' Physical Aggression



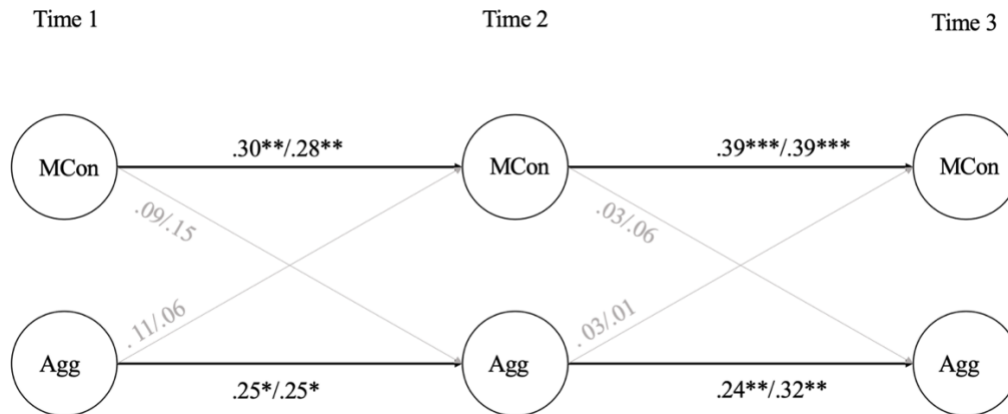
Note. Grey lines indicated non-significant predictions, the specific coefficients estimates were not presented for clarity. Unless specified, all paths were constrained to be equal across countries. The correlations and residual variances between variables were not presented for clarity.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia, numbers in grey represented non-significant coefficients.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figure 3

RI-CLPM Results of Longitudinal and Bidirectional Prediction between Maternal Psychological Control and Adolescents' Physical Aggression



Note. Unstandardized coefficients were presented first and standardized coefficients were presented after the slash. Grey lines indicated non-significant predictions. Note that many parts of this model are not depicted for clarity. See Figure 1 for an example of the full model specification.

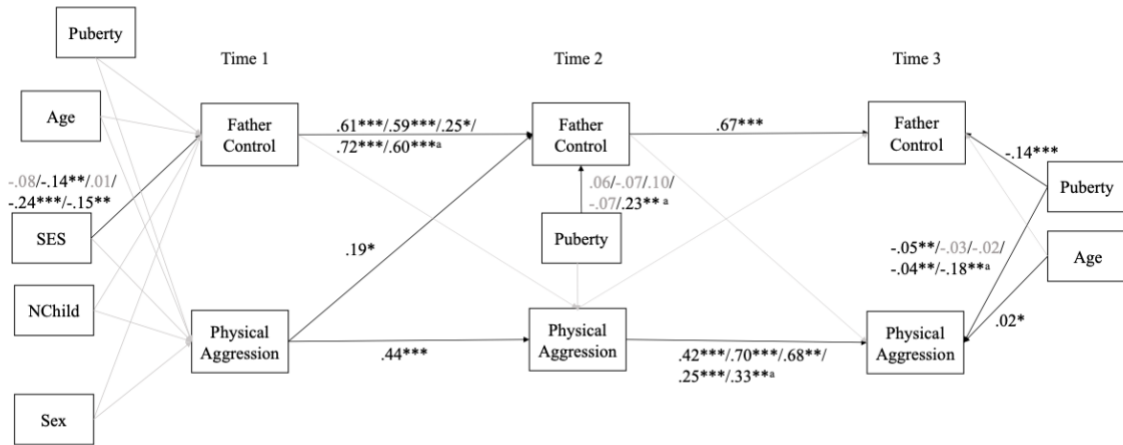
MCon = maternal psychological control; Agg = adolescents' physical aggression.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figure 4

Model Results of Longitudinal and Bidirectional Prediction between Paternal

Psychological Control and Adolescents' Physical Aggression



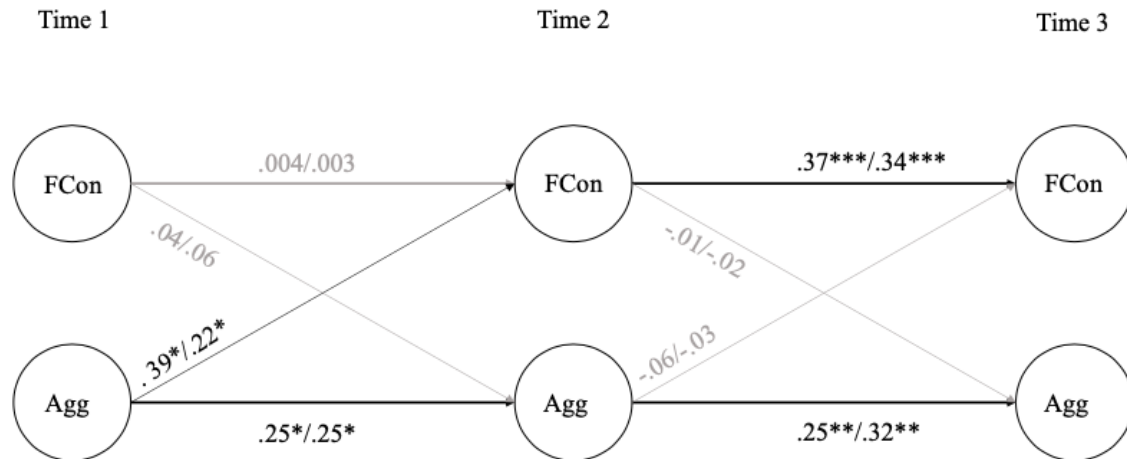
Note. Unstandardized coefficients were presented. Grey lines indicated non-significant predictions, the specific coefficients estimates were not presented for clarity. Unless specified, all paths were constrained to be equal across countries. The correlations and residual variances between variables were not presented for clarity.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia, numbers in grey represented non-significant coefficients.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figure 5

