

Child surgency and child aggression: the moderating effect of parental nurturance, emotion coaching, and family income

Article

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Children and Youth Services Review

Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance, Emotion Coaching, and Family Income

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Corresponding Author:	<p>Yao Sun University of Maryland Baltimore County UNITED STATES</p>
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Order of Authors:	<p>Yao Sun Chun Bun Lam Rebecca Y. M. Cheung</p>
Abstract:	<p>According to the goodness-of-fit development theory, a mismatch between child characteristics and socialization processes tends to lead to child maladjustment. The present study aimed to examine whether the association between child surgency and child aggression varies as a function of parenting styles and practices such as parental nurturance and parental emotion coaching. In addition, family economic background was examined as a contextual moderator. Cross-sectional questionnaire data were collected from parents and class teachers of 288 preschoolers (Mage = 5.2 years; 53% were boys) in Hong Kong, China. Separate multilevel models were run to test parental nurturance, emotion coaching, and family income level as moderators. Results indicated that controlling for confounding variables, child surgency was only positively associated with child aggression when parental nurturance was low, but not when parental nurturance was high. However, this pattern only emerged in high- and medium-income families, but not in low-income families. A similar but different pattern was observed for parental emotion coaching: regardless of family income level, child surgency was only associated with child aggression when parental emotion coaching was low, but not when it was high. Theoretically, our findings highlight the importance of considering the fit between child temperament and environmental features, such as parenting and family economic background, in understanding child development. Practically, our findings point to the utility of helping parents to express their love and affection and to talk to their children about managing emotions to reduce aggression in preschool-aged children, especially those with high surgency and economic advantages.</p>
Suggested Reviewers:	<p>Meingold Hiu-ming Chan, Ph.D. chan.742@osu.edu Dr. Chan has expertise on emotion socialization of children.</p> <p>Qiong Wu, Ph.D. qwu3@fsu.edu Dr. Wu is an expert on children's social and emotional development within Asian cultural context.</p> <p>Eva Yi-Hung Lau, Ph.D. yhlau@eduhk.hk Dr. Lau is an expert on child aggression.</p> <p>Qingfang Song, Ph.D. qingfang.song@wku.edu Dr. Song has expertise on children's social and emotional development and culture.</p> <p>Idean Ettekal, Ph.D. iettekal@tamu.edu Dr. Ettekal is an expert on children's social development.</p>

<p>Response to Reviewers:</p>	<p>Responses to Reviewer 2's comments</p> <p>Comment 1: The authors have well-addressed all my concerns raised. I have no further comments.</p> <p>Response: We are glad that Reviewer #2 is pleased with our responses to their comments. We appreciate Reviewer #2 for reviewing our manuscript again.</p> <p>Responses to Reviewer 3's comments</p> <p>Comment 1: This study derived its hypotheses from the goodness-of-fit development theory, which means extra-familial environment such as peers and schools should also be taken into consideration. What's your position on those environmental factors?</p> <p>Response: We agreed with Reviewer #3 that extra-familial agents including peers and schools also play a role in children's social development. Child development has been increasingly recognized as a multifaceted process that involves an array of socialization agents beyond the core family, such as extended family, peers and schools, community, and even the society. With that been said, among the age group investigated in the present study (i.e., preschool age), family continues to be the one of the most prominent influences of child development (Parke et al., 2002). Moreover, given that the scope of the present study was to highlight the interplay between parenting and child temperament in families of different socioeconomic backgrounds in Hong Kong, we did not include extra-familial factors in the present study. We have now acknowledged this point and directed future studies to investigate the join influence of multiple levels of environmental factors.</p> <p>"Relatedly, in line with the assumptions under the goodness-of-fit framework, environmental factors included extra-familial agents (e.g., peers and teachers) might play a role as important as the familial socializers in children's social development (Parke et al., 2002). Given the scope of the present study, we did not examine the impact of extra-familiar factors. Future studies should take multiple environmental influences into consideration to further advance our understanding of children's behavioral development." p.19</p> <p>Comment 2: "Data analysis" (in its singular form) should be put under the section Results. Instead, "data analytical plans" under the section Materials and Methods.</p> <p>Response: As suggested by Reviewer #3, we now changed "Data Analysis" to its singular form and moved it to under the section Materials and Methods</p> <p>Comment 3: How did you handle missing data?</p> <p>Response: We used a Maximum Likelihood technique to handle missing data. We have now added more details about the handling of missing data in the main text of the manuscript.</p> <p>"About 3% of data were missing. Results of a MCAR test showed that missing was completely at random ($\chi^2(15) = 9.28$, $p = .86$. A maximum likelihood technique was adopted to handle missing data." p.15</p> <p>Comment 4: As suggested by Reviewer 2, "parental nurturance" should be used consistently throughout the manuscript. Avoid using it interchangeably with "maternal nurturance", e.g., in 2.2.6.</p> <p>Response: As per requested by both Reviewer #2 and Reviewer #3, we now used parental nurturance consistently throughout the manuscript.</p>
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Drs. Elizabeth Fernandez, Darcey H. Merritt, and Aron Shlosky
Co-Editor-in-Chief
Children and Youth Services Review

November 2, 2022

Dear editors,

Please find attached a manuscript, titled “Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance, Emotion Coaching, and Family Income” for potential publication in *Children and Youth Services Review*. The authors of the manuscript are Yao Sun, Chun Bun Lam, and Rebecca Y.M. Cheung.

The work described in this manuscript is original. It has not been published in any language, and is not simultaneously under consideration for publication elsewhere. All authors have contributed to this manuscript in meaningful ways. The order of authorship corresponds to the author’s relative contribution. There is no conflict of interest to declare.

We appreciate your time and look forward to your responses. Please contact me if additional information is needed.

Yours Sincerely,

Yao Sun, M.A.
Department of Psychology
University of Maryland, Baltimore County

Also on behalf of Chun Bun Lam, and Rebecca Y.M. Cheung.

Dear Dr. Ngai,

Thank you very much for your email inviting us to revise and resubmit our paper, titled “Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance, Emotion Coaching, and Family Income” We appreciate the thoughtful comments and suggestions provided by the reviewers. As you will see, we have revised our manuscript in response to all these comments and suggestions, as outlined below.

Responses to Reviewer 2’s comments

Comment 1: The authors have well-addressed all my concerns raised. I have no further comments.

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Response: As per requested by both Reviewer #2 and Reviewer #3, we now used parental nurturance consistently throughout the manuscript.

Again, we thank you and the reviewers for the thoughtful and constructive comments. We believe that the review process has significantly improved our manuscript and we are grateful for it.

Yours sincerely,
The Authors

- Findings demonstrate the joint effects of child characteristics and environmental factors on child adjustment
- Nurturance protects against child aggression for high-surgent children with economic advantages
- Emotion coaching protects against child aggression for high-surgent children regardless of family income levels

Abstract

According to the goodness-of-fit development theory, a mismatch between child characteristics and socialization processes tends to lead to child maladjustment. The present study aimed to examine whether the association between child surgency and child aggression varies as a function of parenting styles and practices such as parental nurturance and parental emotion coaching. In addition, family economic background was examined as a contextual moderator. Cross-sectional questionnaire data were collected from parents and class teachers of 288 preschoolers ($M_{age} = 5.2$ years; 53% were boys) in Hong Kong, China. Separate multilevel models were run to test parental nurturance, emotion coaching, and family income level as moderators. Results indicated that controlling for confounding variables, child surgency was only positively associated with child aggression when parental nurturance was low, but not when parental nurturance was high. However, this pattern only emerged in high- and medium-income families, but not in low-income families. A similar but different pattern was observed for parental emotion coaching: regardless of family income level, child surgency was only associated with child aggression when parental emotion coaching was low, but not when it was high. Theoretically, our findings highlight the importance of considering the fit between child temperament and environmental features, such as parenting and family economic background, in understanding child development. Practically, our findings point to the utility of helping parents to express their love and affection and to talk to their children about managing emotions to reduce aggression in preschool-aged children, especially those with high surgency and economic advantages.

Keywords: Child Aggression; Surgency; Parental nurturance; Emotion Coaching; Family Income;

RUNNING HEAD: CHILD SURGENCY AND CHILD AGGRESSION

**Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance,
Emotion Coaching, and Family Income**

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45 **Declaration of interests**
67 ☑The authors declare that they have no known competing financial interests or personal relationships
8 that could have appeared to influence the work reported in this paper.
910 ☐The authors declare the following financial interests/personal relationships which may be considered
11 as potential competing interests:
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Yao Sun: Conceptualization, Methodology, Formal Analysis, Writing- Original draft preparation. Reviewing and Editing.

Chun Bum Lam: Funding acquisition, Conceptualization, Writing- Original draft preparation, Supervision.

Rebecca Y. M. Cheung: Writing- Original draft preparation, Reviewing and Editing.

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**Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance,
Emotion Coaching, and Family Income**

Abstract

According to the goodness-of-fit development theory, a mismatch between child characteristics and socialization processes tends to lead to child maladjustment. The present study aimed to examine whether the association between child surgency and child aggression varies as a function of parenting styles and practices such as parental nurturance and parental emotion coaching. In addition, family economic background was examined as a contextual moderator. Cross-sectional questionnaire data were collected from parents and class teachers of 288 preschoolers ($M_{age} = 5.2$ years; 53% were boys) in Hong Kong, China. Separate multilevel models were run to test parental nurturance, emotion coaching, and family income level as moderators. Results indicated that controlling for confounding variables, child surgency was only positively associated with child aggression when parental nurturance was low, but not when parental nurturance was high. However, this pattern only emerged in high- and medium-income families, but not in low-income families. A similar but different pattern was observed for parental emotion coaching: regardless of family income level, child surgency was only associated with child aggression when parental emotion coaching was low, but not when it was high. Theoretically, our findings highlight the importance of considering the fit between child temperament and environmental features, such as parenting and family economic background, in understanding child development. Practically, our findings point to the utility of helping parents to express their love and affection and to talk to their children about managing emotions to reduce aggression in preschool-aged children, especially those with high surgency and economic advantages.

Keywords: Child Aggression; Surgency; Parental nurturance; Emotion Coaching; Family Income;

1. Introduction

1 Aggression is a pervasive and persistent form of maladjustment in childhood (Furniss
2 et al., 2006; Institute of Medicine, 1989). Child aggression attracts additional interests from
3 parents, practitioners, and researchers, as it was linked to other indices of maladjustment,
4 including peer rejection and depressive symptoms across developmental stages (Ettekal &
5 Ladd, 2020; Krygsman & Vaillancourt, 2019). Temperament-based theories highlight the
6 contributions of such early personality traits as surgency to child aggression (DeLisi &
7 Vaughn, 2014; Rothbart & Derryberry, 1981). Studies found that child surgency –
8 characterized by impulsivity, high intensity pleasure, and high approach tendency – was
9 positively linked to children's aggressive behaviors (Berdan et al., 2008; de Maat et al., 2022;
10 Dollar & Stifter, 2012). On the other hand, a goodness-of-fit theory of development
11 emphasizes the effect of the compatibility among child temperamental traits, parenting, and
12 other contextual factors on developmental outcomes (Chess & Thomas, 1991; Thomas &
13 Chess, 1977). Positive parenting including nurturance and emotion coaching seems to be
14 beneficial to child social development but is rarely tested in relation to child surgency,
15 especially for non-Western populations (Chen, 2018; Gus et al., 2015; Khaleque, 2013). In
16 addition, contextual factors such as family income also play a pivotal role in young children's
17 development of aggressive behaviors (Miller & Tolan, 2018).

