Underlying mechanisms for racial disparities in parent-child physical and psychological aggression and child abuse risk

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ABSTRACT

Background: Understanding factors that contribute to parents' use of physical and psychological parent-child aggression (PCA) is critical in efforts to mitigate child maltreatment.
Objective: Extant research has not adequately distinguished risk factors that may differ by race.
Participants and methods: The present study investigated potential racial differences in worry, approval of PCA, justification for PCA use, negative child intent attributions, and discrimination experiences in relation to child abuse risk and physical and psychological PCA use in a sample of 292 Black (44.9 %) and White mothers.
Results: As hypothesized, compared to White mothers, Black mothers demonstrated higher child abuse risk and reported more PCA use, stronger approval for using PCA, and more justification of their PCA to teach children obedience. Although Black mothers reported more discipline-relevant worry as well as more experience of discrimination, White mothers' lower trait worry related to their greater approval of PCA for discipline, which indirectly related to their abuse risk. Contrary to expectations, perceptions of greater discrimination were related to White mothers' increased child abuse risk, approval of PCA, and justification for PCA because of anger and to teach obedience—findings not observed for Black mothers.
Conclusions: The current results underscore the need for additional research on the role of discrimination and the cultural context of parenting and highlight the importance of explicitly testing racial differences to develop more culturally informed abuse prevention approaches.

1. Introduction

Distinct forms of child maltreatment are officially recognized, including physical abuse and psychological abuse (U.S. Department of Health & Human Services, 2020). Despite mandatory abuse reporting guidelines, most child maltreatment is never communicated to official child protection agencies (Euser, Alink., Stoltenborgh, Bakermans-Kranenburg, & van IJzendoorn, 2015; Sedlak et al., 2010), and only a fraction of reported cases meet the high requirements for substantiation (DHHS, 2020). Given that parents substantiated for abuse reflect an atypical subsample of those engaged in maltreatment, researchers alternatively seek parent self-reports of their actual physically or psychologically aggressive behavior toward their children (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998), although this approach may also be subject to underreporting (Chan, 2012; Kremer, Kondis, & Kremer, 2020).

Researchers often supplement such direct inquiries of parent behavior with estimates of *child abuse risk*—the parenting beliefs and behaviors that predict parents' likelihood to abuse (e.g., Bavolek & Keene, 2001; Chaffin & Valle, 2003). Specifically with regard to behavioral manifestations of abuse risk, more intense and frequent use of parent-child aggression (PCA) increases parents' child abuse risk. All forms of PCA can be viewed as occurring along a continuum, in which commonplace parental discipline practices (e.g., spanking, yelling) lie on one end of the continuum and physical and psychological abuse at the other end (e.g., Rodriguez, 2010). Use of physical discipline is a recognized precursor for physical abuse (King et al., 2018), increasing the odds of physical and psychological abuse (Afifi, Mota, Sareen, & MacMillan, 2017). Parents' physical child abuse risk also covaries with use of psychological aggression (Rodriguez, 2010; Rodriguez & Richardson, 2007), underscoring commonalities between both physical and psychological forms of PCA (Kim, Lee, Taylor, & Guterman, 2014; Lee, Kim, Taylor, & Perron, 2011; Spinazzola et al., 2014).

The implications of such work for children's well-being are evident. The literature enumerating adverse physical and mental health outcomes for children from maltreatment is both compelling and substantial (Font & Berger, 2015; Raby et al., 2019; Widom, Czaja, Bentley, & Johnson, 2012). Likewise, parents' child abuse risk as well as their use of harsh physical PCA is linked to children's poorer mental health and behavior problems (Coley, Kull, & Carrano, 2014; Gershoff & Grogan-Kaylor, 2016b; Maneta, White, & Mezzacappa, 2017; Rodriguez, 2006). Although physical and psychological maltreatment often co-occur, psychological maltreatment is relatively overlooked in research despite substantial evidence that parental verbal and psychological aggression predicts negative outcomes for children (Kim et al., 2014; Lee et al., 2011; Morimoto & Sharma, 2004). Notably, empirical evidence documents that physical and psychological maltreatment yields comparable adverse effects for Black and White children (e.g., Vachon, Krueger, Rogosch, & Cicchetti, 2015) and that physical PCA use leads to subsequent negative outcomes, including for Black children (Coley et al., 2014; Gershoff & Grogan-Kaylor, 2016a; Ma & Klein, 2018; Wang & Kenny, 2014).

Because of such adverse impact, most child abuse prevention programs focus on mitigating child abuse risk, adopting a secondary prevention strategy that targets delivery of services to at-risk populations (e.g., Chartier et al., 2017; Eckenrode et al., 2017), rather than delaying until maltreatment transpires. Despite these concerted efforts, most abuse prevention approaches demonstrate minimal efficacy (Chen & Chan, 2016; Euser et al., 2015). In fact, meta-analytic evidence suggests the modest benefits of child abuse prevention are even weaker in programs including larger proportions of families of color (van der Put, Assink, Gubbels, & Boerkhout von Solinge, 2018). This particular weakness is troubling given evidence of racial disproportionality in the child welfare system (Kim, Wildeman, Jonson-Reid, & Drake, 2017). The current state of affairs may reflect that prevention strategies have not yet been satisfactorily adapted for different racial groups.

Child abuse prevention programs strive to reduce abuse risk by fostering parental attachment to infants, providing guidance on appropriate developmental expectations (e.g., Chartier et al., 2017), and promoting less punitive parenting (Gershoff, Lee, & Durrant, 2017). Such programs typically identify who is eligible to receive such services based on sociodemographic factors like maternal age, educational level, or demographic factors (e.g., Chartier et al., 2017; Eckenrode et al., 2017). Parents of all racial and ethnic backgrounds are more likely to use harsh PCA or engage in abuse if they are single, lower income, or less educated (e.g., Doidge et al., 2017; Sedlak et al., 2010). But relying on such sociodemographic factors alone to determine abuse prevention program eligibility can in effect stigmatize under-resourced parents; factors that predict change in child abuse risk over time are actually comparable between parents with higher and lower sociodemographic risks (Rodriguez, Silvia, & Pu, 2018).

