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# Examining effortful control as a moderator in the association of negative parenting and aggression among Hong Kong Chinese preschoolers

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## ABSTRACT

*Research Findings:* This study examined whether physical coercion and psychological control by mothers and fathers can influence preschoolers' use of physical and relational aggression, and whether the relations are moderated by children's effortful control in a Hong Kong Chinese sample. Data were collected from a sample of 168 children (88 girls;  $M = 60.97$  months,  $SD = 5.51$  months) and their parents twice, six months apart. At Time 1, mothers and fathers reported on their spouse's, as well as their own use of physical coercion and psychological control, and a puzzle box task was administered to assess child effortful control. At Time 2, mothers, fathers, and teachers completed questionnaires to assess child physical and relational aggression. Results show that mothers' physical coercion was associated with child physical and relational aggression. In contrast, fathers' physical coercion was significantly related to child physical aggression but its relation with child relational aggression was not statistically significant, and both these two associations were moderated by effortful control. *Practice or Policy:* These results suggest that general intervention efforts are needed to prevent aggression among children of physically coercive parents, and particularly among children with low effortful control and physically coercive fathers.

## Introduction

Prior research has demonstrated aggression to be a common type of behavioral problem in peer relationships that increases in frequency and intensity during the early childhood period (Basten et al., 2016; Crick et al., 1997; Furniss et al., 2006; Tremblay et al., 2018). However, a significant amount of research attention has been devoted to physical aggression. Researchers have suggested the need to generate knowledge about the antecedents or developmental precursors of another common form of aggression in young children, namely relational aggression, and have often used it to serve as a point of contrast with physical aggression (Crick et al., 1999; Nelson & Hart, 2018). Physical aggression refers to threats of harm or harm through physical means (e.g., pushing and hitting), and relational aggression refers to harm or threatening to harm for achieving a desired goal through the manipulation of relationships with peers (e.g., friendship withdrawal threats; Crick & Grotpeter, 1995). While physical and relational aggression tend to be highly correlated with each other (Lau & Williams, 2021; Poland et al., 2016), prior research have provided evidence that relational aggression can be reliably distinguished from physical aggression in young children and that relational aggression is found to contribute unique information in the prediction of

concurrent and future social maladjustment, beyond that predicted by physical aggression (Crick et al., 1997, 2006). Learning to negotiate with peers is a vital developmental skill that is found to predict future social adjustment. While both physical and relational aggression are related to child maladjustment (Ettetal & Ladd, 2015), studies have found that physically aggressive children tend to display more externalizing behaviors such as impulsivity, and that relationally aggressive children are more likely to show higher levels of internalizing problems such as anxiety and depression (Card et al., 2008; Marshall et al., 2015; Swit & Slater, 2021). Because physical aggression and relational aggression differ in their form and associations with child maladjustment, it is necessary to study both types of common childhood aggression for prevention and intervention purposes. Moreover, in view of young children's susceptibility to parental influence (Nelson et al., 2013), increased numbers of researchers have investigated the influences of parenting, especially negative parenting, on the use of physical and relational aggression among preschool children.

Negative parenting is a complex construct characterized by coercion, hostility, and excessive control (Barber, 1996; Parent & Forehand, 2017). This study focuses on physical coercion and psychological control as two forms of negative parenting. Numerous studies have examined the influence of negative parenting on child outcomes and evidence has shown that children are at increasing risk of externalizing problems (Barber, 2002; Nelson et al., 2006). If parents often use physical coercion or psychological control in parent-child interactions, children may learn coercive and relationally manipulative skills from their parents through modeling and later apply those skills to the peer context by using aggression (Bandura, 1973). Children may also generalize the feeling of hostility from their coercive parent-child relationships to peer relationships and display a high level of aggression (Ladd & Pettit, 2002). In addition, children with a predisposition toward difficult temperament, such as low effortful control, may experience difficulties regulating their behaviors and increase their likelihood of being affected by negative parenting (Belsky, 2005). This study endeavors to explain the means by which negative parenting, specifically physical coercion and psychological control, is associated with children's use of aggression, namely physical aggression and relational aggression, and how the relations may be moderated by child effortful control in a Hong Kong Chinese preschool sample.

### ***Negative Parenting and Child Aggression***

Negative parenting is characterized by hostile, constraining, and controlling parent-child interactions. While parents who use a high level of physical coercion interact with their children by physically intimidating means (e.g., spanking), parents who are high in psychological control engage in a range of practices to manipulate their child's thoughts, emotions, and attachments to them (e.g., shaming and love withdrawal; Aunola & Nurmi, 2005; Barber & Buehler, 1996). Physical coercion and psychological control are harmful to a child's development of autonomy and hinder the process of individuation and hence, have a robust link with negative outcomes in children, including aggression (Lau, 2019; Li et al., 2011; McNamara et al., 2010; Nelson et al., 2006). According to social learning theory, children with coercive and controlling parents are exposed to strong, harsh, conflictual, and relationally manipulative parenting behaviors, which may contribute to children's aggression by modeling ways to manipulate and control others (Bandura, 1973). Parents' coercion and control may also increase children's feelings of insecurity and hostility and in turn, children may develop hostility toward their peers and attempt to use aggression to harm others (Ladd & Pettit, 2002). However, the findings have not been consistent. For instance, using a largely Caucasian, U.S. preschool sample, Casas et al. (2006) found that both mothers' and fathers' psychological control was related to increased physical and relational aggression in girls. On the other hand, mothers' psychological control was associated with increased physical and relational aggression in boys, while fathers' psychological control was related to decreased physical and relational aggression in boys (Casas et al., 2006). However, using a Russian preschool sample, Hart et al. (1998) found that while fathers' physical coercion was associated with boys' overt

aggression, mothers' psychological control and physical coercion were linked to boys' overt aggression and girls' relational aggression respectively. Finally, in another study using a Russian preschool sample, psychological control significantly predicted aggression in same-gender parent-child dyads (Nelson et al., 2013). The inconsistent findings call for more studies on this topic in diverse cultural contexts.