RI-CLPM Results of Longitudinal and Bidirectional Prediction between Paternal Psychological Control and Adolescents' Physical Aggression



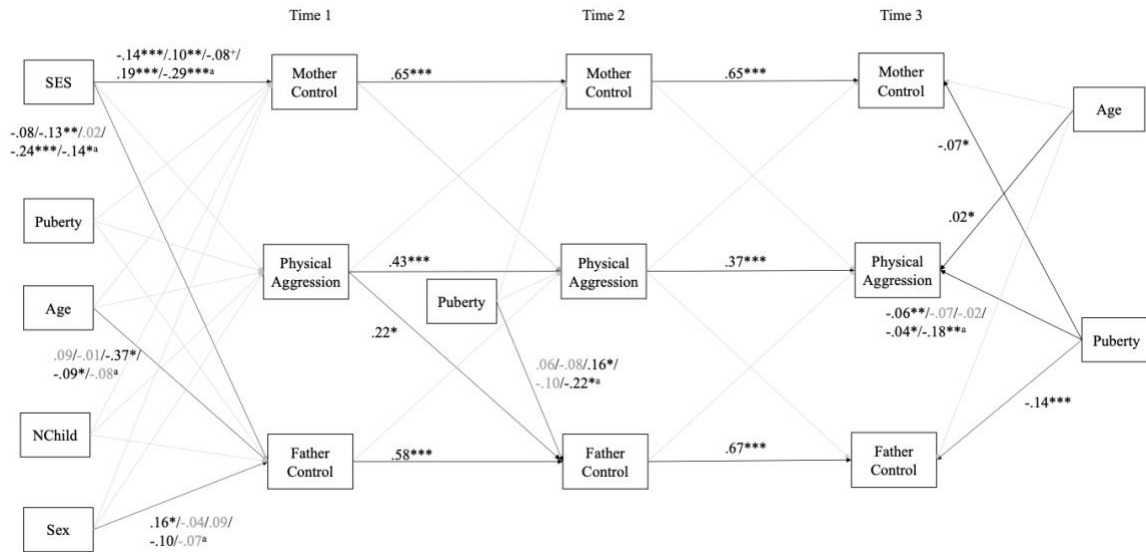
Note. Unstandardized coefficients were presented first and standardized coefficients were presented after the slash. Grey lines indicated non-significant predictions. Note that many parts of this model are not depicted for clarity. See Figure 1 for an example of the full model specification.

FCon = paternal psychological control; Agg = adolescents' physical aggression.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figure 6

Model Results of Longitudinal and Bidirectional Prediction between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression



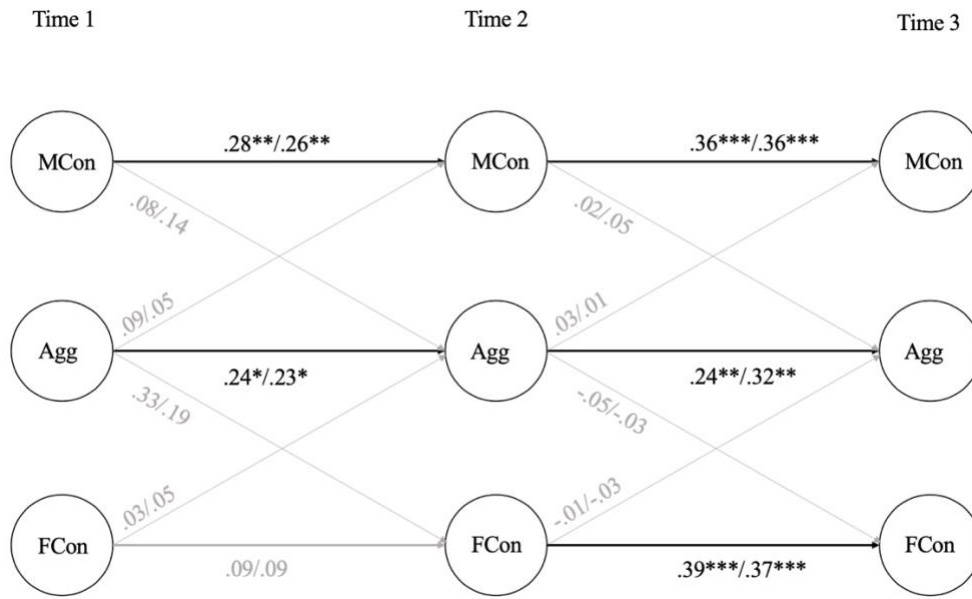
Note. Unstandardized coefficients were presented. Grey lines indicated non-significant predictions, the specific coefficients estimates were not presented for clarity. Unless specified, all paths were constrained to be equal across countries. The correlations and residual variances between concurrent variables were not presented for clarity.

^a Coefficients for Italy/Thailand/Sweden/the U.S./Colombia, numbers in grey represented non-significant coefficients.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figure 7

RI-CLPM Results of Longitudinal and Bidirectional Prediction between Maternal and Paternal Psychological Control and Adolescents' Physical Aggression



Note. Unstandardized coefficients were presented first and standardized coefficients were presented after the slash. Grey lines indicated non-significant predictions. Note that many parts of this model are not depicted for clarity. See Figure 1 for an example of the full model specification.

MCon = maternal psychological control; FCon = paternal psychological control; Agg = adolescents' physical aggression.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.