1.1. Theoretical issues

To understand etiological factors in child abuse risk, Social Information Processing (SIP) theory has been applied to describe how parents engage in parent-child aggression (Milner, 2000; Rodriguez, Silvia, & Gaskin, 2019; Rodriguez, Wittig, & Silvia, 2020). This theory postulates that parents hold pre-existing schemas, before parent-child conflict even arises, usually developed during their upbringing (e.g., beliefs about parenting and discipline). Then, when parents face conflict with their child, their risk to engage in PCA increases when they misperceive the situation and arrive at negative interpretations about their child's behavior before selecting aggressive responses. Pre-existing schemas such as parents' approval of using PCA as a discipline tool is a robust predictor of abuse risk and parents' actual use of PCA (Chiocca, 2017; Lansford et al., 2014; Rodriguez, Bower Russa, & Harmon, 2011). Additionally, parents who interpret their children's behavior with negative intent attributions evidence greater child abuse risk (Camilo, Vaz Garrido, & Calheiros, 2020; Haskett, Scott, Willoughby, Ahern, & Nears, 2006; Rodriguez, Cook, & Jedrziewski, 2012).

The SIP theory for parent-child aggression emphasizes cognitive processes, although the role of emotion has been highlighted in SIP models applied to other forms of aggression (e.g., Lemerise & Arsenio, 2000). Anger has been implicated as a potentially key emotion that increases child abuse risk (Hien, Cohen, Caldeira, Flom, & Wasserman, 2010; Rodriguez & Richardson, 2007; Rodriguez, 2018; Stith et al., 2009), with some maltreatment prevention programs incorporating parent anger management training in conjunction with modifying negative child attributions (Sanders et al., 2004). Although anger appears to be a relevant emotion in PCA, much less attention has considered parental anxiety (Stith et al., 2009). Yet worry on behalf of one's children was significantly associated with mothers' use of severe discipline (Pinderhughes, Dodge, Bates, Pettit, & Amaldo, 2000). Apart from anger, parents may experience worry about their children, which may prompt them to consciously implement aggressive discipline in response to perceived misbehavior.

Such cognitive-emotional elements may be important processes within SIP theory. However, consistent with dual-processing models of aggression (Orobio de Castro, 2004), conscious processing may reflect deliberative decision-making but parents may also react at a more immediate, automatically processed level upon experiencing emotion. In other words, as posited in SIP theory, parents may perceive child behavior, experience an emotion, and consciously process the situation, arriving at a decision to engage in PCA. Alternatively, parents may perceive child behavior, experience emotion, and aggress immediately, with greater speed than transpires

in conscious processing (Bluemke & Teige-Mocigemba, 2015). Thus, parents may feel anger or worry immediately upon perceiving aversive child behavior and react rapidly.

1.2. Racial differences

Data suggests that, compared to White parents, Black parents are more likely to use physical PCA, including abusive PCA (Grogan-Kaylor & Otis, 2007; Klevens et al., 2019; Regalado, Sareen, Inkelas, Wissow, & Halfon, 2004; Silveira, Shafer, Dufur, & Roberson, 2020; Tallieu, Afifi, Mota, Keyes, & Sareen, 2014), and score higher on child abuse risk measures (Combs-Orne, Martin, Foz, & Faver, 2000). Similar patterns of racial differences have been observed for Black parents engaging in more verbal aggression than White parents (Berlin et al., 2009). However, some research suggests White mothers yell more frequently (Lansford, Wager, Bates, Dodge, & Pettit, 2012) whereas others have observed no racial differences in yelling (Regalado et al., 2004). Recent analyses indicate White parents may be more likely to use harsh verbal aggression than Black parents, although such effects disappeared upon incorporating socioeconomic statistical controls (Silveira et al., 2020).

To clarify what may account for a greater inclination to respond aggressively to their children, researchers have noted that Black parents report stronger approval of PCA than White parents (see review, Chiocca, 2017) even after controlling for educational level (Su, Toure, Do, & Ramos, 2018). Black parents may also assign more responsibility to children for unsuccessful parent-child interactions (Lansford et al., 2011), and ascribe more hostile intent to children's behavior than White parents (Pinderhughes et al., 2000). Yet negative child intent attributions predicted parental hostility and harsh parenting for both White and Black parents, although whether these effects were statistically equivalent between racial groups remains unclear (Cooper, Abate, Airrington, Taylor, & Venta, 2018).

Relative to White parents, Black parents are more likely to raise children in adverse conditions given they encounter more structural disadvantages (e.g., as single parents, with poorer employment conditions and greater neighborhood disadvantage) (McLoyd, Hardaway, & Jocson, 2019). Racial disparities in income (Chetty, Hendren, Jones, & Porter, 2020) and educational attainment (Ryan & Siebens, 2012) have contributed to reduced social capital for Black parents (St. John, 2017). A legacy of residential racial segregation contributes to disadvantaged neighborhood conditions for Black families (De la Roca, Ellen, & O'Regan, 2014) and Black parents raise their children against the backdrop of historical and contemporary expressions of racism (McLoyd et al., 2019; Patton, 2017).

Marginalization of people of color given such structural disadvantages in part motivates Black parents' worry about their children compared to White parents (Pinderhughes et al., 2000), because Black parents experience stress anticipating probable discrimination toward their children (Vines & Baird, 2009). Thus, harsh discipline from Black parents may be viewed as a reaction to societal disadvantages ensuing from systemic racism and discrimination (Mowen & Schroeder, 2018). Black mothers exert greater parental control as a means to avert future delinquent behavior (Paschall, Ringwalt, & Flewelling, 2003). Several have speculated that Black parents' PCA use reflects a magnified sense of urgency to secure obedience to keep their child safe outside the home where disobedience could lead to grave outcomes (Kelley et al., 1992; Murry, Bynum, Brody, Willert, & Stephens, 2001; Patton, 2017; Pinderhughes et al., 2000; Silveira et al., 2020). Black parents may engage in PCA seeking to ensure compliance with clear, quick consequences to socialize children regarding the potentially serious social threats that disadvantaged individuals may later encounter (Silveira et al., 2020). Harsh physical or verbal PCA may therefore derive from a protective parenting stance on the part of Black parents (Patton, 2017; Silveira et al., 2020).

Such propositions imply Black parents may be compelled by a stronger imperative to justify harsh parenting because of a need for obedience, although study of mothers' justification for their discipline is seldom examined. One rare early study of a small sample of Black mothers highlighted their motivation to justify discipline from a need for obedience to promote children's later success (Kelley, Power, & Wimbush, 1992). However, the theoretical speculations regarding racial differences in relations to abuse risk have not been tested empirically nor has research explicitly tied these components together, evaluating how parents' worry may relate to their approval of PCA for discipline and their justification to obtain obedience as potential pathways to parents' greater child abuse risk and use of physical or psychological aggression.