The ecological systems theory proposed by Bronfenbrenner (1979) organizes contexts of development into five levels of external influence and equates the role of parental influence as a microsystem within a macrosystem which includes cultural values. The theory emphasizes that parenting behavior that would be regarded as negative in one culture may be considered normative in another cultural context. For instance, the effects of punishment were suggested to depend on the degree of acceptance of parental control in a culture (Lansford et al., 2005). In traditional Chinese culture, parents do not value the granting of autonomy; this belief may manifest in the family as the parental use of physical coercion or psychological control as their expression of "guan" to train or govern children (Chan et al., 2009; Chao, 1994). However, as a former British colony, Hong Kong is well-known for its mixture of traditional Confucian culture and Western culture. As such, contemporary parents are considered more authoritative in their parenting and it is expected that the process by which children respond to negative parenting would be the same among the Chinese. In fact, a few studies have confirmed that physical coercion and psychological control had the same detrimental effects on Chinese children as it does in the West (Chang et al., 2003; Lau, 2019). In a recent cross-sectional study conducted in Hong Kong, both fathers' and mothers' physical coercion were found to correlate with children's physical and relational aggression (Lau, 2019). In another study, Nelson et al. (2006) found that physical coercion primarily predicted aggression in boys, whereas psychological control was linked to aggression in Chinese young girls. The present study did not intend to make cross-cultural comparison. Instead, because of the limited number of studies using non-Western samples and the generally mixed findings in this area, a Hong Kong Chinese sample was used with the intention to add value to the literature to enhance our understanding of the above processes in socialization.

### ***Effortful Control as a Moderator***

While emerging evidence from prior studies on parenting and aggression in both Western and non-Western countries has not yielded a clear picture, various researchers (Bates & Pettit, 2007; Gallagher, 2002; Rothbart & Bates, 2006; Shonkoff et al., 2012) have proposed the need to examine how parenting and child characteristics interact to influence child adjustment outcomes. Studies have looked at how parenting may moderate the relation between child characteristics and externalizing behaviors (Joseph et al., 2021; Menting et al., 2016; Schoppe-Sullivan et al., 2009). Presumably, child characteristics, may also exacerbate or buffer the consequences of negative parenting. However, most prior studies have looked at child gender as a moderator in the relations between negative parenting and child aggression. As such, the second aim of this study was to elucidate the potential effect of other child variables, namely effortful control, as a moderator in those associations. While effortful control primarily emerged from temperament research, the term effortful control is used throughout this paper as our study focuses on child persistence assessed using a behavioral measure developed in the tradition of temperamental effortful control and effortful behavioral regulation (described below).

Effortful control underlies the emergence of self-regulation, which have been linked to children's aggression (Atherton et al., 2017; Russell et al., 2003; Yaman et al., 2010). Specifically, effortful control, a temperamental trait implicated in many forms of self-regulation, is thought to be influenced by an individual's emotional reactivity. Effortful control is also thought to influence an individual's capacity to modulate behaviors and emotional responses by regulating attention, integrating information, and inhibiting or initiating actions to plan and achieve their goal-directed behaviors (Eisenberg et al., 2001,

2010; Gartstein et al., 2013; Kochanska et al., 2000; Liew, 2012; Rothbart & Bates, 2006). Effortful control typically takes longer time to emerge and becomes more sophisticated in the preschool years (Posner & Rothbart, 2000).

The influence of effortful control on children's development of physical and relational aggression is well documented in the literature (Gower & Crick, 2011; O'Toole et al., 2019; Rubin et al., 2003; Slobodskaya et al., 2020). In general, these studies find that children who are high in aggression are characterized by their impulsivity and lack of control and that the child's effortful control predicts their social behaviors and externalizing problems including aggression. Accordingly, effortful control helps children navigate social challenges and leads to better psychosocial adjustment, including lower use of aggression in challenging social situations, by deploying their attention voluntarily (Eisenberg et al., 2001, 2004; Kochanska et al., 2000; Xu et al., 2009).

Although there is a genetic basis to effortful control (Eisenberg et al., 2010; Goldsmith et al., 1997), parenting has also been associated with individual differences in effortful control (Neppl et al., 2020; Warren & Barnett, 2020). Using a sample of Chinese preschoolers, Chang et al. (2003) found that harsh parenting, including physical coercion, had a negative impact on preschoolers' emotional regulation and led to higher levels of physical aggression. However, because of the more direct role that effortful control may play in modulating emotions and behaviors for meeting specific goals in a social situation, the present study focuses on effortful control and examines its relation with child aggression and how it moderates the relation between negative parenting and child aggression.

According to the differential-susceptibility model (Belsky, 2005), some individuals may be more vulnerable to the adverse effects of negative experiences than the others. As such, it is possible that different levels of child effortful control may exacerbate or reduce the adverse impact of negative parenting behaviors and increase or decrease children's risk for externalizing problems. Specific to the present study, low effortful control may interact with negative parenting to increase the risk of using aggression in peer relationships. When parents are coercive and controlling, and there is a lack of effortful control, aggression may be particularly likely. Consistently, studies have found that children low in effortful control may experience poor modulated emotional or behavioral responses to less optimal parenting practices, whereas children who are high in effortful control are better able to regulate themselves despite parental punishment (Bates et al., 2014; Kiff et al., 2011; Morris et al., 2002).

Although the literature has increasingly focused on how effortful control interact with dimensions of parenting, only a few studies have investigated such interaction effect on child aggression specifically. As expected, Lengua (2008) found that effortful control alleviated the negative influence of mothers' physical punishment on externalizing problems including aggression. Pace et al. (2018) also found that fathers' psychological control contributed to more externalizing problems among adolescents who were low in effortful control. However, Rathert et al. (2011) found that psychological control was positively related to proactive aggression among primary school students who had a high level of effortful control. Still, Gartstein and Fagot (2003) failed to find support for the moderating effect of effortful control in the association of parental coercion and preschool children's externalizing behaviors.