18 Guided by the temperament and the goodness-of-fit theories, the present study aimed
19 to extend the current literature by examining the interactive effect among child surgency,
20 positive parenting styles and practices, and family income on child aggression. Using cross-
21 sectional, multi-informant data collected from Chinese families living in Hong Kong, China,
22 we tested whether parents' nurturance – general expression of love for and acceptance of
23 children (Locke & Prinz, 2002) – and emotion coaching – specific behaviors in response to
24 children's negative emotions (Gottman et al., 1996) – moderated the association between
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1 child surgency and aggression in early childhood. We further tested whether the moderation
2 effect of parenting varies in families with different income levels.
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5 **1.1. Surgency and Aggression**

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7 Difficult temperamental traits are viewed as risk factors for child development
8 (Wachs, 2006). Children with high surgency – one of such difficult temperamental traits
9 – typically are full of energy, high on activity levels, impulsive, and tend to get overly excited
10 when encountering novelty. Not surprisingly, young children with high levels of energy and
11 impulsivity are more likely to experience issues when interacting with peers. Indeed, several
12 cross-sectional and longitudinal studies have linked high child surgency to behavioral
13 problems including aggressive and disruptive behaviors. For example, Nwadinobi and Gagne
14 (2020) have documented a concurrent positive association between a group of mainly White
15 American preschoolers' surgency level and their parent-rated aggressive behaviors.
16 Zubizarreta et al. (2018) found that surgency in middle childhood was positively linked to
17 children's aggressive behaviors eight months later among a group of Spanish children. More
18 recently, de Maat et al. (2022) reported evidence supporting the longitudinal relation between
19 Dutch children's surgency and their behavioral problems: children's parent-reported surgency
20 at the age of five years was associated with more teacher-reported externalizing behaviors at
21 the age of seven years. He et al.'s (2017) study documented a positive link between Chinese
22 young children's surgency and externalizing behaviors.
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25 Interestingly, different patterns were unraveled, with other studies yielding negative
26 or no connection between high surgency and child aggression (See Yavuz-Müren et al., 2022
27 for a review). Kochanska and Radke-Yarrow (1992) reported that toddlers with high activity
28 levels and high positive affect were more sociable than low-surgent children and that they
29 exhibited more willingness to play within a peer group when encountered in a new
30 environment. Consistently, Rimm-Kaufman and Kagan (2005) drew the conclusion that
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1 White middle-class infants who were rated as high on surgency (impulsive and had a great
2 tendency to approach unfamiliar people) showed more prosocial behaviors in the unfamiliar
3 situation. However, others reported nonsignificant associations between surgency and
4 aggression. For example, Atherton et al. (2017) found that Mexican-origin school age
5 children's temperamental surgency predicted neither aggressive perpetration nor aggressive
6 victimization. In addition, Delgado et al. (2018) reported that White middle-class children's
7 surgency, as indicated by tendency towards stimulation, high activity levels and impulsivity,
8 was not associated with their externalizing problems. These inconsistent findings may
9 suggest the moderating role of environmental factors on child adjustment.
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12 **1.2. Parental Nurturance and Emotion Coaching as Process Moderators**

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14 According to a goodness-of-fit point of view, child development is not only
15 dependent on child characteristics or parental socialization processes, but also their combined
16 effects (Chess & Thomas, 1991; Thomas & Chess, 1977). In other words, the impact of
17 parental socialization might vary for children with different characteristics. Eisenberg et al.
18 (1998) argued that parental socialization affects children's social and emotional development
19 mainly through two approaches: indirect socialization, which refers to the parent-child
20 interactions that would affect children's understanding and regulation of emotions, and direct
21 socialization, which refers to behaviors that directly reflect parents' emotion-related beliefs
22 and socialization goals. The present study focused on two socialization process constructs,
23 parental nurturance, which pertains to indirect socialization and parental emotion coaching,
24 which pertains to direct socialization. In fact, there is evidence suggesting the effects of
25 parental nurturance and parental emotion coaching might vary for children with different
26 levels of surgency.
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29 **1.2.1. Parental Nurturance**

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1 Parental nurturance is characterized by positive expressivity during parent-child
2 interaction, high supportiveness, and low harshness (Locke & Prinz, 2002). Parents who are
3 more nurturing and express more positivity in parent-child interactions seem to have modeled
4 for their children the appropriate way to interact with others and how to better regulate
5 children's own emotions, thereby reducing the chance children exhibit aggressive behaviors
6 (Eisenberg et al., 2005). In other words, parents who provide a generally warm and positive
7 parenting environment tend to have children who are more regulated and better behaved.
8
9 Indeed, Ye et al.'s (2012) study revealed the moderating effect of parenting style on the link
10 between temperament and aggression in a group of Chinese adolescents. They found that
11 youth characterized by high sensation seeking were at high risk for exhibiting aggressive
12 behaviors; however, such an effect was buffered by an authoritative parenting style, which is
13 characterized by high parental nurturance and high parental supportiveness to children's
14 emotions (Ye et al., 2012). Another study has documented that Chinese school-aged children
15 who had enjoyed high intensity pleasure showed more aggressive behaviors and that such a
16 connection was particularly salient when parents showed a harsh and less nurturing style of
17 parenting (Xu et al., 2009). Taken together, parental nurturance appears to moderate the
18 relation between child surgency and child aggression.

41 **1.2.2. Parental Emotion Coaching**

42 Parental emotion coaching is characterized by frequent, appropriate parent-child
43 communication especially regarding children's negative feelings (Lagacé-Séguin & Coplan,
44 2005). Research findings similarly suggest its interactive effects with surgency on young
45 children's aggressive behaviors. Due to their high sensation seeking and high approach
46 tendency, children with high surgency experience more peer rejections and the consequent
47 negative emotions (Dollar & Stifter, 2012). In the face of such negative emotions, whether
48 parents could help children regulate those emotions appropriately seem to determine whether
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1 these children would act out aggressively (Eisenberg et al., 2007). Indeed, results from
2 previous studies seem to support such a view. For instance, McDoniel and Buss (2018)
3 examined the interactive effect of child temperament and parenting practices on behavioral
4 problems among a group of American children. Their results revealed that high-surgent
5 children exhibited more behavioral problems and that such an association was buffered by
6 parents' emotionally responsive parenting (McDoniel & Buss, 2018). In summary, parental
7 emotion coaching is likely to moderate the association between child surgency and child
8 aggression.

19 **1.3. Family Income Level as Contextual Moderator**

20 Parental socialization operates within the context of family background
21 (Bronfenbrenner & Crouter, 1983). As a result, the effects of parental socialization are likely
22 to differ for families with different individual and familial backgrounds. In other words,
23 although certain parental socialization processes are associated with better child social and
24 emotional outcomes, their effects might not be the same for families with different
25 environmental characteristics such as economic backgrounds (Bronfenbrenner & Crouter,
26 1983; Mistry et al., 2002). Nurturing and emotionally supportive socializations, for instance,
27 are documented as beneficial to children's social and emotional competence for White,
28 middle-class families (Baumrind, 2013; Gallitto & Leth-Steensen, 2019). Yet, the effects of
29 these socialization processes are less tested in low-income and non-White families
30 (McGroder, 2000; Smetana, 2017).

31 In fact, parental socialization goals and child developmental risks tend to differ in
32 families with different economic backgrounds (Conger et al., 2010; Spera, 2005).
33 Consequently, parents in households with different income levels are likely to engage in
34 different types of parenting. For example, in affluent or middle-class White households,
35 parents are more likely to use warm, authoritative, and emotionally supportive parenting; on
36

1 the flip side, in non-White households with economic hardships, parents tend to engage in
2 parenting behaviors characterized by harsh discipline, power assertion, and low nurturance
3 (Choi et al., 2018; Shaffer et al., 2012; Xie & Li, 2019). A qualitative study also reported that
4 many parents living in resource-constrained environments lacked the capacities to
5 *consistently* provide nurturance to their children which had significant implications to
6 children's social and emotional development (Goldschmidt et al., 2021). Moreover, evidence
7 showed that family income level can influence the trajectory of child development. Studies
8 found that family economic hardship was linked to elevated child aggression (Anderson et
9 al., 2022; Brophy-Herb et al., 2011; Tremblay et al., 2004), potentially due to the lack of
10 resources and heightened neighborhood risks associated with it. Despite known as a highly-
11 developed financial hub, Hong Kong is characterized by a large wealth gap. According to a
12 study conducted in Hong Kong, the top 10% richest earn 40 times more than the bottom 10%
13 poorest (Oxfam, 2022). Given the huge income inequality of the city, it is imperative to exam
14 family economic backgrounds as a contextual moderator when studying Hong Kong families.
15
16 Taken together, family income levels should be considered as a contextual moderator.

36 **1.4. The Present Study**

37 To recap, the present study, grounded within the goodness of fit theory of
38 development, intended to address several gaps of the extant literature on temperament,
39 parenting, and child aggression. First, to address the literature paucity regarding the
40 interactive effect of parental socialization processes on the relation between child surgency
41 and aggression, we tested two process moderators: parental nurturance which pertains to
42 indirect socialization and parental emotion coaching which pertains to direct socialization.
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44 Second, we included family income levels as a contextual moderator to test the potentially
45 different effects of parenting in Hong Kong families with different economic backgrounds.
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47 Furthermore, Hong Kong Chinese parents tend to foster highly social and controlled
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1 behaviors in their young children to help children adhere to the cultural norm in the society
2 (Kwong et al., 2018). As a result, Hong Kong parents might see child impulsivity and
3 aggression as less tolerable compared to Western parents. Yet, Hong Kong children's social
4 behaviors and their socialization processes are relatively understudied. To provide insight
5 regarding Hong Kong Chinese young children's social and emotional development, the
6 present study adopted a Hong Kong Chinese sample. To pinpoint the effect of main study
7 variables, a series of demographic variables were controlled, as they might confound with the
8 outcome variables (Archer, 2004). Guided by temperament and goodness-of-fit theories, we
9 expected that high child surgency would be linked to more aggressive behaviors in children
10 when they have parents that are low in nurturance or emotion coaching. We also
11 hypothesized that both parental nurturance and emotion coaching would buffer against
12 aggression in medium- and high-income families.