1.3. Current study

The present investigation combined two groups of mothers to examine mechanisms that may underlie racial differences in maternal child abuse risk and use of physical and psychological aggression. We pursued three research aims. (H1) Based on prior research, Black mothers were anticipated to evidence higher child abuse risk and report greater use of physical and verbal PCA (Berlin et al., 2009; Silveira et al., 2020), greater approval of PCA as a discipline tactic (Su et al., 2018), and more negative child intent attributions (Pinderhughes et al., 2000) relative to White mothers. (H2) Given Black mothers would more likely experience marginalization, we expected (2a) Black mothers would report more overall trait worry and report greater worry in response to both consciously processed hypothetical vignettes depicting child misbehavior as well as automatically processed images of child misbehavior (although we did not expect comparable racial group differences in mothers' anger). (2b) Further, Black mothers were expected to report higher justification for their use of physical or psychological aggression to teach obedience compared to White mothers. (2c) In our second group of mothers, we also inquired about experiences of discrimination, anticipating Black mothers would report more experience of discrimination compared to White mothers. (2d) We expected Black mothers' greater experience of discrimination would be significantly positively associated with child abuse risk and physical and psychological PCA. (H3) With the combined sample, we tested a multigroup path model for Black versus White mothers in which we considered whether maternal trait worry (i.e., their general worry

tendency which could precede discipline processes) indirectly related to their child abuse risk and physical and psychological PCA through their PCA approval and their justification of discipline from a need to teach obedience (see Fig. 1). Given the hypothesized pattern of differences noted above, we anticipated greater approval for PCA and justification for obedience would predict PCA and abuse risk more strongly for Black mothers than for White mothers.

2. Method

2.1. Participants and procedures

The current sample ($N = 292$) comprises two sets of mothers. The first group of mothers is drawn from parents enrolled in a prospective longitudinal study conducted in the Southeast U.S., the "Following First Families" (Triple-F) Study. This study has tracked parent-child aggression risk across time, with over half of enrollees involving families with one or more sociodemographic risks (i.e., ≤ 150 % of the federal poverty line, receipt of federal assistance, $\leq$ high school education, single parenthood, $\leq$ age 18). Mothers and their partners began the three-wave Triple-F study in the final trimester of mothers' first pregnancy. As part of a Triple-F study extension using an online survey (through Qualtrics), 103 mothers who identified as White or Black were included in this investigation, at which point their children would have been between 5–6 ½ years old. All study procedures for the Triple-F study were overseen and approved by the university's Institutional Review Board.

The second group of 189 mothers involved a national sample who responded to a Qualtrics survey designed by the research team and administered via Prolific, an online survey research and data collection company suitable for behavioral research. To participate in this study, participant eligibility criteria included: U.S. nationality; age ≥ 18 years; mother of a child age 8 or younger; with enrollment structured to approximate the racial balance in the first group of mothers (identical surveys recruited separate samples of mothers who identified as White or Black). Prolific sent an email with the Qualtrics survey link to eligible mothers, which permits participants to remain anonymous to the research team. After providing consent, participants completed the survey and were compensated $7.00 by Prolific. To ensure the quality of the data, three attention checks were embedded throughout the survey. None of the participants failed more than one of the attention checks. Given data were de-identified, the university institutional review board deemed this group of mothers exempt from oversight.

Only mothers who identified as Black or White were included in this investigation. To confirm that the two samples did not differ on key demographic characteristics in order to combine the two groups of mothers, several analyses confirmed: both groups were comparable in their racial composition (group 1, 40.8 % Black, group 2, 47.1 % Black, $\chi^2 = 1.07$, $p > .05$); living with a spouse/partner (group 1, 83.5 %, group 2, 80.4 %, $\chi^2 = .42$, $p > .05$); receipt of public assistance (group 1, 26.2 %, group 2, 31.7 %, $\chi^2 = .98$, $p > .05$); maternal age ($t(290) = .46$, $p > .05$); annual household income ($t(290) = .15$, $p > .05$); educational attainment ($t(290) = .45$, $p > .05$).

With regard to demographic characteristics for this combined sample, mothers' mean age was 32.65 years ($SD = 5.75$). Mothers selected the racial group with which they predominantly identify: 55.1 % of mothers identified as non-Hispanic, non-biracial White; 44.9 % as Black (9.2 % also identified as biracial and 2.3 % as Hispanic). In terms of mothers' educational level: 14.0 % $\leq$ high school; 25.0 % some college; 30.2 % college degree; 30.8 % $\geq$ college degree. In terms of combined household income, 23.4 % reported an annual household income below $30,000, 47.1 % reported a household income below $60,000; 29.8 % of the sample reported receipt of public assistance. In the combined sample, 81.5 % reported currently living with a spouse or partner.

2.2. Measures

All of the following measures were administered to both groups of mothers with the exception of the Experiences of Discrimination scale delivered to the second group only.
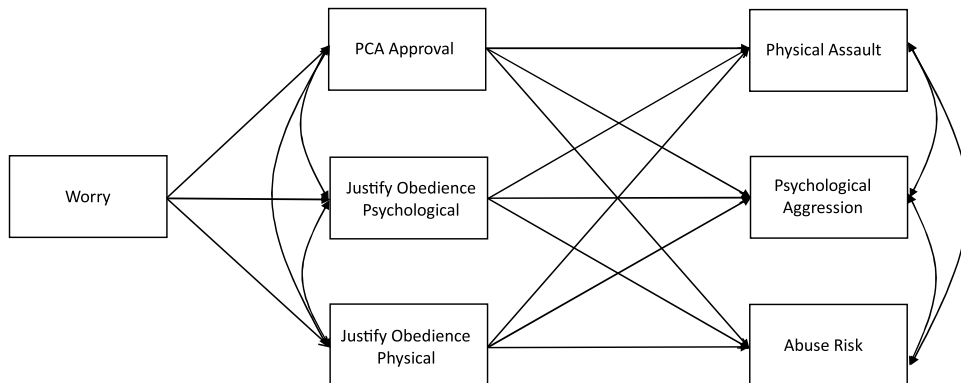
Fig. 1. Proposed Path Model.