To our knowledge, there is only one study that has looked at the interactive effect of negative parenting and effortful control on young children's aggression in China (Xu et al., 2009). While the study found no interactive effect between harsh parenting and effortful control on child aggression, it did find that effortful control moderated the relation between indulgent parenting and proactive aggression. Specifically, it was found that children with low or moderate levels of effortful control showed increased aggression when their parents were high in parental indulgence. Nevertheless, Xu et al. (2009)'s study was limited by their cross-sectional design, the lack of examination of psychological control as another subtype of harsh/negative parenting, and the lack of investigation of different

forms of aggression. The present study fills the gaps in the literature by testing the longitudinal interaction effect of physical coercion/psychological control and effortful control on physical and relational aggression among Hong Kong Chinese preschoolers.

## The Present Study

To establish the triangulations and the reliability of the data obtained, a two-wave longitudinal study using mixed methods involving multiple informants was conducted to examine the longitudinal associations between parental physical coercion and psychological control and child aggression as well as the moderating effect of effortful control in such links. In particular, fathers are included in this study because the role of fathers in influencing child outcomes has generally been overlooked in the literature (Lamb, 2004). Although fathers are generally perceived to play a less significant role than mothers in the socialization of children's behaviors, recent research supports the salience of fathering in the parenting and socialization of children in both Western and Eastern countries (e.g., Brumariu & Kerns, 2010; Lau, 2019; Di Maggio & Zappulla, 2014; Xing et al., 2017). For example, some studies suggest that fathers play an important role on children's internalizing and externalizing behaviors (Buchanan, 2014; Herbert et al., 2013; Rinaldi & Howe, 2012). Yet, other research studies have found no significant association among them (Keown, 2011; Xing et al., 2017). This study aims to bring greater clarity to the literature.

Based on the literature and theories reviewed, this study hypothesizes that higher Time 1 parental physical coercion and psychological control and lower Time 1 effortful control will predict higher Time 2 child physical aggression and relational aggression. Based on the differential-susceptibility model (Belsky, 2005) suggesting that the effortful control of a child is likely to engender a different reaction to the style of parenting, this study also hypothesizes that child effortful control will moderate the relations between physical coercion and psychological control and child physical aggression and relational aggression. Specifically, it is hypothesized that physical coercion and psychological control would longitudinally predict child physical and relational aggression, especially for children characterized by low effortful control.

## Method

### Participants

This study was part of a larger project investigating Chinese parenting and children's social development. Participants in this study were children aged four to six years attending lower (K2) or upper kindergarten (K3) classes from five kindergartens in Hong Kong. A total of 17 class teachers from five kindergartens provided informed consent for participation. Invitation letters were then sent to all families in those classes and 175 families provided consent to participate. However, seven of them were excluded since their children were diagnosed with special educational needs related to social functioning. Hence, the final sample included 168 children ( $M = 60.97$  months;  $SD = 5.51$  months). Of the 168 children, 35 of them were K2 students (18 girls;  $M = 52.7$  months,  $SD = 3.82$  months), and the remaining 133 children were attending K3 classes (70 girls;  $M = 63.1$  months,  $SD = 3.47$  months).

The participating mothers (158 mothers) and fathers (154 fathers) were on average 35.6 ( $SD = 4.93$ ) years old and 39.9 ( $SD = 6.12$ ) years old respectively. The participating families had an average of 1.87 ( $SD = .67$ ) children in their household. Mothers were most frequently reported as the main caregiver in the family (67.1%), followed by grandparents (17.4%) and domestic helper (8.1%). The socio-economic status of the sample was mostly middle class. Specifically, the median education level was secondary education for mothers (58.9%) and for fathers (55.4%), which was also the median education level of the population in 2016 (Hong Kong Census and Statistics Department, 2016). The remaining parents completed primary school or below (mothers: 0.6%, fathers: 2.5%), tertiary

education or above (mothers: 38.6%, fathers: 40.2%), or others (e.g., vocational degree training; mothers: 1.8%, 1.9%). Most of the mothers were not employed (50%), whereas 90.6% of fathers were full-time employed. The average monthly household income was HK\$29,450 ( $SD = 18,713$ ) (US \$1 = HK\$7.78), which is higher than the median monthly household income of Hong Kong families (HK\$24,890; Hong Kong Census and Statistics Department, 2016).

### **Procedure**

A two-wave longitudinal design was employed. Time 1 data collection was held in November and December 2017, while Time 2 data collection was held in May and June 2018. The interval between the two waves of data collection was approximately six months. Tokens of appreciation at the value of HKD\$50 (U.S.\$6.43) were offered to the families at each time point. At Time 1, 158 mothers and 154 fathers completed the questionnaires, providing demographic information as well as reporting on their own parenting behaviors and that of their spouses. The parents were instructed to complete the questionnaire independently. At the same time, research assistants conducted the child assessment of effortful control with the participating children at the kindergarten. Six children were absent on the day of the assessment and so only 162 children completed the effortful control task. At Time 2 only one boy dropped out of the study because of school transfer, and all participating teachers along with 152 mothers, and 148 fathers reported on children's aggression. Excluding the missing cases above, there were less than 1% of missing item for each question item. Results from Little (1988)'s test of Missing Completely at Random (MCAR) test suggested that the data were missing completely at random: Chi-Square = 52.23,  $DF = 630$ ,  $Sig. = 1.00$ .

### **Measures**

The parenting items, namely physical coercion and psychological control, were adapted and developed based on the responses obtained from parent interviews of the larger study. Specifically, among the five participating kindergartens in this study, one kindergarten in each of the three strata developed based on the median monthly household income of the districts in Hong Kong were selected. Among three participating kindergartens, two children from upper (K3), lower (K2) and nursery (K1) kindergarten classes (K1: three girls and three boys; K2: two girls and four boys; K3: two girls and four boys) were randomly selected to invite their parent to attend an individual interview (Stage 1). 18 parents (17 mothers) participated in the individual interviews held in their children's kindergarten in late May or early July 2017. Parents who participated in the individual interviews were excluded from the study in Stage 2 to avoid any potential biases (e.g., parents may have increased awareness of negative parenting behaviors in general and the nature of this study and thus, may respond to the questionnaire items differently than parents who did not participate in the interviews). During the interviews, four hypothetical vignettes involving parents' use of coercion (physical coercion and psychological control) in response to non-desired child behaviors were presented. After listening to the interviewer reading each vignette, parents were invited to describe situations during the previous month when they used or observed others using those negative parenting behaviors. They were also invited to provide examples of things they did or said using physical coercion and psychological control. All interviews were around 30 minutes in duration and were audiotaped.