2. Materials and Methods

2.1. Participants and Procedures

34 Hong Kong consists of 18 different administrative districts; each has a unique
35 socioeconomic status (SES) background (Census and Statistics Department, 2012). To
36 increase the diversity of our sample, we stratified the 18 districts into low SES districts
37 (districts with median household incomes below the population's median household income)
38 and high SES districts (districts with median household incomes above the population's
39 median household income). Next, using publicly available information, we randomly called
40 preschools from low and high SES districts and invited them to join the study. Three
41 preschools from low SES districts and three preschools from high SES districts agreed to
42 participate. Then, formal consents were sent to families with children studying in two
43 randomly selected second-year classes, and two randomly selected third-year classes, in each
44 participating preschool. Parents who returned consent forms self-administered questionnaires
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1 at home, reporting their own parenting behaviors, child characteristics, and demographic
2 information. Teachers self-administered questionnaires at work, reporting social behaviors of
3 each participating child in their classes.
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5 After completing and returning the questionnaires, each parent and teacher was
6 compensated with a supermarket coupon of HK \$50 (\approx US\$6). Eventually, 288 preschoolers'
7 parents and teachers provided consent to the study and returned the completed questionnaires.
8
9 A total of 24 class teachers rated child behaviors at schools (response rate = 100%). All
10 teachers were female. The procedure of the present study was approved by the Human
11 Research Ethic Committee of the second author's University.
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14 **2.2. Measures**

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16 Validated measurements were adopted to assess the study variables. Two bilingual
17 research assistants helped to translate English questionnaires to Chinese and back-translate to
18 English. The research assistants then compared their work to adjust the accuracy. Mean
19 scores were used as the final scores of constructs.
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22 **2.2.1. Social Competence Scale**

23 Children's aggressive behaviors were assessed using the 7-item aggressive-coercive
24 subscale from the Social Competence Scale (Vaughn et al., 2009). Teachers rated children's
25 aggressive and coercive behaviors towards peers on a 6-point scale. The scores ranged from 1
26 (not at all accurate) to 6 (very accurate). Higher scores indicated more aggressive behaviors
27 towards peers. Some example items were: "this child says mean things to peer in teasing or
28 name-calling" and "this child starts fights with peers." In the present study, the Cronbach's
29 alpha was .92.
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32 **2.2.2. Children's Behavior Questionnaire (CBQ)**

33 Child surgency was measured using eight items adapted from surgency subscale of
34 CBQ – short form (Rothbart et al., 2001). Parents were asked to rate their children's
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1 temperament considering their activity level, high intensity pleasure, and impulsivity on a 6-
2 point scale. With 1 indicating “not at all accurate” and 6 indicating “very accurate,” a higher
3 score represented a higher level of child surgency. Some example items were “likes going
4 down high slides or other adventurous activities” and “is full of energy, even in evening.”
5
6 The Cronbach’s alpha in the present study was .60.
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9 12.2.3. Block Rearing Practices Report

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11 Paternal nurturance was measured adopting the 9-item nurturance subscale from
12 Block Rearing Practices Report (Dekovic et al., 1991). Parents answered the degree to which
13 the statements describe themselves regarding showing loving attitudes and acceptance during
14 parent-child interactions. With 1 indicating “not at all accurate” and 6 indicating “very
15 accurate”, higher scores indicated higher levels of parental nurturance. Two example items
16 were: “I talk it over and reason with my child when they misbehave” and “My child and I
17 have warm intimate moments together.” In the present study, the Cronbach’s alpha was .78.
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20 2.2.4. Parental Emotional Style Questionnaire (MESQ)

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22 Paternal emotion coaching was measured adopting the 7-item Emotional coaching
23 subscale from the MESQ (Lagacé-Séguin & Coplan, 2005). MESQ is a questionnaire that
24 assesses the extent to which parents acknowledge, accept, and soothe their children’s negative
25 emotions. Although originally developed based on a group of mothers, it is suitable to
26 administer to any main caregivers (Baker et al., 2010; Lagacé-Séguin & Coplan, 2005).
27
28 Parents self-rated on a 6-point scale, with 1 represented “not at all accurate,” and 6
29 represented “very accurate.” Higher scores indicated more frequent emotion coaching
30 behaviors from parents. Some example items were: “when my child is angry, it is an
31 opportunity for getting close” and “when my child is sad, I take some time to experience this
32 feeling with them.” In the present study, the Cronbach’s alpha was .76.
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35 2.2.5. Sociodemographic Information

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1 Demographic information was also collected. Parents reported child gender (1 = girls,
2 2 = boys), child age, and their monthly family income levels (1 = HK \$10,000 (\approx US \$1282)
3 or below, 14 = HK \$70,001 (\approx US \$8974) or above). Teachers reported their education levels
4 (1 = primary school, 2 = secondary school, 3 = diploma/higher education, 4 = bachelor's and
5 5 = master/doctoral).

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11 **3. Results**

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13 **3.1.1. Data Analysis**

14 We first conducted descriptive statistics and Pearson two-tailed correlations using SPSS
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16 28. Results were summarized and presented in *Table 1*. About 3% of data were missing.
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18 Results of a MCAR test showed that missing was completely at random ($\chi^2(15) = 9.28, p$
19 = .86. A maximum likelihood technique was adopted to handle missing data. Next, to answer
20 our research questions, we tested two three-way interaction models. In the present study,
21 children's aggressive behaviors were rated by class teachers, while the other variables were
22 rated by parents. Giving the nested nature of our data (one teacher rated multiple children in
23 the same classroom), we calculated Intraclass Correlation (ICC) to determine whether a
24 multi-level modeling approach is needed to account for the nestedness of our outcome
25 variable. Results showed that when including no predictor variable (unconditional model),
26 there was a significant variance at the teacher level ($\sigma^2 = 0.23, SE = .09, p = .00$). Moreover,
27 our study design met the minimum requirement for 2-level multilevel models, that is, having
28 at least 10 clusters (e.g., teachers) with at least one observation (e.g., child) per cluster (Bell
29 et al., 2008; Maas & Hox, 2005; Snijders & Bosker, 1999). Taken together, to accommodate
30 the potential bias due to the nestedness, we adopted a 2-level multilevel modeling using SAS
31 Academic OnDemand for Academics. We tested parental nurturance and emotion coaching
32 in two separate models given the high correlations between the two constructs ($r = .47, p$
33 < .001). At Level 1 (child level), we first included all covariates, that is, child gender, child
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age, and teachers' education levels. Then, we included predictor variables (i.e., surgency, parenting, and family income). Next, we included the two-way interaction terms among the three predictor variables (surgency x parenting, parenting x income, surgency x income). Finally, we included the three-way interaction term among predictor variables (surgency x parenting x income). At Level 2 (teacher level), we only included the outcome variable (i.e., child aggression). The three-way interaction was considered significant if the three-way interaction term yield to be a statistically significant predictor of the outcome variable. Significant interaction terms were followed up with a set of simple slope analyses to probe the specific effect of interactions at high (1 SD above the mean) and low (1 SD below the mean) levels. Results of the hierarchical regressions were summarized and presented in *Table 2* and *Table 3*.

3.2. Sociodemographic Characteristics and Descriptive Statistics

The mean age of participated preschoolers was 5.2 years ($SD = 0.6$ year), and 54% of them were boys. A total of 25% of the parents (80% were mothers) had a university degree or above. Of the participating parents, 9% were between 21 and 30 years old, 62% were between 31 and 40 years old, 25% were between 41 and 50 years old, and 3 % were above 51 years old. Moreover, 62% of the participating family make a monthly income that is about the same or below the median household income in Hong Kong (Census and Statistics Department, 2022). *Table 1* showed that child aggression was positively linked to child gender ($r = .22, p < .001$) and child age ($r = .13, p = .03$) and negatively linked to parental nurturance ($r = -.16, p = .01$). Conversely, child aggression was not correlated to parental emotion coaching ($r = -.08, p = .18$).

3.3. Joint Moderating Effects of Parental Nurturance and Income Level

As shown in *Table 2*, after adopting a multi-level setting and controlling for the covariates, the three-way interaction among child surgency, parental nurturance, and family

1 income level on child aggression resulted to be significant ($B = -0.15$, $SE = .04$, $p < .001$).
 2 Results of the follow-up simple slope analyses were presented in *Figure 1*. Considering high-
 3 income families, child surgency was positively associated with child aggression when
 4 parental nurturance levels were low ($B = 0.73$, $SE = .16$, $p < .001$), but was negatively
 5 associated with child aggression when parental nurturance levels were high ($B = -0.35$, SE
 6 $= .17$, $p = .04$). Regarding medium-income families, child surgency was positively associated
 7 with child aggression when parental nurturance levels were low ($B = 0.29$, $SE = .11$, $p = .01$),
 8 but was not significantly associated with child aggression when parental nurturance levels
 9 were high ($B = -0.08$, $SE = .11$, $p = .50$). As for low-income families, child surgency was not
 10 related to child aggression, both when parental nurturance levels were low ($B = -0.13$, SE
 11 $= .17$, $p = .43$) and high ($B = 0.19$, $SE = .15$, $p = .21$).

27 **3.4. Joint Moderating Effects of Parental Emotion Coaching and Income Level**

28 *Table 2* showed that after controlling for all covariates, the three-way interaction
 29 among child surgency, parental emotion coaching, and family income level on child
 30 aggression resulted to be non-significant ($B = -0.04$, $SE = .03$, $p = .20$). Although, as
 31 presented in *Table 3*, the two-way interaction term of child surgency and parental emotion
 32 coaching on child aggression was significant ($B = -0.27$, $SE = .12$, $p = .02$). Follow-up simple
 33 slope analyses (*Figure 2*) revealed that child surgency was positively associated with child
 34 aggression when parental emotion coaching levels were low ($B = 0.31$, $SE = .11$, $p = .00$). But
 35 this association was not significant when parental emotion coaching levels were high ($B = -$
 36 0.05 , $SE = .11$, $p = .66$).

51 **4. Discussion**

52 Early childhood researchers have been trying to understand children's social
 53 behaviors under the temperament framework. Nevertheless, results of studies investigating
 54 the association between child surgency and child aggression were not consistent (Yavuz-
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Müren et al., 2022), suggesting the presence of potential moderators. According to a
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goodness-of-fit perspective, children's social development is contingent upon not only their own characteristics, but also on the processes of socialization and the contexts where the socialization processes occur (Chess & Thomas, 1991; Thomas & Chess, 1977). Therefore, the primary goal of the present study was to adopt the goodness-of-fit theory of child development, and to search for potential protective factors for high-surgent young children. Particularly, we tested a general indirect socialization style, nurturance, and a specific direct socialization behavior, emotion coaching, as potential process moderators of the association between child surgency and child aggression in the Chinese context. We also tested family income levels as a contextual moderator.