2.2.1. Child abuse risk measures

2.2.1.1. Parent-Child Conflict Tactics Scale (CTSPC; Straus et al., 1998). Developed using a nationally representative sample, the CTSPC is designed to assess parental discipline use and maltreatment. Parents reported the frequency with which they employ 22 discipline strategies, with the current investigation focused on physical and psychological aggression. The Physical Assault subscale comprises 13 items (a diverse range of items such as "hit him/her on the bottom with something like a belt, hairbrush, a stick, or some other hard object" to "burned or scalded him/her on purpose"); the Psychological Aggression subscale consists of five items (including "swore or cursed at him/her" and "called him/her dumb or lazy or some other name like that"). CTSPC items are weighted for their respective total subscale scores. Parents reporting use of a tactic 0, 1, or 2 times in the past year receive those corresponding weights; 3–5 times is weighted 4; 6–10 times is weighted 8; 11–20 times is weighted 15; and more than 20 times is weighted 25. The test authors provide evidence of construct and discriminant validity. For the current investigation, after each item, mothers were asked to think about the last time they engaged in that specific tactic and to select all the reasons they applied that tactic (multiple selections permitted): "you wanted your child to learn values", "you wanted your child to learn to obey", "you were angry or frustrated". For this investigation, the number of times they selected obedience was tallied for Justify Obedience Physical and Justify Obedience Psychological scores, with similar scores tallied for Justify Anger Physical and Justify Anger Psychological.

2.2.1.2. The Adult-Adolescent Parenting Inventory-2 (AAPI-2; Bavolek & Keene, 2001). The AAPI-2 measures child abuse risk using 40 items. The AAPI-2 assesses beliefs about children and child-rearing including questions about their expectations for children and their responsibilities, empathic attitudes toward children, and discipline beliefs, which differentiate maltreating from non-maltreating parents. Mothers report their level of agreement with each item on a 5-point scale, from 1 (*strongly agree*) to 5 (*strongly disagree*). Item are summed for a total score wherein higher scores indicate greater abuse risk. The AAPI-2 demonstrates reliability and validity (Conners, Whiteside-Mansell, Deere, Ledet, & Edwards, 2006), and attained good internal consistency in the current study (α =.93).

2.3. Emotion trait measures

2.3.1. Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990)

The PSWQ is a 16-item measure of trait worry, which emphasizes self-perceptions of cognitive worry (e.g., "I am always worrying about something"). Items are rated on a 5-point scale from 1 (*not at all typical of me*) to 5 (*very typical of me*). All items are combined for a Total score, with higher scores indicating greater worry. In the current study, the PSWQ demonstrated good internal consistency at α = .94.

2.3.2. State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988)

The STAXI is a frequently used measure of anger. For this investigation, the Anger Expression subscale that assesses behavioral expressions of anger was selected as most relevant. This subscale includes 20 items on a 4-point scale, from 1 (*almost never*) to 4 (*almost always*). A total Anger Expression score is computed by combining Anger-In (how much anger is suppressed, e.g., "I boil inside but I don't show it") with Anger-Out (how much anger is manifest outwardly, "I do things like slam doors"), subtracting the ability to control that anger, Anger-Control (e.g., "I can stop myself from losing my temper"). Higher Anger Expression scores indicate greater tendency to display anger.

2.4. Additional parenting measures

2.4.1. Attitudes toward Spanking (ATS; Holden, 2001)

The ATS assesses parents' endorsement of using parent-child aggression as a discipline response (e.g., "Spanking is a normal part of parenting"). Ten items are posed using a 7-point scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores reflect greater approval of PCA. The current study attained good internal consistency for the ATS, α = .94.

2.4.2. Automatic Parent Emotion Analog Response (APEAR; Rodriguez, Silvia, Lee, & Grogan-Kaylor, 2020)

The APEAR task is an analog measure of automatic reactions to random, rapidly presented stimuli of child behavior. Sixteen photos (gender-balanced, children of color depicted in 30 % of stimuli) are presented in each of three categories of child behavior: Bad (misbehavior, e.g., fighting, temper tantrum, stealing); Danger (e.g., playing with electrical socket, knives, iron); and Good (e.g., reading, vacuuming, brushing teeth). Each image is presented for 4000 ms, immediately followed by three questions: (1) "Would this make you angry?"; (2) "Would you worry about your child?"; (3) "What would you do?" The first two questions, each presented for 3000 ms, are posed as Yes/No in order to obtain quick affective responses. For automatic discipline reactions, parents were asked to select from one of five options within 5000ms: Reward, Nothing/Ignore, Distract, Punish, Hit/Spank. For this investigation, we focused on mothers' responses to images of misbehavior, with total Worry and Anger scores for Bad images as well as a tally for how often they selected Hit/Spank as a response.

2.4.3. Parent-Child Vignettes (PCV; Haskett et al., 2006; Plotkin, 1983)

This consciously-processed measure consists of 18 brief vignettes describing child misbehavior, developed to assess parents' negative child behavior attributions and punishment intentions. On the PCV, parents imagine the scene in the vignette involves their

child and are asked to report on whether they believe the child intended to annoy the parent, using a 9-point scale, from 1 (*did not mean to annoy me at all*) to 9 (*the only reason the child did this was to annoy me*). This adapted PCV version (Rodriguez et al., 2020) attempts to mirror the APEAR, wherein the attribution question is followed by questions on whether they would feel angry, from 1 (*not angry or frustrated at all*) to 9 (*very angry or frustrated*), or worried for their child from 1 (*not worried about my child at all*) to 9 (*very worried about my child*). Lastly, mothers indicated how they would respond to the child misbehavior with the following options: Ignore, Punish, Hit/Spank, Talk. For the current investigation, we focused on total scores summed across the 18 vignettes for Attribution, Anger, and Worry scores, and frequency counts for how often parents selected Hit/Spank. Prior work has demonstrated differences between abusive and non-abusive mothers in terms of attributions (Haskett et al., 2006). In the current study, Attribution, Anger, and Worry scores attained good internal consistency: α = .91, .92, and .91, respectively.