The present study followed the procedures used in a prior study in which a Chinese scale of parental behaviors was developed (Lau et al., 2012). Specifically, examples of physically coercive and psychologically controlling parenting behaviors repeatedly identified from the interview responses were used to select and adapt the existing items developed based on Western samples. For example, for behaviors that are commonly reported by parents and similar in nature, we considered if we can match them with the existing items and whether adaptation of the wordings was needed. The interview responses were also used to identify negative parenting behaviors that may be culturally specific for develop new

items for use in the Chinese cultural context. For commonly described behaviors that cannot be matched with the existing items or for items that were not mentioned in the interviews, the respective items were added or removed from the list of items.

Four scales were selected for the adaptation and development of items. In particular, the physical coercion scale from Robinson et al. (2001) was selected because it was widely used by cross-cultural researchers in studies of parental physical coercion. On the other hand, three psychological control scales (Nelson et al., 2013; Olsen et al., 2002; Shek, 2006) with different dimensions of psychological control were selected in order to capture the multidimensional nature of the construct. While the items assessing physical coercion were considered culturally appropriate and were not modified after a careful review and comparison with the interview responses, the items of psychological control were adapted as described below. All items were forward- and back-translated by the first author and a research assistant who are bilingual in English and Chinese.

### **Physical Coercion**

Self-report and spousal report of physical coercion were assessed using the four-item physical coercion dimension of the Parenting Style and Dimensions Questionnaire – Short Version (PSDQ – Short Version; Robinson et al., 2001; e.g., “Spank when our child is disobedient”). Each item was rated on a five-point scale (1 = *never*; 5 = *always*). The internal consistencies were high in this study (Self-report: mother = .74, father = .80; Spouse-report: mother = .87, father = .84). The four items were averaged and a composite score for each parent was created to minimize reporting biases by summing the standardized scores of self- and spouse-reports, with higher scores indicating higher frequency on the use of physical coercion in parenting.

### **Psychological Control**

Self-report and spousal report of psychological control were obtained using a modified version of the 16-item Psychological Control Scale adapted from measures of psychological control administered in the Western and Chinese contexts (Nelson et al., 2013; Olsen et al., 2002; Shek, 2006) and the responses from the interviews described earlier to fully represent the multidimensional nature of psychological control and to ensure its cultural appropriateness for this study. The current items reflect the dimensions of guilt induction (three items), shaming (four items), love withdrawal (five items), invalidating/excessive control (three items), and erratic emotional behavior (one item). All items are listed in Table 1 and all items, except the three newly added items, have been shown to have high reliabilities in previous studies. Each parent indicated the frequency of their own and their spouse's use of psychologically controlling behaviors using a five-point scale (1 = *never*; 5 = *always*). Principal-components factor analyses were conducted with the 16 items using a varimax rotation for both mothers' and fathers' self- and spouse- reports. As shown in Table 1, the 16 items together explained 41.77% to 56.81% of the variance, depending on the informant. The internal consistencies of this scale were high in this study (Self-report: mother = .91, father = .91; Spouse-report: mother = .94, father = .95). Like the physical coercion measure, all items were averaged and a composite score for each parent was created by summing the standardized scores of self- and spouse-reports. Higher scores are indicative of higher levels of parental psychological control.

### **Effortful Control**

Effortful control has been studied using a variety of methods and behavioral measures including tasks that assess children's persistence on tasks have been commonly used with preschool children in both laboratory settings and at home (Cumberland-Li et al., 2004). In this study, children's effortful control was examined using the puzzle box task (Eisenberg et al., 2001) in which a child is asked to assemble an 11-piece wooden matching puzzle inside a box covered by a cloth and instructed not to cheat by lifting the cloth and looking inside. A research assistant (RA) turned on the video camera and sat some distance from the child. The child was told that a prize will be given if he/she finishes the puzzle within



**Table 1.** Results from principal component analysis for the psychological control scale.

Variable	Father self-report	Father spousal report	Mother self-report	Mother spousal report
<b>Factor loadings</b>				
<i>Love withdrawal</i>				
1. Becomes less friendly with our child if our child does not see things his or her way	0.582	0.745	0.633	0.783
2. Tell our child that we do not love him/her anymore#	0.704	0.748	0.635	0.749
3. I ignore our child (e.g., avoid interacting with our child) when he/she tries to get attention#	0.605	0.757	0.571	0.670
4. I avoid looking at our child when our child has disappointed me	0.631	0.666	0.567	0.807
5. If our child has hurt our feelings, I stop talking to our child until our child pleases me again	0.538	0.647	0.614	0.765
<i>Guilt Induction</i>				
6. Make our child feel guilty when she or he does not meet our expectations	0.675	0.791	0.687	0.766
7. Tell our child that we feel embarrassed when she or he does not meet our expectations	0.656	0.781	0.692	0.731
8. Tells our child he or she is not as good as other children	0.589	0.774	0.655	0.755
<i>Erratic Emotional Behavior</i>				
9. Loses temper easily with our child	0.632	0.729	0.725	0.778
<i>Shaming</i>				
10. Tease our child in front of others#	0.676	0.547	0.690	0.640
11. I tell our child that his/her behavior was dumb or stupid	0.715	0.771	0.757	0.781
12. I tell our child that he/she should be ashamed when he/she misbehaves	0.726	0.806	0.667	0.789
13. I let our child know how disappointed we are when he/she misbehaves	0.700	0.784	0.665	0.807
<i>Invalidating/Excessive control</i>				
14. I try to change how our child feels or thinks about things	0.531	0.695	0.461	0.688
15. I want to control everything in my child's life	0.683	0.713	0.589	0.750
16. I always want to change my child to fit my standard	0.677	0.713	0.673	0.776
<b>Eigen value</b>	6.71	8.57	6.68	9.09
#newly developed items				