Consistent with previous studies conducted in Western contexts (de Maat et al., 2022; Dollar & Stifter, 2012; Zubizarreta et al., 2018), our results indicated that child surgency was linked to child aggression. Such a link, however, was not significant when parents expressed high levels of love and affection. These findings lend support to the view that parental socialization may protect children from temperamental risks, which corroborated our initial hypothesis. A similar pattern was found with parental emotion coaching. As we hypothesized, high child surgency was positively linked to children's aggressive behaviors only when parents failed to provide adequate guidance for their young children to regulate negative emotions. However, unlike parental nurturance, our results showed that parental emotion coaching was not directly correlated with child aggression. This non-significant direct relation is consistent with the findings of a prior study (Ramsden & Hubbard, 2002). One explanation might be that emotion coaching is a specific parenting practice aiming to help children regulate their negative emotions when negative emotions are *present*. Nevertheless, children might differ in terms of the frequency they show negative emotions, the reasons why they experience negative emotions, and whether their negative emotions are

1 observable for their parents (i.e., emotion expressivity) which might influence the effect of
2 emotion coaching on aggression. These potential confounding factors once again point to the
3 importance of considering child characteristics in conjunction with parenting behaviors.
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5 Relatedly, in line with the assumptions under the goodness-of-fit framework, environmental
6 factors included extra-familial agents (e.g., peers and teachers) might play a role as important
7 as the familial socializers in children's social development (Parke et al., 2002). Given the
8 scope of the present study, we did not examine the impact of extra-familial factors. Future
9 studies should take multiple environmental influences into consideration to further advance
10 our understanding of children's behavioral development.
11

12 For both process moderators, it is possible that they exert their power by facilitating
13 children's self-regulation. As suggested by previous studies, a nurturing parenting style can
14 facilitate the develop and the maturation of children's emotion self-regulation skills, which
15 could in turn protect children from maladjustment including aggression (Eisenberg et al.,
16 2005; Grusec & Goodnow, 1994). Likewise, conceptualized as a specific manner to show
17 acceptance and to directly help children regulate their negative emotions, parental emotion
18 coaching may facilitate children's development of emotion self-regulation. Sameroff (2010)
19 argued that young children depend heavily on others in terms of regulating emotions, such as
20 parents, teachers, and peers. As a result, parental emotion socialization places great
21 importance on children's social and emotional development. Thus, it is possible that parental
22 nurturance and parental emotion coaching fostered better emotion self-regulation skills in
23 young children, thereby protected high-surgent children from aggression.
24

25 Notably, family income levels altered the impact of parental nurturance on high-
26 surgent children's aggressive behaviors. In keeping with previous findings, we found that
27 parental nurturance buffered against child aggression for high-surgent children only when
28 family income levels were average or high. One explanation is that given the stress and
29

1 hassles associated with economic strain, low-income parents are likely to lack the capacities
2 to *consistently* provide high-quality nurturance to protect children from exhibiting aggression
3 (Goldschmidt et al., 2021). In fact, our results showed that, for low-income families, the
4 direction of parental nurturance's effect was the opposite of that of middle- and high-income
5 families. Although the exacerbating effect of high nurturance was not statistically significant,
6 it might explain why low-income parents turn to the harsher forms of parenting – the opposite
7 of nurturance. Relatedly, studies found that Chinese young children from low-income
8 families tended to receive less emotional warmth and more harsh disciplines from parents,
9 which in turn led to more behavioral problems (Wu et al., 2015; Xing et al., 2019). Our
10 findings demonstrated the potential negative impact of a poor fit between parenting and
11 developmental risks faced by children from different socioeconomic and cultural
12 backgrounds (Chess & Thomas, 1991; Conger et al., 2010; Dong et al., 2022; Spera, 2005).
13 However, given that fewer developmental studies are conducted with low-income families
14 than with middle- and high-income families, more empirical support is needed to make this
15 claim. To this end, future studies should adopt a more representative sample, ideally from
16 different cultural and socioeconomic backgrounds.

17 On the contrary, the protective effect of parental emotion coaching on child
18 aggression did not differ in families with different economic backgrounds. We speculate that
19 unlike the general nurturing parenting style which requires parents to have the resources to
20 constantly provide warmth and support, emotion coaching requires “momentary” actions.
21 That is, instead of providing constant and continuous support, parents only need to coach
22 children when they display negative emotions. These specific actions of coaching help
23 children regulate their negative emotions regardless of economic backgrounds. Supporting
24 this speculation, Ramsden and Hubbard (2002) found in a group of diverse US families that
25 emotion coaching practices did not differ by family income levels, and that parental emotion
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1 coaching was indirectly linked to reduced child aggression through boosting child emotion
2 regulation skills.
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4 Our findings have important theoretical and practical implications. Theoretically,
5 results of our study provided support to both the temperament theory (Rothbart, 2007;
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7 Rothbart & Derryberry, 1981) and the goodness-of-fit theory of development (Chess &
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9 Thomas, 1991; Thomas & Chess, 1977). Our study highlighted the importance of taking into
10 account both child features, such as child temperament, and environmental features, such as
11 socialization processes and family economic background, in understanding child
12 development. Our study also addressed the literature gaps by examining the moderating
13 effect of parenting on high-surgent children (Stifter & Dollar, 2016). Furthermore, given the
14 non-significant protective effect of nurturance in low-income families, our findings suggest
15 the need of research on and support to low-income families (Brown et al., 2019; McGroder,
16 2000). Practically, our findings highlight the pivotal influence of parenting in “altering” at-
17 risk children’s developmental trajectories, indicate the utility of helping parents to express
18 their warmth and affection, and communicate to their children about their feelings and
19 emotions, as to reduce aggressive behaviors in preschool-age children. These practices are
20 particularly important to those children with dispositional traits that are associated with
21 aggression, such as surgency. This “indirect” approach through parents to reduce at-risk
22 children’s aggression carries significant practical value, given that children’s temperament is
23 likely to remain stable over time (Chen & Schmidt, 2015). Importantly, our findings show the
24 differential effect of socialization processes for families with different economic
25 backgrounds, providing guidelines of parenting for families differ in SES. Given the large
26 wealth inequality in Hong Kong (Oxfam, 2022), it is pivotal to make specific adjustment in
27 parenting intervention programs for families of different background. For instance, parenting
28 practices that function as protective factors in all families such as emotion coaching should
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1 be prioritized for low-income parents. Policy-makers should also make parenting resources
2 available and accessible to low-income parents. If necessary, monetary incentives can be
3 provided to low-income families to participate in parenting workshops or classes.
4

5 Our study has several evident strengths. First, our study represents one of the first
6 attempts to detect the moderating effects of parental nurturance and parental emotion
7 coaching on the relation between child surgency and child aggression among families with
8 diverse economic backgrounds. By adopting a Chinese sample with diverse socioeconomic
9 backgrounds and taking into account family income levels, our study enriches the relatively
10 scarce family research using non-Western samples (Thalmayer et al., 2020). Second, we
11 linked variables reported by multiple informants and adopted the multilevel modeling when
12 analyzing teacher-rated aggression and parent-rated temperament, thus offset some common
13 method variance and provided a relatively more reliable result (Podsakoff et al., 2003).
14 Finally, we adopted an approach to enlarge the generalizability of our study by stratifying and
15 recruiting from areas with different SES backgrounds in Hong Kong.
16

34 5. Limitations and Conclusions

35 Our study is not without limitations. First and foremost, the present study's cross-
36 sectional design and correlational nature restrict us from inferring the longitudinal or causal-
37 effect relations among child surgency, children's aggressive behaviors, parental nurturance,
38 and parental emotion coaching. Further studies with more rigorous designs such as
39 longitudinal or randomized experimental design are needed to determine the long-term effect
40 of parental socialization processes. Second, although we adopted multiple informants to
41 avoid some common method variance, the measurement can be improved – some of them
42 showed merely acceptable internal reliability (i.e., .60). Relatedly, despite our effort to adopt
43 validated measurements, the study variables were measured by brief questionnaires for
44 parents and teachers with only a few survey items. Therefore, our findings and conclusions
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1 should be generated with caution. In the meantime, future studies should try to replicate the
2 study findings using multiple sophisticated measurement tools such as validated long
3 questionnaires, ideally developed in a Chinese context, as well as observations. Finally,
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5 although we adopted a stratified sampling approach to ensure the diversity of our sample, we
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7 only collected data from young children studying in six preschools in Hong Kong. Our
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9 sample cannot represent all Chinese children. Further studies should be conducted with
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11 representative samples with wider age range and from different parts of China.
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14 Despite these limitations, our study provides important insight into the joint effect of
15 young children's temperamental traits, parental socialization, and family SES background on
16 children's social development in the Chinese context. From a theoretical perspective, our
17 study echoes the views on the interactive effects of children's characteristics and parenting
18 practices (Chess & Thomas, 1991; Eisenberg et al., 1998) and expands the typical focus of
19 temperament to child surgency (Stifter & Dollar, 2016). From a practical perspective, our
20 findings highlight the protective effect of socialization for children with high surgency and
21 economic advantage, therefore point to the utility of promote positive parenting to reduce
22 children's aggressive behaviors in early childhood.
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Table 1 Means, Standard Deviations, Ranges, and Correlations Among Variables.

Variables	1	2	3	4	5	6	7	8	M	SD	Range
1 Child gender	–								–	–	0.00 – 1.00
2 Child age	-.04	–							5.19	0.61	3.25 – 6.58
3 Teacher education	-.06	-.07	–						2.07	1.04	1.00 – 5.57
4 Monthly household income	.07	-.15*	.25*	–					4.01	0.70	2.25 – 6.00
5 Child surgency	.08	.10	-.08	-.03	–				2.63	1.03	1.00 – 5.00
6 Child aggression	.22**	.13*	.23**	.10	.08	–			1.08	0.27	1.00 – 2.00
7 Parental nurturance	-.10	.03	-.09	-.05	.03	-.16**	–		5.10	0.54	3.44 – 6.00
8 Parental emotion coaching	-.03	.03	-.03	.02	.01	-.08	.47**	–	4.84	0.66	2.86 – 6.00

Note: * $p < .05$ ** $p < .01$

Table 2 Unstandardized Coefficients (B), Standard Errors (SE), parameters of multilevel model of child aggression, parental nurturance, parental emotion coaching, and family income.

Variables	Child aggression			Variables	Child aggression		
	B	SE	p		B	SE	p
Child gender	0.41	0.11	.00	Child gender	0.41	0.11	.04
Child age	0.24	0.11	.03	Child age	0.24	0.11	.04
Teacher education	0.27	0.10	.01	Teacher education	0.27	0.11	.02
Child surgency (CS)	0.11	0.08	.16	Child surgency (CS)	0.13	0.08	.11
Parental nurturance (PN)	-0.16	0.10	.11	Emotion coaching (EC)	-0.07	0.08	.41
Monthly household income (MHI)	0.00	0.01	.82	Monthly household income (MHI)	0.00	0.02	.92
CS x PN	-0.35	0.15	.02	CS x EC	-0.24	0.12	.05
CS x MHI	0.02	0.02	.33	CS x MHI	0.02	0.02	.35
PN x MHI	-0.01	0.02	.59	EC x MHI	-0.00	0.02	.93
CS x PN x MHI	-0.15	0.04	<.001	CS x EC x MHI	-0.04	0.03	.20

Table 3 Unstandardized Coefficients (B), Standard Errors (SE), parameters of multilevel model of child aggression and parental emotion coaching.