2.5. Discrimination measure

2.5.1. Experience of Discrimination (EOD; Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005)

The EOD inquires about respondents' self-reported experience across nine possible situations. The Experience subscale measures the total occurrence of discrimination across these situations (e.g., school, work, police); after each situation, respondents also estimate the frequency with which these occurred for a weighted total Frequency score, from 0 (*never*), 1 (*once*), 2.5 (*2-3 times*) or 5 (*4 or more times*). In the current study, both scales demonstrated acceptable reliability: Experience, α = .83; Frequency, α = .84. Because the EOD was only added to the protocol for the second group of mothers, we could not include this factor in our multigroup path analysis.

2.6. Data analytic plan

Preliminary analyses were conducted with SPSS 27. We report on demographic differences between racial groups in these preliminary analyses; however, because Black parents are more likely to experience socioeconomic disparities than their White counterparts, we did not statistically control for income or education given that such systemic disparities may in fact contribute to mothers' worry and discrimination experiences. Using statistical controls can render biased results (see discussion in Palloni & Morenoff, 2001), removing variance from both the presumptive predictors and dependent variables and artificially implying that racial groups are thereby equated with such over-control remedies despite systemic inequities between groups.

To test our first two research questions, Black-White group comparisons were conducted with independent sample t-tests. Bivariate correlations between measures for each racial group are then reported. For our third aim, multigroup path analysis was performed using Mplus 8, wherein we compared a constrained model (i.e., all pathways constrained to be equal between racial groups) to an unconstrained model (i.e., all pathways unconstrained between racial groups). Model fit was judged to be good with a comparative fit index (CFI) and Tucker Lewis Index (TLI) above .95 and a root mean square error of approximation (RMSEA) and standardized root mean square residual (SMSR) of .08 or below (Kline, 2011). To determine whether the unconstrained model demonstrated better fit than the constrained model, a chi-square difference test ($\chi^2\Delta$) was conducted. A significant $\chi^2\Delta$ would suggest the unconstrained model better fits the data, whereas a non-significant $\chi^2\Delta$ would suggest the constrained model (wherein racial groups were

Table 1
Mean, Standard Deviations by Race and Group Differences.

	Black (*n* = 131) M (SD)	White (*n* = 161) M (SD)	*t*-test	*p*-value
AAPI-2 Child Abuse Risk	104.86 (19.28)	89.11 (23.51)	**6.22**	<.001
CTSPC Physical Assault	12.98 (20.85)	8.73 (15.52)	**1.99**	.047
CTSPC Psychological Aggression	24.75 (21.88)	18.51 (17.17)	**2.66**	.007
CTSPC Justify Obedience Physical	1.68 (1.60)	1.16 (1.60)	**2.77**	.006
CTSPC Justify Obedience Psych	1.53 (1.14)	1.05 (.97)	**3.84**	<.001
CTSPC Justify Anger Physical	1.06 (1.76)	.96 (1.72)	.48	.630
CTSPC Justify Anger Psych	1.29 (1.24)	1.53 (1.11)	−1.76	.080
Penn State Worry Questionnaire	47.48 (14.32)	52.65 (14.67)	**−3.02**	.003
STAXI Anger Expression	25.55 (11.29)	28.68 (11.82)	**−2.27**	.024
ATS PCA Approval	41.83 (14.02)	32.67 (16.84)	**5.02**	<.001
PCV Anger	58.30 (24.86)	61.30 (22.58)	−1.07	.286
PCV Worry	73.61 (28.67)	65.45 (26.63)	**2.51**	.013
PCV Hit/Spank	1.02 (1.68)	.63 (1.53)	**2.08**	.039
PCV Attributions	44.35 (20.12)	42.61 (22.55)	.68	.496
APEAR Bad Anger	9.10 (3.44)	8.83 (3.23)	.68	.499
APEAR Bad Worry	9.06 (3.64)	6.65 (3.43)	**5.82**	<.001
APEAR Bad Hit/Spank	1.52 (2.12)	.53 (1.23)	**4.75**	<.001
EOD Discrimination Experience[a]	3.31 (2.54)	.80 (1.53)	**8.28**	<.001
EOD Discrimination Frequency[a]	9.67 (9.20)	2.30 (4.53)	**8.28**	<.001

Note. AAPI-2 = Adult-Adolescent Parenting Inventory-2; CTSPC = Parent Child Conflict Tactics Scale; STAXI = State-Trait Anger Expression Inventory; ATS = Attitudes Toward Spanking; PCA = Parent-child aggression; PCV = Parent-Child Vignettes; APEAR = Automatic Parent Emotion Analog Response task; EOD = Experiences of Discrimination. Bolded values significant at *p* ≤ .05.
[a] Only available for the second sample, Black *n* = 87, White *n* = 99.

Table 2

Correlations among Outcome Measures by Racial Group.

}	1.}	2.}	3.}	4.}	5.}	6.}	7.}	8.}	9.}	10.}	11.}	12.}	13.}	14.}	15.}	16.}	17.}	18.}	19.}
1.		.31***	.16	.29***	.16	.22*	−.01	−.03	.29***	.56***	.25**	−.06	.39***	.40***	.31***	.25**	.39***	.07	.06
2.	.54***		.58***	.46***	.22*	.67***	.40***	.02	.11	.39***	.23**	.20*	.32***	.19*	.10	.11	.27**	.02	.06
3.	.10	.26**		.39***	.40***	.58***	.65***	.13	.20*	.36***	.28**	.25**	.20*	.11	.10	−.10	.20*	.13	.15
4.	.47***	.60***	.27***		.56***	.21*	.26**	.03	.18*	.40***	.13	.06	.38***	.14	.01	−.05	.11	.16	.19
5.	.28***	.10	.45***	.41***		.19*	.28**	.11	.17	.30**	.21*	.12	.26**	.16	.02	−.04	.01	.07	.04
6.	.47***	.57***	.28***	.43***	.13		.59***	.05	.02	.35***	.38***	.27**	.17	.20*	.12	.16	.27**	.06	.05
7.	−.05	.02	.56***	.06	.32***	.28***		.25**	.13	.25**	.36***	.25**	.02	.10	.16	−.04	.09	.17	.14
8.	−.24**	−.16*	.09	−.14	−.05	−.06	.12		.28**	.15	.16	.04	−.16	−.05	.15	−.06	.04	.25*	.12
9.	.20*	.11	.25***	.25***	.39***	.20*	.14	.13		.11	.09	−.25**	.13	.07	.02	−.11	.10	.10	.07
10.	.68***	.36***	.16*	.40***	.36***	.24**	.03	−.25**	.26***		.26**	.15	.37***	.18*	.27**	.08	.42***	.12	.09
11.	.46***	.43***	.22**	.34***	.13	.45***	.20**	.04	.20**	.22**		.40***	.22*	.61***	.35***	−.02	.13	.07	−.04
12.	.33***	.40***	.06	.24**	−.12	.34***	.02	−.06	−.12	.10	.57***		.34***	.29***	−.07	.17	−.05	.08	.01
13.	.55***	.67***	.09	.59***	.10	.57***	.06	−.10	.12	.35***	.49***	.34***		.39***	.08	.02	.40***	−.09	−.11
14.	.63***	.49***	.01	.38***	.06	.47***	.02	−.10	.06	.25**	.75***	.53***	.52***		.16	.13	.15	.01	−.09
15.	.23**	.12	.07	.09	.03	.08	.11	.13	.05	.16*	.50***	.24**	.20**	.33***		.32***	.38***	.04	−.05
16.	.32***	.28***	−.07	.16*	−.08	.13	−.15	−.04	−.15	.15	.23**	.58***	.28***	.26***	.29***		.20*	−.18	−.25*
17.	.42***	.30***	.02	.18*	.09	.34***	.02	.00	.14	.42***	.33***	.19*	.46***	.36***	.22**	.26***		.06	.06
18.	.52***	.30***	.06	.30**	.28**	.47***	.24*	−.14	.18	.45***	.30***	.28**	.50***	.36***	.15	.27**	.33***		.90***
19.	.46***	.31***	.09	.35***	.31**	.41***	.22*	−.14	.15	.43***	.23*	.26**	.47***	.28**	.06	.28**	.28**	.95***	