**Table 2.** Descriptive information and bivariate correlations among major variables by informants.

	2	3	4	5	6	7	8	N	Range	M	SD	$\alpha$
1. Mother physical coercion <sup>a</sup>	.48**	.34**	.31**	.44	.38**	.23**	.21**	158	1.00–3.75	1.70	.55	.74
2. Mother physical coercion <sup>b</sup>	-	.57**	.38**	.34**	.73**	.42**	.27**	154	1.00–5.00	1.74	.71	.87
3. Father physical coercion <sup>a</sup>	-	-	.50**	.27**	.52**	.59**	.31**	154	1.00–3.00	1.63	.58	.80
4. Father physical coercion <sup>b</sup>	-	-	-	.24**	.31**	.31**	.62**	157	1.00–5.00	1.51	.63	.84
5. Mother psychological control <sup>a</sup>	-	-	-	-	.48**	.47**	.52**	158	1.00–3.88	2.11	.57	.91
6. Mother psychological control <sup>b</sup>	-	-	-	-	-	.64**	.41**	154	1.00–4.75	2.10	.57	.94
7. Father psychological control <sup>a</sup>	-	-	-	-	-	-	.50**	154	1.00–3.63	1.95	.55	.91
8. Father psychological control <sup>b</sup>	-	-	-	-	-	-	-	157	1.00–4.75	1.80	.66	.95
	2	3	4	5	6	7	8	N	Range	M	SD	$\alpha$
1. Teacher-report physical aggression	.14	-.02	.74**	.12	.05			167	1.00–3.38	1.29	.51	.92
2. Mother-report physical aggression	-	.40**	.13	.67**	.34**			152	1.00–3.00	1.37	.47	.89
3. Father-report physical aggression	-	-	.03	.23**	.77**			148	1.00–3.00	1.38	.48	.93
4. Teacher-report relational aggression	-	-	-	.28**	.09			167	1.00–3.89	1.62	.71	.94
5. Mother-report relational aggression	-	-	-	-	.25**			152	1.00–3.00	1.50	.44	.85
6. Father-report relational aggression	-	-	-	-	-			148	1.00–3.00	1.58	.49	.88

\* $p < .05$ ; \*\* $p < .01$ . <sup>a</sup>Self-report; <sup>b</sup>Spouse-report.

five minutes. One unseen RA timed each child's persistence on the puzzle box to create an index calculated as the number of seconds persisting (i.e. working on the puzzle without cheating) divided by the number of seconds spent on completing the puzzle successfully (maximum = 300 seconds/ 5 minutes). Another unseen RA timed 37% (60 out of 162) of the videos and interrater reliability assessed using Intraclass Correlation Coefficient (ICC) was high (.97). Child persistence was used in the analysis as an index of effortful control. Higher scores indicated higher levels of persistence, which reflected children's levels of effortful control.

### Physical and Relational Aggression

Teachers, mothers, and fathers rated the children's physical aggression and relational aggression using the Preschooler's Social Behavior Scale (Crick et al., 1997). The eight-item physical aggression subscale captured how frequently the children harmed others using physical means (e.g., "This child pushes or shoves other children"), and the nine-item relational aggression subscale measured how frequently the children hurt others using social relationships as the vehicle of harm (e.g., "This child tells others not to play with or be a peer's friend"). All items were rated on a five-point scale (1 = *never*; 5 = *always*). The two subscales evinced high internal consistencies (Physical aggression: Mother-report = .89, father-report = .93, teacher-report = .92; Relational aggression: Mother-report = .85, father-report = .85, teacher-report = .94). The items in each subscale were averaged and a composite score for each type of aggression was created to minimize reporting biases and better represent children's aggressive behaviors across contexts by summing the standardized scores of teacher-, mother-, and father-ratings. Higher scores indicated higher levels of physical and relational aggression.

## Results

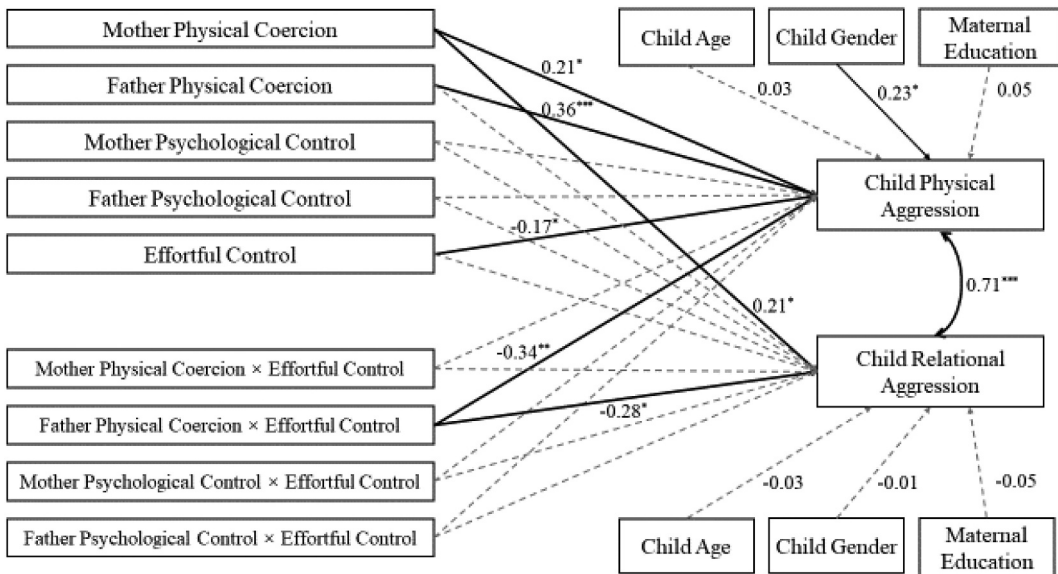
The means, standard deviations (*SD*), range, and correlations of the major and composite variables are presented in Tables 2-3. Multicollinearity was tested using the variance inflation factor (*VIF*) and the tolerance values did not indicate any multicollinearity concern (The *VIF* values were 2.14 for mother physical coercion, 1.97 for father physical coercion, 2.83 for mother psychological control, 2.59 for father psychological control, and 1.01 for effortful control). Results from correlations showed that both mothers' and fathers' physical coercion and psychological control at Time 1 were positively and significantly correlated with child physical and relational aggression, which were obtained from teacher-, mother-, and father-reports, at Time 2. However, child effortful control, which was observed using the puzzle box task at Time 1, was not significantly correlated with either physical or relational aggression at Time 2.