Variables	Child aggression		
	B	SE	p
Child gender	0.40	0.11	<.001
Child age	0.23	0.11	.05
Teacher education	0.27	0.11	.02
Child surgency (CS)	0.13	0.08	.10
Emotion coaching (EC)	-0.07	0.08	.38
Monthly household income	0.00	0.02	.95
CS x EC	-0.28	0.12	.02

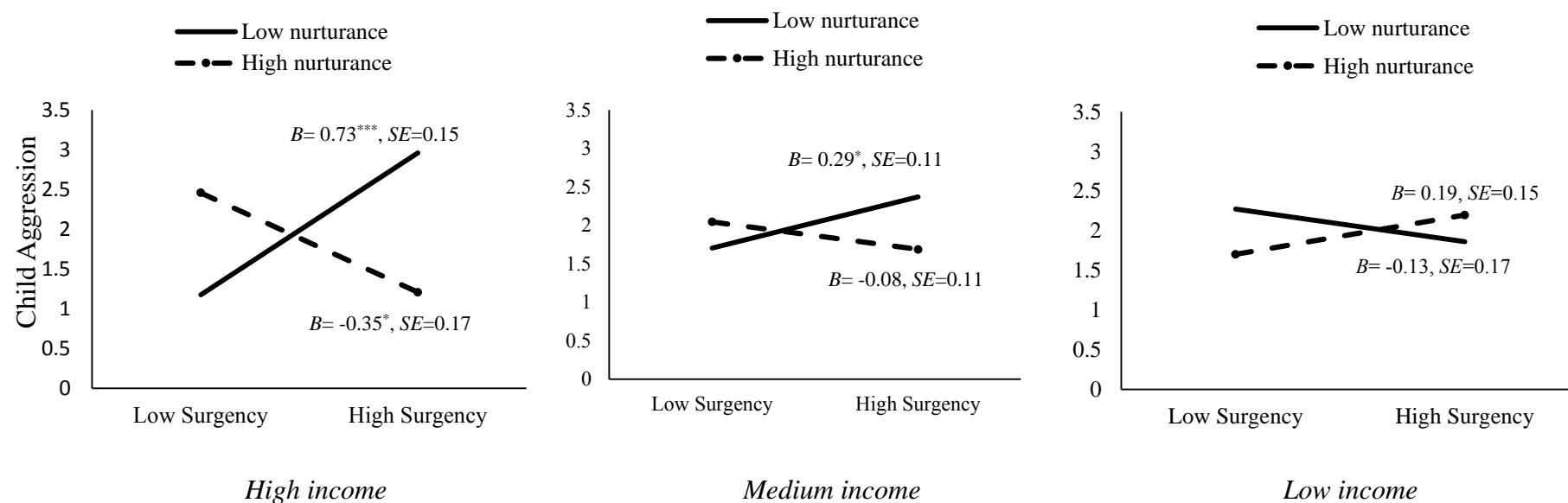


Figure 1. Three-way interactions of child surgency with teachers' rating of children's aggressive behaviors by parental nurturance and family income.

Note: * $p < .05$, *** $p < .001$

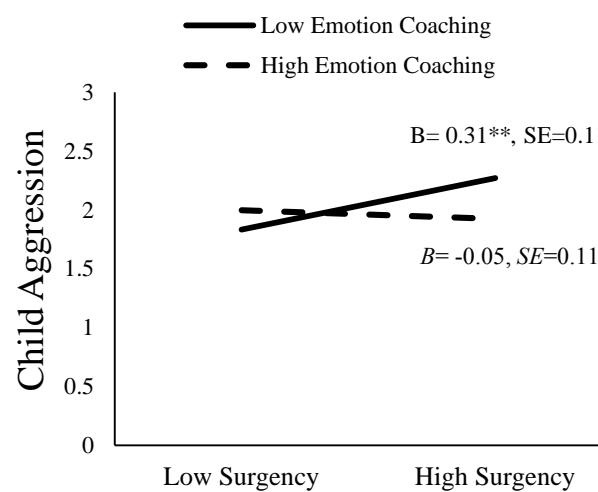


Figure 2. Two-way interaction of surgency with teacher-rated child aggression by parental emotion coaching.

Note: ** $p < .01$

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**Child Surgency and Child Aggression: The Moderating Effect of Parental Nurturance,
Emotion Coaching, and Family Income**

Abstract

According to the goodness-of-fit development theory, a mismatch between child characteristics and socialization processes tends to lead to child maladjustment. The present study aimed to examine whether the association between child surgency and child aggression varies as a function of parenting styles and practices such as parental nurturance and parental emotion coaching. In addition, family economic background was examined as a contextual moderator. Cross-sectional questionnaire data were collected from parents and class teachers of 288 preschoolers ($M_{age} = 5.2$ years; 53% were boys) in Hong Kong, China. Separate multilevel models were run to test parental nurturance, emotion coaching, and family income level as moderators. Results indicated that controlling for confounding variables, child surgency was only positively associated with child aggression when parental nurturance was low, but not when parental nurturance was high. However, this pattern only emerged in high- and medium-income families, but not in low-income families. A similar but different pattern was observed for parental emotion coaching: regardless of family income level, child surgency was only associated with child aggression when parental emotion coaching was low, but not when it was high. Theoretically, our findings highlight the importance of considering the fit between child temperament and environmental features, such as parenting and family economic background, in understanding child development. Practically, our findings point to the utility of helping parents to express their love and affection and to talk to their children about managing emotions to reduce aggression in preschool-aged children, especially those with high surgency and economic advantages.

Keywords: Child Aggression; Surgency; Parental nurturance; Emotion Coaching; Family Income;

1. Introduction

1 Aggression is a pervasive and persistent form of maladjustment in childhood (Furniss
2 et al., 2006; Institute of Medicine, 1989). Child aggression attracts additional interests from
3 parents, practitioners, and researchers, as it was linked to other indices of maladjustment,
4 including peer rejection and depressive symptoms across developmental stages (Ettekal &
5 Ladd, 2020; Krygsman & Vaillancourt, 2019). Temperament-based theories highlight the
6 contributions of such early personality traits as surgency to child aggression (DeLisi &
7 Vaughn, 2014; Rothbart & Derryberry, 1981). Studies found that child surgency –
8 characterized by impulsivity, high intensity pleasure, and high approach tendency – was
9 positively linked to children's aggressive behaviors (Berdan et al., 2008; de Maat et al., 2022;
10 Dollar & Stifter, 2012). On the other hand, a goodness-of-fit theory of development
11 emphasizes the effect of the compatibility among child temperamental traits, parenting, and
12 other contextual factors on developmental outcomes (Chess & Thomas, 1991; Thomas &
13 Chess, 1977). Positive parenting including nurturance and emotion coaching seems to be
14 beneficial to child social development but is rarely tested in relation to child surgency,
15 especially for non-Western populations (Chen, 2018; Gus et al., 2015; Khaleque, 2013). In
16 addition, contextual factors such as family income also play a pivotal role in young children's
17 development of aggressive behaviors (Miller & Tolan, 2018).

18 Guided by the temperament and the goodness-of-fit theories, the present study aimed
19 to extend the current literature by examining the interactive effect among child surgency,
20 positive parenting styles and practices, and family income on child aggression. Using cross-
21 sectional, multi-informant data collected from Chinese families living in Hong Kong, China,
22 we tested whether parents' nurturance – general expression of love for and acceptance of
23 children (Locke & Prinz, 2002) – and emotion coaching – specific behaviors in response to
24 children's negative emotions (Gottman et al., 1996) – moderated the association between
25

1 child surgency and aggression in early childhood. We further tested whether the moderation
2 effect of parenting varies in families with different income levels.
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5 **1.1. Surgency and Aggression**

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7 Difficult temperamental traits are viewed as risk factors for child development
8 (Wachs, 2006). Children with high surgency – one of such difficult temperamental traits
9 – typically are full of energy, high on activity levels, impulsive, and tend to get overly excited
10 when encountering novelty. Not surprisingly, young children with high levels of energy and
11 impulsivity are more likely to experience issues when interacting with peers. Indeed, several
12 cross-sectional and longitudinal studies have linked high child surgency to behavioral
13 problems including aggressive and disruptive behaviors. For example, Nwadinobi and Gagne
14 (2020) have documented a concurrent positive association between a group of mainly White
15 American preschoolers' surgency level and their parent-rated aggressive behaviors.
16 Zubizarreta et al. (2018) found that surgency in middle childhood was positively linked to
17 children's aggressive behaviors eight months later among a group of Spanish children. More
18 recently, de Maat et al. (2022) reported evidence supporting the longitudinal relation between
19 Dutch children's surgency and their behavioral problems: children's parent-reported surgency
20 at the age of five years was associated with more teacher-reported externalizing behaviors at
21 the age of seven years. He et al.'s (2017) study documented a positive link between Chinese
22 young children's surgency and externalizing behaviors.
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25 Interestingly, different patterns were unraveled, with other studies yielding negative
26 or no connection between high surgency and child aggression (See Yavuz-Müren et al., 2022
27 for a review). Kochanska and Radke-Yarrow (1992) reported that toddlers with high activity
28 levels and high positive affect were more sociable than low-surgent children and that they
29 exhibited more willingness to play within a peer group when encountered in a new
30 environment. Consistently, Rimm-Kaufman and Kagan (2005) drew the conclusion that
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1 White middle-class infants who were rated as high on surgency (impulsive and had a great
2 tendency to approach unfamiliar people) showed more prosocial behaviors in the unfamiliar
3 situation. However, others reported nonsignificant associations between surgency and
4 aggression. For example, Atherton et al. (2017) found that Mexican-origin school age
5 children's temperamental surgency predicted neither aggressive perpetration nor aggressive
6 victimization. In addition, Delgado et al. (2018) reported that White middle-class children's
7 surgency, as indicated by tendency towards stimulation, high activity levels and impulsivity,
8 was not associated with their externalizing problems. These inconsistent findings may
9 suggest the moderating role of environmental factors on child adjustment.
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12 **1.2. Parental Nurturance and Emotion Coaching as Process Moderators**

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14 According to a goodness-of-fit point of view, child development is not only
15 dependent on child characteristics or parental socialization processes, but also their combined
16 effects (Chess & Thomas, 1991; Thomas & Chess, 1977). In other words, the impact of
17 parental socialization might vary for children with different characteristics. Eisenberg et al.
18 (1998) argued that parental socialization affects children's social and emotional development
19 mainly through two approaches: indirect socialization, which refers to the parent-child
20 interactions that would affect children's understanding and regulation of emotions, and direct
21 socialization, which refers to behaviors that directly reflect parents' emotion-related beliefs
22 and socialization goals. The present study focused on two socialization process constructs,
23 parental nurturance, which pertains to indirect socialization and parental emotion coaching,
24 which pertains to direct socialization. In fact, there is evidence suggesting the effects of
25 parental nurturance and parental emotion coaching might vary for children with different
26 levels of surgency.
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29 **1.2.1. Parental Nurturance**

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1 Parental nurturance is characterized by positive expressivity during parent-child
2 interaction, high supportiveness, and low harshness (Locke & Prinz, 2002). Parents who are
3 more nurturing and express more positivity in parent-child interactions seem to have modeled
4 for their children the appropriate way to interact with others and how to better regulate
5 children's own emotions, thereby reducing the chance children exhibit aggressive behaviors
6 (Eisenberg et al., 2005). In other words, parents who provide a generally warm and positive
7 parenting environment tend to have children who are more regulated and better behaved.
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9 Indeed, Ye et al.'s (2012) study revealed the moderating effect of parenting style on the link
10 between temperament and aggression in a group of Chinese adolescents. They found that
11 youth characterized by high sensation seeking were at high risk for exhibiting aggressive
12 behaviors; however, such an effect was buffered by an authoritative parenting style, which is
13 characterized by high parental nurturance and high parental supportiveness to children's
14 emotions (Ye et al., 2012). Another study has documented that Chinese school-aged children
15 who had enjoyed high intensity pleasure showed more aggressive behaviors and that such a
16 connection was particularly salient when parents showed a harsh and less nurturing style of
17 parenting (Xu et al., 2009). Taken together, parental nurturance appears to moderate the
18 relation between child surgency and child aggression.