Note. White mothers below the diagonal; Black mothers above the diagonal. 1=Adult-Adolescent Parenting Inventory-2; 2=Parent-Child Conflict Tactics Scale (CTSPC) Physical Assault; 3 = CTPSC Psychological Aggression; 4 = CTSPC Justify Obedience, Physical Assault; 5 = CTSPC Justify Obedience, Psychological Aggression; 6 = CTSPC Justify Anger, Physical Assault; 7 = CTSPC Justify Anger, Psychological Aggression; 8=Penn State Worry Questionnaire; 9=State-Trait Anger Expression Total; 10=Attitude Toward Spanking; 11=Parent-Child Vignette (PCV) Anger Total; 12 = PCV Worry Total; 13 = PCV Hit/Spank Total; 14 = PCV Attribution Total; 15=Automatic Parent Emotion Analog Response (APEAR), Bad Anger Total; 16 = APEAR Bad Worry Total; 17 = APEAR Bad Hit/Spank Total; 18=Experience of Discrimination (EOD), Experience Total; 19 = EOD, Frequency Total.

*p ≤ .05, **p ≤ .01, ***p ≤ .001.

comparable) better fits the data. To determine whether specific paths within the multigroup model significantly differed between Black and White mothers, parameter difference testing was conducted in Mplus using the Model Constraint command. To identify indirect effects, we used the Model Indirect command in Mplus conducted with 500 bootstraps.

3. Results

3.1. Racial group demographic differences

Black mothers were significantly younger, reported lower household income, and reported lower educational attainment than White mothers: $t(290) = 3.54$, $t(290) = 6.90$, and $t(290) = 4.65$, all $p \leq .001$, respectively.

3.2. Racial group differences in outcome measures

See Table 1 for group means, standard deviations, and t-test values. As predicted (H1), Black mothers attained significantly higher child abuse risk scores on the AAPI-2 and reported using significantly more psychological and physical aggression than White mothers. Black mothers also automatically selected significantly more Hit/Spank responses to misbehavior on the APEAR task as well as choosing more Hit/Spank choices for consciously processed hypothetical vignettes on the PCV. Black mothers also reported significantly stronger approval of PCA use; however, racial groups did not significantly differ in their negative child intent attributions.

Contrary to expectations (H2a), White mothers reported more trait anxiety than Black mothers; White mothers also reported more anger expression. However, as hypothesized (H2a), Black mothers reported significantly more consciously processed worry on the PCV and more automatically experienced worry on the APEAR compared to White mothers, despite no apparent group differences in their experience of anger on either measure. Also as anticipated (H2b), Black mothers justified both physical and psychological PCA from a need to teach obedience significantly more than White mothers (again, there were no group differences in justifying PCA because of anger). Finally, as expected (H2c), Black mothers reported significantly more experiences of discrimination compared to White mothers.

Notably, we repeated these analyses statistically controlling for both household income and maternal educational attainment (analyses available upon request). In every instance, all mean group differences that were significantly different remained significantly different and every group difference that was not significantly different remained non-significant.

3.3. Bivariate correlations

Table 2 presents bivariate associations among variables for each racial group. Notable associations were the strong effects observed between White parents' report of experiencing discrimination and their greater abuse risk and their physical PCA use—effects that were not observed for Black parents, counter to our hypotheses (H2d). Indeed, White mothers who reported greater experience of discrimination were significantly more likely to justify their use of both physical and psychological aggression from both a need for obedience and because they were angry or frustrated (with moderate effect sizes)—again, none of those effects were observed for Black mothers.

However, White mothers' *lower* trait worry was associated with their greater abuse risk ($r = -.24$, $p < .01$) but unrelated for Black mothers ($r = -.03$). Lower trait worry was significantly associated with greater approval of PCA for White mothers ($r = -.25$, $p < .01$), in the inverse and predicted direction observed for Black mothers ($r = .15$). Correlations between negative child intent attributions (PCV Attribution) with child abuse risk (AAPI-2), physical PCA (CTSPC Physical Assault), and parental justification of physical PCA to teach obedience (CTSPC Justify Obedience, Physical Assault) were significantly stronger ($Z = 2.672$, $p = .004$; $Z = 2.89$, $p = .002$; and Z

Table 3
Unconstrained Model Standardized Path Coefficients.