We then conducted a path analysis to examine the main effects and the interaction effects involving parental variables and child effortful control at Time 1 on child physical and relational aggression at Time 2 in one model (see, Figure 1). We used full information maximum likelihood estimation

**Table 3.** Descriptive information and bivariate correlations among all composite variables.

	1	2	3	4	5	6	7
1	Mother physical coercion	-	-	-	-	-	-
2	Father physical coercion	.53**	-	-	-	-	-
3	Mother psychological control	.69**	.47**	-	-	-	-
4	Father psychological control	.36**	.60**	.63**	-	-	-
5	Child persistence	-.06	-.03	-.01	0	-	-
6	Child physical aggression	.41**	.43**	.27**	.30**	0.02	-
7	Child relational aggression	.42**	.30**	.30**	.27**	0.02	.74**
N		161	160	161	160	162	167
Mean		1.73	1.58	2.12	1.86	0.63	1.34
SD		.58	.53	.59	.54	.27	.34

\* $p < .05$ ; \*\* $p < .01$ .

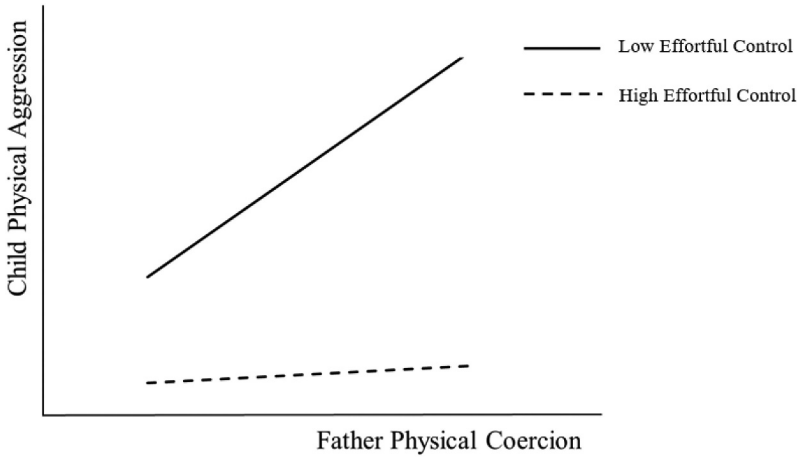


**Figure 1.** Path analysis examining the main effects and interaction effects involving parental physical coercion and psychological control and effortful control at Time 1 on child physical and relational aggression at Time 2.

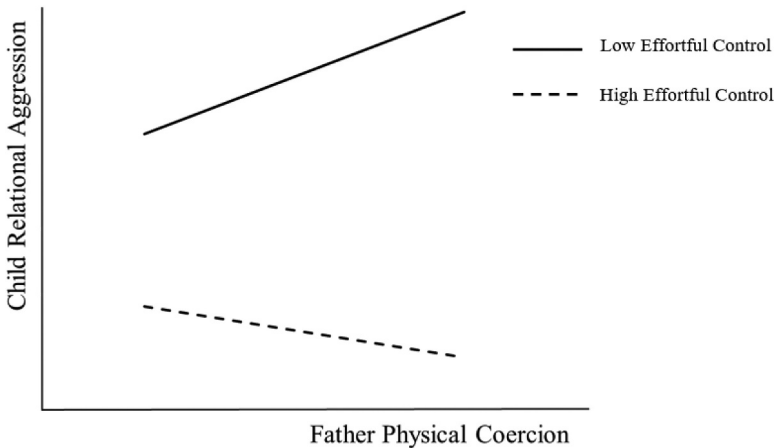
procedures to treat missing data (Schafer & Graham, 2002). We followed Aiken and West (1991) procedures to test the interaction effects. For example, we first mean-centered paternal physical coercion and child effortful control before multiplying the two centered variables to form a new interaction variable. We then entered the new interaction variable into a regression equation together with the two original main effect variables. We conducted the above-mentioned interaction procedure in one path analysis model that involved the interaction between child effortful control and both paternal and maternal physical coercion and psychological control. We also controlled for child gender, child age, and maternal education.

The findings partially supported the first hypothesis that higher Time 1 negative parenting and lower Time 1 effortful control will predict higher Time 2 child aggression. Specifically, mothers' physical coercion was longitudinally associated with child physical aggression ( $r = .21$ ,  $p < .05$ ) and relational aggression ( $r = .36$ ,  $p < .001$ ) in the predicted directions. Also, in the predicted direction, fathers' physical coercion was longitudinally correlated with child physical aggression ( $r = .21$ ,  $p < .05$ ). However, fathers' physical coercion was not associated with child relational aggression. Mothers' and fathers' psychological control were also not associated with child physical aggression and relational aggression. Lastly, child effortful control was only associated with child physical aggression ( $r = -.17$ ,  $p < .05$ ) in the predicted direction, but not child relational aggression.

For the second hypothesis that child effortful control will moderate the relations between physical coercion and psychological control and child physical aggression and relational aggression, two significant interaction effects were found. In particular, the interaction results suggest that child effortful control only moderated the effects of fathers' physical coercion on child physical aggression ( $r = -.34$ ,  $p < .01$ ) and relational aggression ( $r = -.28$ ,  $p < .05$ ). There were no interaction effects for mothers' physical coercion and psychological control and fathers' psychological control on child effortful control. We performed simple slope analyses on the two significant interactions and present the results in Figures 2-3. As illustrated by the simple slopes in Figure 2, when child effortful control was 1 SD below the mean, which indicates that the child had low self-regulation, child physical aggression was more positively predicted by fathers' physical coercion ( $\beta = -.72$ ,  $p < .001$ ) than it was when child effortful control was 1 SD



**Figure 2.** Simple slopes of Time 1 paternal physical coercion on Time 2 child physical aggression at  $\pm 1SD$  of effortful control (+1SD:  $\beta = 0.05$ ,  $t = 0.38$ ,  $p = .70$ ; -1SD:  $\beta = 0.72$ ,  $t = 4.60$ ,  $p < .001^{***}$ ).