41 **1.2.2. Parental Emotion Coaching**

42 Parental emotion coaching is characterized by frequent, appropriate parent-child
43 communication especially regarding children's negative feelings (Lagacé-Séguin & Coplan,
44 2005). Research findings similarly suggest its interactive effects with surgency on young
45 children's aggressive behaviors. Due to their high sensation seeking and high approach
46 tendency, children with high surgency experience more peer rejections and the consequent
47 negative emotions (Dollar & Stifter, 2012). In the face of such negative emotions, whether
48 parents could help children regulate those emotions appropriately seem to determine whether
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1 these children would act out aggressively (Eisenberg et al., 2007). Indeed, results from
2 previous studies seem to support such a view. For instance, McDoniel and Buss (2018)
3 examined the interactive effect of child temperament and parenting practices on behavioral
4 problems among a group of American children. Their results revealed that high-surgent
5 children exhibited more behavioral problems and that such an association was buffered by
6 parents' emotionally responsive parenting (McDoniel & Buss, 2018). In summary, parental
7 emotion coaching is likely to moderate the association between child surgency and child
8 aggression.

19 **1.3. Family Income Level as Contextual Moderator**

20 Parental socialization operates within the context of family background
21 (Bronfenbrenner & Crouter, 1983). As a result, the effects of parental socialization are likely
22 to differ for families with different individual and familial backgrounds. In other words,
23 although certain parental socialization processes are associated with better child social and
24 emotional outcomes, their effects might not be the same for families with different
25 environmental characteristics such as economic backgrounds (Bronfenbrenner & Crouter,
26 1983; Mistry et al., 2002). Nurturing and emotionally supportive socializations, for instance,
27 are documented as beneficial to children's social and emotional competence for White,
28 middle-class families (Baumrind, 2013; Gallitto & Leth-Steensen, 2019). Yet, the effects of
29 these socialization processes are less tested in low-income and non-White families
30 (McGroder, 2000; Smetana, 2017).

31 In fact, parental socialization goals and child developmental risks tend to differ in
32 families with different economic backgrounds (Conger et al., 2010; Spera, 2005).
33 Consequently, parents in households with different income levels are likely to engage in
34 different types of parenting. For example, in affluent or middle-class White households,
35 parents are more likely to use warm, authoritative, and emotionally supportive parenting; on
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1 the flip side, in non-White households with economic hardships, parents tend to engage in
2 parenting behaviors characterized by harsh discipline, power assertion, and low nurturance
3 (Choi et al., 2018; Shaffer et al., 2012; Xie & Li, 2019). A qualitative study also reported that
4 many parents living in resource-constrained environments lacked the capacities to
5 *consistently* provide nurturance to their children which had significant implications to
6 children's social and emotional development (Goldschmidt et al., 2021). Moreover, evidence
7 showed that family income level can influence the trajectory of child development. Studies
8 found that family economic hardship was linked to elevated child aggression (Anderson et
9 al., 2022; Brophy-Herb et al., 2011; Tremblay et al., 2004), potentially due to the lack of
10 resources and heightened neighborhood risks associated with it. Despite known as a highly-
11 developed financial hub, Hong Kong is characterized by a large wealth gap. According to a
12 study conducted in Hong Kong, the top 10% richest earn 40 times more than the bottom 10%
13 poorest (Oxfam, 2022). Given the huge income inequality of the city, it is imperative to exam
14 family economic backgrounds as a contextual moderator when studying Hong Kong families.
15
16 Taken together, family income levels should be considered as a contextual moderator.

36 **1.4. The Present Study**

37 To recap, the present study, grounded within the goodness of fit theory of
38 development, intended to address several gaps of the extant literature on temperament,
39 parenting, and child aggression. First, to address the literature paucity regarding the
40 interactive effect of parental socialization processes on the relation between child surgency
41 and aggression, we tested two process moderators: parental nurturance which pertains to
42 indirect socialization and parental emotion coaching which pertains to direct socialization.
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44 Second, we included family income levels as a contextual moderator to test the potentially
45 different effects of parenting in Hong Kong families with different economic backgrounds.
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47 Furthermore, Hong Kong Chinese parents tend to foster highly social and controlled
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1 behaviors in their young children to help children adhere to the cultural norm in the society
2 (Kwong et al., 2018). As a result, Hong Kong parents might see child impulsivity and
3 aggression as less tolerable compared to Western parents. Yet, Hong Kong children's social
4 behaviors and their socialization processes are relatively understudied. To provide insight
5 regarding Hong Kong Chinese young children's social and emotional development, the
6 present study adopted a Hong Kong Chinese sample. To pinpoint the effect of main study
7 variables, a series of demographic variables were controlled, as they might confound with the
8 outcome variables (Archer, 2004). Guided by temperament and goodness-of-fit theories, we
9 expected that high child surgency would be linked to more aggressive behaviors in children
10 when they have parents that are low in nurturance or emotion coaching. We also
11 hypothesized that both parental nurturance and emotion coaching would buffer against
12 aggression in medium- and high-income families.

2. Materials and Methods

2.1. Participants and Procedures

34 Hong Kong consists of 18 different administrative districts; each has a unique
35 socioeconomic status (SES) background (Census and Statistics Department, 2012). To
36 increase the diversity of our sample, we stratified the 18 districts into low SES districts
37 (districts with median household incomes below the population's median household income)
38 and high SES districts (districts with median household incomes above the population's
39 median household income). Next, using publicly available information, we randomly called
40 preschools from low and high SES districts and invited them to join the study. Three
41 preschools from low SES districts and three preschools from high SES districts agreed to
42 participate. Then, formal consents were sent to families with children studying in two
43 randomly selected second-year classes, and two randomly selected third-year classes, in each
44 participating preschool. Parents who returned consent forms self-administered questionnaires
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1 at home, reporting their own parenting behaviors, child characteristics, and demographic
2 information. Teachers self-administered questionnaires at work, reporting social behaviors of
3 each participating child in their classes.
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5 After completing and returning the questionnaires, each parent and teacher was
6 compensated with a supermarket coupon of HK \$50 (\approx US\$6). Eventually, 288 preschoolers'
7 parents and teachers provided consent to the study and returned the completed questionnaires.
8 A total of 24 class teachers rated child behaviors at schools (response rate = 100%). All
9 teachers were female. The procedure of the present study was approved by the Human
10 Research Ethic Committee of the second author's University.
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13 **2.2. Measures**

14 Validated measurements were adopted to assess the study variables. Two bilingual
15 research assistants helped to translate English questionnaires to Chinese and back-translate to
16 English. The research assistants then compared their work to adjust the accuracy. Mean
17 scores were used as the final scores of constructs.
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20 **2.2.1. Social Competence Scale**

21 Children's aggressive behaviors were assessed using the 7-item aggressive-coercive
22 subscale from the Social Competence Scale (Vaughn et al., 2009). Teachers rated children's
23 aggressive and coercive behaviors towards peers on a 6-point scale. The scores ranged from 1
24 (not at all accurate) to 6 (very accurate). Higher scores indicated more aggressive behaviors
25 towards peers. Some example items were: "this child says mean things to peer in teasing or
26 name-calling" and "this child starts fights with peers." In the present study, the Cronbach's
27 alpha was .92.
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30 **2.2.2. Children's Behavior Questionnaire (CBQ)**

31 Child surgency was measured using eight items adapted from surgency subscale of
32 CBQ – short form (Rothbart et al., 2001). Parents were asked to rate their children's
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1 temperament considering their activity level, high intensity pleasure, and impulsivity on a 6-
2 point scale. With 1 indicating “not at all accurate” and 6 indicating “very accurate,” a higher
3 score represented a higher level of child surgency. Some example items were “likes going
4 down high slides or other adventurous activities” and “is full of energy, even in evening.”
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6 The Cronbach’s alpha in the present study was .60.
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9 12.2.3. Block Rearing Practices Report

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11 Paternal nurturance was measured adopting the 9-item nurturance subscale from
12 Block Rearing Practices Report (Dekovic et al., 1991). Parents answered the degree to which
13 the statements describe themselves regarding showing loving attitudes and acceptance during
14 parent-child interactions. With 1 indicating “not at all accurate” and 6 indicating “very
15 accurate”, higher scores indicated higher levels of parental nurturance. Two example items
16 were: “I talk it over and reason with my child when they misbehave” and “My child and I
17 have warm intimate moments together.” In the present study, the Cronbach’s alpha was .78.
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20 2.2.4. Parental Emotional Style Questionnaire (MESQ)

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22 Paternal emotion coaching was measured adopting the 7-item Emotional coaching
23 subscale from the MESQ (Lagacé-Séguin & Coplan, 2005). MESQ is a questionnaire that
24 assesses the extent to which parents acknowledge, accept, and soothe their children’s negative
25 emotions. Although originally developed based on a group of mothers, it is suitable to
26 administer to any main caregivers (Baker et al., 2010; Lagacé-Séguin & Coplan, 2005).
27
28 Parents self-rated on a 6-point scale, with 1 represented “not at all accurate,” and 6
29 represented “very accurate.” Higher scores indicated more frequent emotion coaching
30 behaviors from parents. Some example items were: “when my child is angry, it is an
31 opportunity for getting close” and “when my child is sad, I take some time to experience this
32 feeling with them.” In the present study, the Cronbach’s alpha was .76.
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35 2.2.5. Sociodemographic Information

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1 Demographic information was also collected. Parents reported child gender (1 = girls,
 2 2 = boys), child age, and their monthly family income levels (1 = HK \$10,000 (\approx US \$1282)
 3 or below, 14 = HK \$70,001 (\approx US \$8974) or above). Teachers reported their education levels
 4 (1 = primary school, 2 = secondary school, 3 = diploma/higher education, 4 = bachelor's and
 5 5 = master/doctoral).