	White		Black	
	ß	p	ß	p
Worry → PCA Approval *	**−.24**	.001	.15	.144
Worry → Justify Obedience Psychological	−.05	.520	.11	.226
Worry → Justify Obedience Physical	**−.14**	.032	.03	.742
PCA Approval → Physical Assault	**.20**	.005	**.25**	.011
PCA Approval → Psychological Aggression *	−.03	.715	**.22**	.015
PCA Approval → Child Abuse Risk	**.60**	.000	**.53**	.000
Justify Obedience Psychological → Physical Assault	**−.23**	.004	−.09	.368
Justify Obedience Psychological → Psychological Aggression	**.41**	.000	**.23**	.020
Justify Obedience Psychological → Child Abuse Risk	−.03	.621	−.06	.483
Justify Obedience Physical → Physical Assault	**.61**	.000	**.42**	.000
Justify Obedience Physical → Psychological Aggression	.11	.268	.17	.152
Justify Obedience Physical → Child Abuse Risk	**.24**	.007	.12	.260

Note: PCA = Parent-child aggression. Statistically significant estimates are bolded; covariances not shown. Pathways with an asterisk indicate statistically significant differences in paths between White and Black mothers.

$= 2.89, p = .015$, respectively) among White mothers than Black mothers; the effect size for White mothers was strong compared to the moderate effects observed for Black mothers.

Similar to the group mean difference analyses that included statistical controls above, we evaluated whether our observed associations would change controlling for household income and educational attainment. In most instances, the magnitude of the correlations observed for White mothers *strengthened* (in some instances, the magnitude remained unchanged); nearly all of the correlations remained unchanged for Black mothers. Statistical significance or non-significance of correlations was essentially unaffected by these controls (these additional analyses with socioeconomic controls also available upon request).

3.4. Multigroup path analysis

In testing H3, model fit indices were superior for the unconstrained model (constrained: RMSEA = .08, CFI = .97, TLI = .93, SRMR = .09; unconstrained: RMSEA = .05, CFI = 1.00, TLI = .98, SRMR = .02), with a significant chi-square difference test suggesting the unconstrained model fit the data better than the constrained model ($\chi^2\Delta[12] = 27.51, p < .05$). Therefore, Table 3 presents standardized path coefficients per racial group for the unconstrained model (see also Suppl. Figure). Parameter difference testing suggested that two pathways significantly differed between racial groups: 1) worry significantly *negatively* related to approval of PCA for White mothers, and positively—but not significantly—related to PCA approval for Black mothers; and 2) PCA approval to psychological aggression was non-significant for White mothers but statistically significant for Black mothers. Among White mothers, lower trait worry was indirectly associated with greater physical PCA via approval of PCA ($b_{ind} = -0.05, p = .033$), and lower trait worry was indirectly associated with higher child abuse risk via approval of PCA ($b_{ind} = -0.15, p = .003$). No statistically significant indirect effects were identified among Black mothers.

4. Discussion

The current study evaluated racial differences in factors related to mothers' child abuse risk and physical and psychological aggression. Consistent with prior studies, Black mothers reported using significantly more physical and psychological PCA and attained higher abuse risk scores than White mothers. Also as expected, Black mothers endorsed more approval of PCA as a discipline approach, but there were no significant differences in negative child intent attributions. With regard to the main hypotheses of interest, relative to White mothers, Black mothers reported a greater need to justify either physical or psychological aggression because of a need to teach obedience. Moreover, compared to White mothers, Black mothers reported more worry for consciously processed and automatically processed discipline situations involving child misbehavior, with no comparable differences in anger. Further consistent with hypotheses, Black mothers reported more frequent experiences of discrimination. But contrary to expectations, White mothers expressed more trait worry than Black mothers and reports of more discrimination were significantly related to White mothers'—but not Black mothers'—abuse risk and reports of physical PCA. Path analyses indicated that White mothers with less trait worry were more likely to approve of PCA use, which significantly differed from the positive association observed for Black mothers. However, Black mothers' approval of PCA was significantly linked to their psychological aggression use, which was not apparent for White mothers.

As predicted, the current study observed greater child abuse risk, more physical PCA use, and an inclination to select physical PCA in consciously processed and automatically presented stimuli among Black mothers compared to White mothers. These findings are consistent with prior work noting increased child abuse risk (Combs-Orne et al., 2000) and physical PCA use among Black mothers (e. g., Klevens et al., 2019; Silveira et al., 2020). Although our findings align with prior reports of greater verbal aggression among Black mothers (Berlin et al., 2009), our findings contrast those suggesting White mothers engage in more yelling (Lansford et al., 2012) or those that find no racial group differences in verbal aggression for parents of infants and toddlers (Regalado et al., 2004). The findings suggesting White mothers engage in more yelling derive from data collected over 30 years ago (Lansford et al., 2012) and some evidence suggests both spanking and yelling increase with child age (Regalado et al., 2004), potentially reflected in our sample of mothers with older children. Overall, our pattern of findings support a stronger tendency among Black mothers to utilize PCA, indicative of elevated child abuse risk.

Our primary goal was to identify factors that may account for such racial group differences. Consistent with earlier work (Su et al., 2018), Black mothers reported significantly greater endorsement of PCA as a discipline technique. This attitude toward PCA is a critical pre-existing schema in Social Information Processing (SIP) theory (Milner, 2000), and the current findings affirm the importance of this precondition for child abuse risk. With regard to the other key SIP factor included in this investigation—negative children intent attributions—no significant racial group mean differences were observed in the current study. This result conflicts with prior findings of racial differences in negative child intent attributions (Pinderhughes et al., 2000). Although negative attributions were observed to be related to over-reactive parenting for both Black and White parents in an earlier study (Cooper et al., 2018)—similar to our findings—our study identified a difference in the magnitude of such effects: negative child attributions were more weakly related to PCA risk for Black mothers relative to White mothers, although both groups evidence moderate to strong effects on child abuse risk from negative attributions.

Racial group differences were postulated to reflect the experience of systemic inequities of Black parents that may motivate their anxiety and justification for PCA to secure obedience (Pinderhughes et al., 2000; Silveira et al., 2020) because they are more likely to be raising children in more challenging conditions (McLoyd et al., 2019). Indeed, Black mothers in this study were younger, lower income, with lower educational attainment than White mothers. The present findings affirm that Black parents report more frequent justification of both physical and psychological aggression because of a need for obedience than White mothers—but with no

corresponding differences in justifying PCA because of anger or frustration. Several researchers have previously speculated that imperatives to secure obedience would particularly motivate Black parents' PCA to protect their children (Murry et al., 2001; Patton, 2017; Pinderhughes et al., 2000). Additionally, compared to White mothers, Black mothers reported more worry when reading hypothetical vignettes of child misbehavior but also reacted with more worry when presented with images of child misbehavior, which would comport with prior conjectures that Black parents experience more worry relevant to children's behavior (Pinderhughes et al., 2000), although White mothers actually reported more trait worry and anger expression. In contrast, there were no racial group differences in anger for either consciously processed or automatically processed child misbehavior. Black mothers also reported significantly more frequent experience of discrimination in the current study, consistent with prior work recognizing the environment of racism within which Black mothers are parenting (McLoyd et al., 2019). Together, these findings provide support for the premise that Black parents may experience more worry to potentially discipline-relevant situations and justify their PCA due to a need to teach their children's obedience, reflecting a protective parenting perspective in the context of experiencing more discrimination (Patton, 2017; Silveira et al., 2020).