**Figure 3.** Simple slopes of Time 1 paternal physical coercion on Time 2 child relational aggression at  $\pm 1SD$  of effortful control (+1SD:  $\beta = -0.16$ ,  $t = -0.97$ ,  $p = .33$ ; -1SD:  $\beta = 0.37$ ,  $t = 2.10$ ,  $p < .05^*$ ).

above the mean ( $\beta = -.05$ , *n.s.*). Similarly, child relational aggression was positively predicted by fathers' physical coercion ( $\beta = .37$ ,  $p < .05$ ) when child effortful control was 1 *SD* lower than the mean. However, this association was nonsignificant ( $\beta = -.16$ , *n.s.*) when child effortful control was 1 *SD* higher than the mean (see, Figure 3). Together, the interaction results suggested that when children are low in self-regulation, they are more likely to react to their fathers' physical coercion by displaying higher levels of physical aggression and relational aggression.

## Discussion

While negative parenting has been found to have a robust link with negative child outcomes (McNamara et al., 2010; Morris et al., 2002; Nelson & Hart, 2018), whether types of negative parenting and forms of childhood aggression, particularly in the Chinese context, and whether child effortful control would moderate the association have rarely been investigated. This study extended the current

literature on negative parenting, namely physical coercion and psychological control, and children's aggression, namely physical aggression and relational aggression, by employing a 2-wave longitudinal, mixed-methods, and multi-informant approach. This study also fills existing gaps in the literature by examining the role of fathers in the above relations in addition to mothers. Specifically, fathers and mothers were included in the same model to examine whether their parenting behaviors would predict child aggression by controlling for another parents' parenting behaviors. Finally, the inclusion of effortful control as a moderator to examine the role that children's play in exacerbating or reducing the effect of negative parenting on child development.

Consistent with prior findings (Chang et al., 2003; Hart et al., 1998; Nelson et al., 2006), the present study found that mothers' and fathers' physical coercion predicted children's physical aggression and relational aggression, except fathers' physical coercion which was unrelated to children's relational aggression. Since Chinese mothers are generally regarded as the primary caregiver and play a major role in socializing young children in the family (Lau, 2019), their use of physical coercion may have a more salient negative influence on children and lead to a general increase in aggression, regardless of their forms. In contrast, consistent with the social learning perspective (Bandura, 1973), the present study found that fathers' physical coercion was only linked to physically aggressive strategies by children that are more similar in the nature. Using a preschool sample, Russell et al. (2003) also found fathers' authoritarian parenting only predicted children's physical aggression, but not relational aggression. While recent studies have shown an increased involvement by fathers, fathers, particularly Chinese fathers, generally play a secondary childcare role in child rearing and the socialization of child behaviors (Lau & Power, 2019; Pleck & Masciadrelli, 2004). Hence, while fathers' physical coercion may be a general salient risk factor for children's aggressive behaviors, it may be particularly relevant to the development of physical aggression as children may model their fathers' physically coercive strategies as a means to achieve their goals (Nelson & Hart, 2018).

In addition to physical coercion, we found that effortful control was related to physical aggression, but not relational aggression. Consistent with prior studies (Eisenberg et al., 2001; Xu et al., 2009), the present findings support the notion that children with high effortful control can better regulate themselves during social challenges and reduce the use of physical aggression. On the other hand, the lack of findings in the link between effortful control and relational aggression in the present study may due to the fact that compared to physical aggression, relational aggression represents a more cognitively skillful form of aggression which requires at least some self-regulation (Heilbron & Prinstein, 2008; Renouf et al., 2010). For example, Dane and Marini (2014) found that proneness to frustration was more strongly associated with reactive-relational aggression among adolescents who had a high level of effortful control. Such finding suggested that behavioral inhibition and planning abilities that allow children to inhibit immediate negative reactions to provocation and to engage in future-oriented thinking may in some cases facilitate relational forms of retaliation. Similarly, McQuade et al. (2017) found that impairment in executive functioning was related to physical aggression, while higher levels of executive functioning ability was uniquely associated with relational aggression in school-aged children. Hence, it is possible that the effect of effortful control on relational aggression is moderated by young children's rapidly developing cognitive skills. In particular, children with better cognitive skills have higher levels of future-oriented thinking or executive functioning for inhibiting their immediate aggressive acts to plan for future relationally aggressive acts to achieve a desired goal (Poland et al., 2016; Van Rest et al., 2018). In contrast, children with poorer effortful control as well as cognitive skills are less likely to control their impulses to act in relationally aggressive ways in challenging social situations.

Contrary to our expectations, the present study failed to find evidence for the association between psychological control and aggression. Prior research has examined the association between psychological control and child aggression, but the results are mixed (e.g., Hart et al., 1998; Kuppens et al., 2009; Nelson et al., 2013). There are several possible explanations. First, the lack of findings for parental psychological control and child aggression may represent an artifact of measurement differences. For

instance, Nelson et al. (2013) and Casas et al. (2006) found that certain dimensions of psychological control, but not all, are associated with physical and relational aggression. While the present study utilized an adapted measure involving multidimensions of psychological control, the failure to find significant connections may be attributed to our use of a composite score, instead of a dimension approach. Second, studies that have confirmed the links between parents' psychological control and children's aggression involved the examination of different parent-child dyads (e.g., Kuppens et al., 2009; Nelson et al., 2014, 2013). It is possible that the relations between psychological control and aggression are gender specific.