11 **3. Results**

12 **3.1.1. Data Analysis**

13 We first conducted descriptive statistics and Pearson two-tailed correlations using SPSS
 14 28. Results were summarized and presented in *Table 1*. About 3% of data were missing.

15 Results of a MCAR test showed that missing was completely at random ($\chi^2(15) = 9.28, p$
 16 = .86. A maximum likelihood technique was adopted to handle missing data. Next, to answer
 17 our research questions, we tested two three-way interaction models. In the present study,
 18 children's aggressive behaviors were rated by class teachers, while the other variables were
 19 rated by parents. Giving the nested nature of our data (one teacher rated multiple children in
 20 the same classroom), we calculated Intraclass Correlation (ICC) to determine whether a
 21 multi-level modeling approach is needed to account for the nestedness of our outcome
 22 variable. Results showed that when including no predictor variable (unconditional model),
 23 there was a significant variance at the teacher level ($\sigma^2 = 0.23, SE = .09, p = .00$). Moreover,
 24 our study design met the minimum requirement for 2-level multilevel models, that is, having
 25 at least 10 clusters (e.g., teachers) with at least one observation (e.g., child) per cluster (Bell
 26 et al., 2008; Maas & Hox, 2005; Snijders & Bosker, 1999). Taken together, to accommodate
 27 the potential bias due to the nestedness, we adopted a 2-level multilevel modeling using SAS
 28 Academic OnDemand for Academics. We tested parental nurturance and emotion coaching
 29 in two separate models given the high correlations between the two constructs ($r = .47, p$
 30 < .001). At Level 1 (child level), we first included all covariates, that is, child gender, child
 31

age, and teachers' education levels. Then, we included predictor variables (i.e., surgency, parenting, and family income). Next, we included the two-way interaction terms among the three predictor variables (surgency x parenting, parenting x income, surgency x income). Finally, we included the three-way interaction term among predictor variables (surgency x parenting x income). At Level 2 (teacher level), we only included the outcome variable (i.e., child aggression). The three-way interaction was considered significant if the three-way interaction term yield to be a statistically significant predictor of the outcome variable. Significant interaction terms were followed up with a set of simple slope analyses to probe the specific effect of interactions at high (1 SD above the mean) and low (1 SD below the mean) levels. Results of the hierarchical regressions were summarized and presented in *Table 2* and *Table 3*.

3.2. Sociodemographic Characteristics and Descriptive Statistics

The mean age of participated preschoolers was 5.2 years ($SD = 0.6$ year), and 54% of them were boys. A total of 25% of the parents (80% were mothers) had a university degree or above. Of the participating parents, 9% were between 21 and 30 years old, 62% were between 31 and 40 years old, 25% were between 41 and 50 years old, and 3 % were above 51 years old. Moreover, 62% of the participating family make a monthly income that is about the same or below the median household income in Hong Kong (Census and Statistics Department, 2022). *Table 1* showed that child aggression was positively linked to child gender ($r = .22, p < .001$) and child age ($r = .13, p = .03$) and negatively linked to parental nurturance ($r = -.16, p = .01$). Conversely, child aggression was not correlated to parental emotion coaching ($r = -.08, p = .18$).

3.3. Joint Moderating Effects of Parental Nurturance and Income Level

As shown in *Table 2*, after adopting a multi-level setting and controlling for the covariates, the three-way interaction among child surgency, parental nurturance, and family

1 income level on child aggression resulted to be significant ($B = -0.15$, $SE = .04$, $p < .001$).
 2 Results of the follow-up simple slope analyses were presented in *Figure 1*. Considering high-
 3 income families, child surgency was positively associated with child aggression when
 4 parental nurturance levels were low ($B = 0.73$, $SE = .16$, $p < .001$), but was negatively
 5 associated with child aggression when parental nurturance levels were high ($B = -0.35$, SE
 6 $= .17$, $p = .04$). Regarding medium-income families, child surgency was positively associated
 7 with child aggression when parental nurturance levels were low ($B = 0.29$, $SE = .11$, $p = .01$),
 8 but was not significantly associated with child aggression when parental nurturance levels
 9 were high ($B = -0.08$, $SE = .11$, $p = .50$). As for low-income families, child surgency was not
 10 related to child aggression, both when parental nurturance levels were low ($B = -0.13$, SE
 11 $= .17$, $p = .43$) and high ($B = 0.19$, $SE = .15$, $p = .21$).

27 **3.4. Joint Moderating Effects of Parental Emotion Coaching and Income Level**

28 *Table 2* showed that after controlling for all covariates, the three-way interaction
 29 among child surgency, parental emotion coaching, and family income level on child
 30 aggression resulted to be non-significant ($B = -0.04$, $SE = .03$, $p = .20$). Although, as
 31 presented in *Table 3*, the two-way interaction term of child surgency and parental emotion
 32 coaching on child aggression was significant ($B = -0.27$, $SE = .12$, $p = .02$). Follow-up simple
 33 slope analyses (*Figure 2*) revealed that child surgency was positively associated with child
 34 aggression when parental emotion coaching levels were low ($B = 0.31$, $SE = .11$, $p = .00$). But
 35 this association was not significant when parental emotion coaching levels were high ($B = -$
 36 0.05 , $SE = .11$, $p = .66$).

51 **4. Discussion**

52 Early childhood researchers have been trying to understand children's social
 53 behaviors under the temperament framework. Nevertheless, results of studies investigating
 54 the association between child surgency and child aggression were not consistent (Yavuz-
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Müren et al., 2022), suggesting the presence of potential moderators. According to a
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goodness-of-fit perspective, children's social development is contingent upon not only their own characteristics, but also on the processes of socialization and the contexts where the socialization processes occur (Chess & Thomas, 1991; Thomas & Chess, 1977). Therefore, the primary goal of the present study was to adopt the goodness-of-fit theory of child development, and to search for potential protective factors for high-surgent young children. Particularly, we tested a general indirect socialization style, nurturance, and a specific direct socialization behavior, emotion coaching, as potential process moderators of the association between child surgency and child aggression in the Chinese context. We also tested family income levels as a contextual moderator.

Consistent with previous studies conducted in Western contexts (de Maat et al., 2022; Dollar & Stifter, 2012; Zubizarreta et al., 2018), our results indicated that child surgency was linked to child aggression. Such a link, however, was not significant when parents expressed high levels of love and affection. These findings lend support to the view that parental socialization may protect children from temperamental risks, which corroborated our initial hypothesis. A similar pattern was found with parental emotion coaching. As we hypothesized, high child surgency was positively linked to children's aggressive behaviors only when parents failed to provide adequate guidance for their young children to regulate negative emotions. However, unlike parental nurturance, our results showed that parental emotion coaching was not directly correlated with child aggression. This non-significant direct relation is consistent with the findings of a prior study (Ramsden & Hubbard, 2002). One explanation might be that emotion coaching is a specific parenting practice aiming to help children regulate their negative emotions when negative emotions are *present*. Nevertheless, children might differ in terms of the frequency they show negative emotions, the reasons why they experience negative emotions, and whether their negative emotions are

1 observable for their parents (i.e., emotion expressivity) which might influence the effect of
2 emotion coaching on aggression. These potential confounding factors once again point to the
3 importance of considering child characteristics in conjunction with parenting behaviors.
4

5 **Relatedly, in line with the assumptions under the goodness-of-fit framework, environmental**
6 **factors included extra-familial agents (e.g., peers and teachers) might play a role as important**
7 **as the familial socializers in children's social development (Parke et al., 2002). Given the**
8 **scope of the present study, we did not examine the impact of extra-familial factors. Future**
9 **studies should take multiple environmental influences into consideration to further advance**
10 **our understanding of children's behavioral development.**

11 For both process moderators, it is possible that they exert their power by facilitating
12 children's self-regulation. As suggested by previous studies, a nurturing parenting style can
13 facilitate the develop and the maturation of children's emotion self-regulation skills, which
14 could in turn protect children from maladjustment including aggression (Eisenberg et al.,
15 2005; Grusec & Goodnow, 1994). Likewise, conceptualized as a specific manner to show
16 acceptance and to directly help children regulate their negative emotions, parental emotion
17 coaching may facilitate children's development of emotion self-regulation. Sameroff (2010)
18 argued that young children depend heavily on others in terms of regulating emotions, such as
19 parents, teachers, and peers. As a result, parental emotion socialization places great
20 importance on children's social and emotional development. Thus, it is possible that parental
21 nurturance and parental emotion coaching fostered better emotion self-regulation skills in
22 young children, thereby protected high-surgent children from aggression.

23 Notably, family income levels altered the impact of parental nurturance on high-
24 surgent children's aggressive behaviors. In keeping with previous findings, we found that
25 parental nurturance buffered against child aggression for high-surgent children only when
26 family income levels were average or high. One explanation is that given the stress and
27

1 hassles associated with economic strain, low-income parents are likely to lack the capacities
2 to *consistently* provide high-quality nurturance to protect children from exhibiting aggression
3 (Goldschmidt et al., 2021). In fact, our results showed that, for low-income families, the
4 direction of parental nurturance's effect was the opposite of that of middle- and high-income
5 families. Although the exacerbating effect of high nurturance was not statistically significant,
6 it might explain why low-income parents turn to the harsher forms of parenting – the opposite
7 of nurturance. Relatedly, studies found that Chinese young children from low-income
8 families tended to receive less emotional warmth and more harsh disciplines from parents,
9 which in turn led to more behavioral problems (Wu et al., 2015; Xing et al., 2019). Our
10 findings demonstrated the potential negative impact of a poor fit between parenting and
11 developmental risks faced by children from different socioeconomic and cultural
12 backgrounds (Chess & Thomas, 1991; Conger et al., 2010; Dong et al., 2022; Spera, 2005).
13 However, given that fewer developmental studies are conducted with low-income families
14 than with middle- and high-income families, more empirical support is needed to make this
15 claim. To this end, future studies should adopt a more representative sample, ideally from
16 different cultural and socioeconomic backgrounds.