Despite these racial group differences, in the multigroup path analysis, use of physical or psychological PCA was related to justification to teach obedience for both Black and White mothers—these paths were not significantly different in our multigroup analysis. Therefore, although Black mothers were more likely to report the need to teach obedience as a justification for PCA, these were not differentially related to greater actual PCA use as anticipated. Path analysis results instead indicated that Black mothers' greater approval of PCA was significantly associated with their psychological aggression, which was not observed for White mothers—underscoring the salience of strong PCA approval for Black mothers in particular (Chiocca, 2017). In addition, although such higher PCA approval attitudes were related, as expected, to Black mothers' greater trait worry—albeit not significantly—PCA approval attitudes were significantly *inversely* related for White mothers—namely, White mothers who approve of PCA as a discipline approach reported experiencing less worry. These directional effects would be important to replicate with a larger sample to determine if indeed White mothers' PCA approval is less motivated by general worry relative to Black mothers' greater worry. Furthermore, we relied on a measure of trait worry to capture the broader context of what might precede mothers' justification and approval of PCA and their subsequent abuse risk; but future work might consider employing a measure of mothers' worry toward their children specifically to more directly connect to the theorized discipline-relevant processes.

Among our intriguing results, White mothers—not Black mothers—who believed they had experienced more discrimination showed a consistent pattern of greater child abuse risk, evident in higher child abuse risk scores, greater use of physical PCA, stronger approval of PCA as a discipline approach, and greater justification for using PCA because they wished to teach obedience and because they were angry or frustrated. The pervasiveness of these effects in relation to discrimination were observed among White mothers despite the fact that Black mothers on average experienced substantially more discrimination than White mothers. Not only does this pattern of findings for White mothers contradict our hypotheses, it instead implicates a potential underlying commonality in White mothers reflecting authoritarianism (Feldman, 2003). The high behavioral control characterizing an authoritarian parenting style (Smetana, 2017) may reflect a social dominance orientation that values non-egalitarian, hierarchical interpersonal relations (Pratto, Sidanius, & Levin, 2006). Those holding a social dominance orientation favor in-group members relative to out-group members (Sidanius, Pratto, & Mitchell, 1994), and for White individuals, this corresponds to a belief that their in-group (Whites) experiences disenfranchisement and discrimination (Jardina, 2019) despite the systemic racism experienced by Black individuals. Such a hierarchical social dominance orientation is also related to individuals' stronger approval for PCA (Hess, Gray, & Nunez, 2012), and a need to enforce conformity from children is reflected in a propensity toward authoritarianism (Boppana & Rodriguez, 2017; Feldman, 2003) which could be manifest as a justification to ensure obedience. In light of these provocative findings with White mothers, additional, more intensive research inquiry into racial group differences on the role of perceived discrimination in relation to PCA and abuse risk is needed, particularly because our findings on discrimination derive from data gathered anonymously from only the second group of mothers involved in the current investigation.

4.1. Limitations, additional future directions, and implications

The current study should be evaluated in light of a number of limitations. Because this investigation was conducted during the COVID-19 pandemic, all data were gathered from both groups of mothers online. Although no substantive demographic differences between the two samples were noted, only the second group of mothers responded anonymously. An anonymous delivery format may promote more candor in responding, particularly on sensitive topics, but replication of this study with a larger sample with creative techniques to cultivate accuracy and honesty is warranted (perhaps comparing in-person versus online responding). A larger sample would also provide more insight into the role of discrimination as noted above, ideally increasing the subsample size of Black parents, and thus allowing for its potential inclusion in future path analyses. The current study engaged only mothers and thus cannot be extrapolated to Black or White fathers. Finally, although we tested a theoretical model (Fig. 1) conceptually consistent with general worry temporally preceding PCA justification and approval, the design remains cross-sectional and thus causal interpretations cannot be rendered. Future longitudinal work could also consider how the proposed processes evolve over time, clarifying their temporal relations.

Compared to White mothers, Black mothers attained higher child abuse risk scores and reported more PCA use (mirrored in their responses to the consciously processed hypothetical vignette measure and the automatic analog task). Some work suggests that Black adults respond to measures tapping authoritarian parenting differently than White adults (Pérez & Hetherington, 2014), implicating measurement invariance that could account for racial differences in child abuse risk measures. But the observed racial differences in reporting actual behavior on the CTSPC suggest Black mothers are either indeed engaging in more PCA or that they may be more

forthcoming in their PCA reports than White mothers. Continued and concerted efforts to improve the assessment of child abuse risk might clarify these issues.

The present findings provide preliminary evidence that factors involved in physical and psychological PCA and abuse risk differ between Black and White mothers. The observed effects affirm that some SIP theory factors (e.g., negative child intent attributions; attitudes approving of PCA) are important for both racial groups. Nonetheless, some elements may be weaker or stronger in relative importance for Black mothers, thereby suggesting the need to identify additional, unmeasured factors that may be more robust predictors of Black mothers' child abuse risk. Taken together, our findings imply that research collapsing across racial groups may at best be inaccurately identifying some of the elements that may be critical to increasing child abuse risk, or at worst be obfuscating what elements are differentially critical for different racial groups. Research that simply statistically controls for socioeconomic indicators may be inaccurately concluding those racial groups are thus equated (Palloni & Morenoff, 2001), drawing inaccurate judgments about contributors to child abuse risk—potentially reducing the effectiveness of child abuse prevention programs for families of color (see van der Put et al., 2018). In an effort to develop more culturally-informed prevention and intervention programs to safeguard the welfare of all children, future work must disentangle differential risk factors with greater precision to enhance the relevance of such programs in reducing child abuse risk of distinct parent subgroups.

Author note

Declaration of Competing Interest

The authors report no declarations of interest.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.chiabu.2021.105089.

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