Third, psychological control may have a more detrimental effect on older children who consider individuality and autonomy more important for their development and who have more advanced cognitive competencies in interpreting the intrusive nature of psychological control than preschoolers (Arnett, 2004; Fung & Lau, 2012). Hence, the links between psychological control and aggression could have been significant if a sample of school-aged children or adolescents was involved. Fourth, prior studies of psychological control in various cultures have provided evidence for the link between psychological control and children's internalizing behaviors in various cultures (Nanda et al., 2012; Olsen et al., 2002). It is possible that some children may respond to psychological control by acting aggressively, while the responses of other children could be to be fearful or withdrawn. As a result, the mean levels of aggression used in this study could have underestimated the association between psychological control and aggression as it pertains to one class of children.

Finally, the lack of findings for psychological control provides additional evidence to support that the way a specific parenting behavior may relate to children's outcomes will depend on the contexts in which the parenting behavior is situated (Deater-Deckard & Dodge, 1997; Lansford et al., 2005; Stacks et al., 2009). In particular, the lack of such findings in this study may suggest that although contemporary Chinese parents are authoritative, parents' psychological control may not be considered intruding upon children's sense of autonomy. Compared to physical coercion, Chinese parents may view psychological control as a more subtle tool (e.g., shaming) of *guan* for parents to "train" and "govern" children to be a part of society (Chao, 1994; Chao & Tseng, 2002; Fung, 1999). As Chinese mothers were found to use psychological control more frequently (Wu et al., 2002), they may perceive their use of psychological control as normative and common and are more likely to use it in the context of a nurturing and love-oriented relationship. Therefore, young Chinese children may not perceive their parents' psychological control as unpleasant. The negative effect of psychological control on aggression may also be masked by parents' provision of warmth and structure. In fact, Wang et al. (2007) found that psychological control was related to decreased learning strategies among U.S., but not Chinese, adolescents. Similarly, Lee et al. (2012) found that psychological control did not have a negative impact on East Asian school-aged children's school outcomes. Taken together, these findings suggest the interpretation of psychological control may not be the same among all cultures and is, therefore, perceived and understood differently by children and parents around the world – specifically between Eastern and Western countries. Supporting this notion, Cheah et al. (2019) found that children's cognitive appraisal moderated the negative influence of psychological control on Chinese children's depressive symptoms and highlighted the need to examine the meaning and impact of psychological control across cultural contexts.

Consistent with our hypotheses and the differential-susceptibility model (Belsky, 2005), we found that fathers' physical coercion only predicted higher levels of physical aggression and relational aggression among children who were low on effortful control. However, contrary to hypotheses, the present study failed to find support for the moderation effect of effortful control on the relation between mothers' physical coercion and child aggression. As discussed, Chinese mothers play a bigger role in child rearing and socialization than fathers (Kwok et al., 2013; Lau, 2019). Therefore, mothers' use of physical coercion may have a salient direct relation with children's aggression, regardless of children's level of effortful control. On the contrary, because Chinese fathers tend to play a secondary role in socialization, their physical coercion would only be associated with aggression among children

who are more susceptible. For example, children growing in maladaptive social environments with physically coercive fathers, together with low effortful control, are more likely to develop physical and relational aggression.

### ***Limitations, Future Directions, and Implications***

Several limitations related to the conceptualization of this study should be acknowledged. First, we only assessed physical coercion and psychological control as two forms of negative parenting behaviors without considering other parenting behaviors that may provide information about the parents' overall style of interacting with the child. We also only delineated but did not examine the degree to which social/cultural contexts facilitate or inhibit the effect of negative parenting on aggression. Lastly, we did not consider individual differences in children's ability to comprehend information related to negative parenting and their reaction to various parenting behaviors. In the future, researchers should examine the relation between negative parenting and child aggression by employing a conceptual framework that takes greater account of 1) the other behaviors of a given parent and the other parent that may buffer or exacerbate the impact of negative parenting on children, 2) the societal and cultural contextualizing factors (e.g., normativeness) to explore the role they play on this topic, 3) whether children are able to fully comprehend the meaning of different forms of negative parenting, and 4) the wariness in children in their reaction to parents' behaviors.

Several methodological limitations of this study should also be noted. First, our relatively small sample size may have limited our ability to detect potentially small but important effects. Future studies should examine the current research questions by employing larger samples. Second, the use of self- and spouse-reports of parenting behaviors and parent- and teacher-reports of aggression may have resulted in shared method variance for reports of parenting and child aggression by parents. While the high correlation between physical and relational aggression found in the present study is commonly seen in the literature (e.g., Crick et al., 2006; Lansford et al., 2012; Poland et al., 2016), it is possible that teachers and parents may have difficulties distinguishing physical aggression from relational aggression. Future studies that employ varied informants, including the use of child self-report and observations of parenting and aggression, are desired. In addition, while this study was enhanced by collecting longitudinal data, data was only collected at two time points with a relatively short period of six months between assessments. Future studies should collect data at multiple points, over a longer period, to examine whether the association between negative parenting and aggression is stable across development. Fourth, the use of a one-dimensional approach for examining psychological control and not considering child gender may have hindered our ability to identify the relations between psychological control and aggression. Future studies could examine dimensions of psychological control and their relations with child aggression outcomes among different parent-child dyads to better elucidate the complex relations. Lastly, while we discussed some of the findings in the context of Chinese culture, we did not include any measure to examine the effect of cultural aspect on parenting. Future studies should examine how culture and child and parental perception of negative parenting may play a role in the relations examined in this study.

Overall, given the association between parental physical coercion and children's development of aggression, prevention and intervention programs that reduce parental use of physical coercion should be developed. Because fathers' physical coercion was particularly associated with childhood aggression among children who are low in effortful control, prevention and intervention programs for reducing fathers' physical coercion may specifically target children who are less able to regulate their behaviors.

## Conclusion

This study examined the parenting correlates of different forms of childhood aggression using a longitudinal data set. The findings are consistent with prior research examining the salience of negative parenting in predicting child physical and relational aggression. The findings also support the importance of considering children's differential susceptibility to parenting behaviors. Specifically, the study found that physical coercion by fathers is likely to be particularly harmful for children who are low in effortful control. The findings provide important implications for prevention and intervention programs for parent education to reduce parental physical coercion, particularly among fathers with children low in effortful control.

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