17 On the contrary, the protective effect of parental emotion coaching on child
18 aggression did not differ in families with different economic backgrounds. We speculate that
19 unlike the general nurturing parenting style which requires parents to have the resources to
20 constantly provide warmth and support, emotion coaching requires “momentary” actions.
21 That is, instead of providing constant and continuous support, parents only need to coach
22 children when they display negative emotions. These specific actions of coaching help
23 children regulate their negative emotions regardless of economic backgrounds. Supporting
24 this speculation, Ramsden and Hubbard (2002) found in a group of diverse US families that
25 emotion coaching practices did not differ by family income levels, and that parental emotion
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1 coaching was indirectly linked to reduced child aggression through boosting child emotion
2 regulation skills.
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4 Our findings have important theoretical and practical implications. Theoretically,
5 results of our study provided support to both the temperament theory (Rothbart, 2007;
6 Rothbart & Derryberry, 1981) and the goodness-of-fit theory of development (Chess &
7 Thomas, 1991; Thomas & Chess, 1977). Our study highlighted the importance of taking into
8 account both child features, such as child temperament, and environmental features, such as
9 socialization processes and family economic background, in understanding child
10 development. Our study also addressed the literature gaps by examining the moderating
11 effect of parenting on high-surgent children (Stifter & Dollar, 2016). Furthermore, given the
12 non-significant protective effect of nurturance in low-income families, our findings suggest
13 the need of research on and support to low-income families (Brown et al., 2019; McGroder,
14 2000). Practically, our findings highlight the pivotal influence of parenting in “altering” at-
15 risk children’s developmental trajectories, indicate the utility of helping parents to express
16 their warmth and affection, and communicate to their children about their feelings and
17 emotions, as to reduce aggressive behaviors in preschool-age children. These practices are
18 particularly important to those children with dispositional traits that are associated with
19 aggression, such as surgency. This “indirect” approach through parents to reduce at-risk
20 children’s aggression carries significant practical value, given that children’s temperament is
21 likely to remain stable over time (Chen & Schmidt, 2015). Importantly, our findings show the
22 differential effect of socialization processes for families with different economic
23 backgrounds, providing guidelines of parenting for families differ in SES. Given the large
24 wealth inequality in Hong Kong (Oxfam, 2022), it is pivotal to make specific adjustment in
25 parenting intervention programs for families of different background. For instance, parenting
26 practices that function as protective factors in all families such as emotion coaching should
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1 be prioritized for low-income parents. Policy-makers should also make parenting resources
2 available and accessible to low-income parents. If necessary, monetary incentives can be
3 provided to low-income families to participate in parenting workshops or classes.
4

5 Our study has several evident strengths. First, our study represents one of the first
6 attempts to detect the moderating effects of parental nurturance and parental emotion
7 coaching on the relation between child surgency and child aggression among families with
8 diverse economic backgrounds. By adopting a Chinese sample with diverse socioeconomic
9 backgrounds and taking into account family income levels, our study enriches the relatively
10 scarce family research using non-Western samples (Thalmayer et al., 2020). Second, we
11 linked variables reported by multiple informants and adopted the multilevel modeling when
12 analyzing teacher-rated aggression and parent-rated temperament, thus offset some common
13 method variance and provided a relatively more reliable result (Podsakoff et al., 2003).
14 Finally, we adopted an approach to enlarge the generalizability of our study by stratifying and
15 recruiting from areas with different SES backgrounds in Hong Kong.
16

34 **5. Limitations and Conclusions**

35

36 Our study is not without limitations. First and foremost, the present study's cross-
37 sectional design and correlational nature restrict us from inferring the longitudinal or causal-
38 effect relations among child surgency, children's aggressive behaviors, parental nurturance,
39 and parental emotion coaching. Further studies with more rigorous designs such as
40 longitudinal or randomized experimental design are needed to determine the long-term effect
41 of parental socialization processes. Second, although we adopted multiple informants to
42 avoid some common method variance, the measurement can be improved – some of them
43 showed merely acceptable internal reliability (i.e., .60). Relatedly, despite our effort to adopt
44 validated measurements, the study variables were measured by brief questionnaires for
45 parents and teachers with only a few survey items. Therefore, our findings and conclusions
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1 should be generated with caution. In the meantime, future studies should try to replicate the
2 study findings using multiple sophisticated measurement tools such as validated long
3 questionnaires, ideally developed in a Chinese context, as well as observations. Finally,
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5 although we adopted a stratified sampling approach to ensure the diversity of our sample, we
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7 only collected data from young children studying in six preschools in Hong Kong. Our
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9 sample cannot represent all Chinese children. Further studies should be conducted with
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11 representative samples with wider age range and from different parts of China.
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15 Despite these limitations, our study provides important insight into the joint effect of
16 young children's temperamental traits, parental socialization, and family SES background on
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18 children's social development in the Chinese context. From a theoretical perspective, our
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20 study echoes the views on the interactive effects of children's characteristics and parenting
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22 practices (Chess & Thomas, 1991; Eisenberg et al., 1998) and expands the typical focus of
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24 temperament to child surgency (Stifter & Dollar, 2016). From a practical perspective, our
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26 findings highlight the protective effect of socialization for children with high surgency and
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28 economic advantage, therefore point to the utility of promote positive parenting to reduce
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30 children's aggressive behaviors in early childhood.
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Table 1 Means, Standard Deviations, Ranges, and Correlations Among Variables.

Variables	1	2	3	4	5	6	7	8	M	SD	Range
1 Child gender	–								–	–	0.00 – 1.00
2 Child age	-.04	–							5.19	0.61	3.25 – 6.58
3 Teacher education	-.06	-.07	–						2.07	1.04	1.00 – 5.57
4 Monthly household income	.07	-.15*	.25*	–					4.01	0.70	2.25 – 6.00
5 Child surgency	.08	.10	-.08	-.03	–				2.63	1.03	1.00 – 5.00
6 Child aggression	.22**	.13*	.23**	.10	.08	–			1.08	0.27	1.00 – 2.00
7 Parental nurturance	-.10	.03	-.09	-.05	.03	-.16**	–		5.10	0.54	3.44 – 6.00
8 Parental emotion coaching	-.03	.03	-.03	.02	.01	-.08	.47**	–	4.84	0.66	2.86 – 6.00

Note: * $p < .05$ ** $p < .01$

Table 2 Unstandardized Coefficients (B), Standard Errors (SE), parameters of multilevel model of child aggression, parental nurturance, parental emotion coaching, and family income.

Variables	Child aggression			Variables	Child aggression		
	B	SE	p		B	SE	p
Child gender	0.41	0.11	.00	Child gender	0.41	0.11	.04
Child age	0.24	0.11	.03	Child age	0.24	0.11	.04
Teacher education	0.27	0.10	.01	Teacher education	0.27	0.11	.02
Child surgency (CS)	0.11	0.08	.16	Child surgency (CS)	0.13	0.08	.11
Parental nurturance (PN)	-0.16	0.10	.11	Emotion coaching (EC)	-0.07	0.08	.41
Monthly household income (MHI)	0.00	0.01	.82	Monthly household income (MHI)	0.00	0.02	.92
CS x PN	-0.35	0.15	.02	CS x EC	-0.24	0.12	.05
CS x MHI	0.02	0.02	.33	CS x MHI	0.02	0.02	.35
PN x MHI	-0.01	0.02	.59	EC x MHI	-0.00	0.02	.93
CS x PN x MHI	-0.15	0.04	<.001	CS x EC x MHI	-0.04	0.03	.20

Table 3 Unstandardized Coefficients (B), Standard Errors (SE), parameters of multilevel model of child aggression and parental emotion coaching.

Variables	Child aggression		
	B	SE	p
Child gender	0.40	0.11	<.001
Child age	0.23	0.11	.05
Teacher education	0.27	0.11	.02
Child surgency (CS)	0.13	0.08	.10
Emotion coaching (EC)	-0.07	0.08	.38
Monthly household income	0.00	0.02	.95
CS x EC	-0.28	0.12	.02

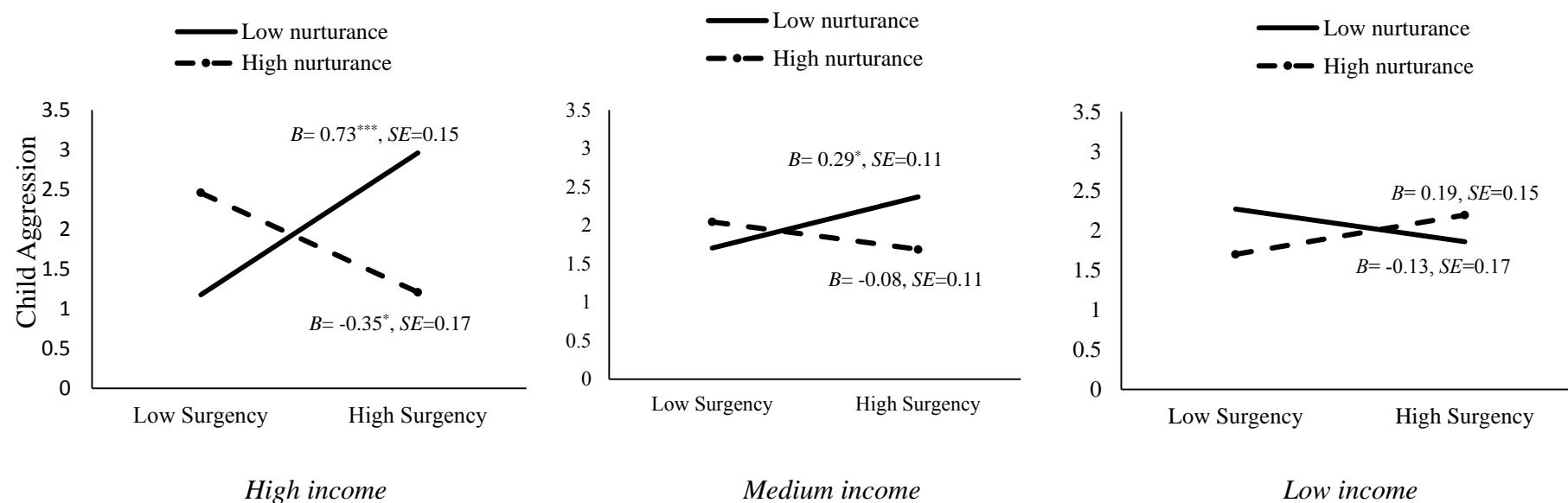


Figure 1. Three-way interactions of child surgency with teachers' rating of children's aggressive behaviors by parental nurturance and family income.

Note: * $p < .05$, *** $p < .001$

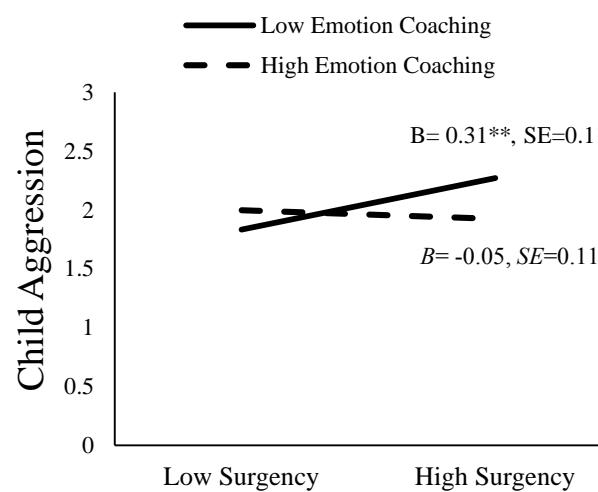


Figure 2. Two-way interaction of surgency with teacher-rated child aggression by parental emotion coaching.

Note: ** $p < .01$