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Parental influences on child report of relational attribution biases during early childhood

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ABSTRACT

Influences on social cognition, such as hostile attribution biases, are a relatively understudied topic despite the association of hostile attribution biases with important developmental and clinical outcomes. From a developmental perspective, it is particularly important to understand the early development of biases regarding how the intentions of others are perceived, especially in the relationship context. Therefore, understanding potential correlates, such as parental influences, of such biases during early childhood may be especially important. The current study (N = 121) was designed to explore several gaps and limitations in the hostile intent attribution literature, especially the lack of research on hostile attribution biases for relational provocations and associated parent behavior. In particular, this gap was addressed by investigating parental influences on hostile attribution biases for relational provocations during early childhood (i.e., 3–5 years of age) using parent and child reports. It was found that parent hostile attribution biases for relational provocations was significantly associated with child hostile attribution biases for relational provocations. Furthermore, it was demonstrated that parent relational aggression was related to parenting practices. Implications for research and practice are discussed.

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Introduction

Aggression is a potentially normative behavior in earlier developmental periods, such as early childhood (3–5 years of age; Eisner & Malti, 2015), while simultaneously being associated with the development of social-emotional maladjustment (Bierman & Wargo, 1995; Bierman, 2004; Crick et al., 2006). In the research that has been conducted on aggression, the focus has historically been primarily on physical aggression (i.e., hitting, kicking, forcefully taking objects) or the intent to hurt another individual using physical force or the threat of physical harm (Dodge, Coie, & Lynam, 2006; Eisner & Malti, 2015). However, relational aggression, or inflicting harm through damage (e.g., hurting relationships one child has with other children by saying "Let's not play with them"), threat (e.g., "You can't play unless you give me that toy"), or control of relationships (Crick & Grotpeter, 1995), has become an area of research with increasing prominence (e.g., Murray-Close, Nelson, Ostrov, Casas, & Crick, 2016). During early childhood, relational aggression can include behaviors such as placing one's hands on a chair so a child cannot sit at the table and saying "You can't come to my birthday party" (Casas & Bower, 2018; Crick & Grotpeter, 1995, p. 713). Engagement in relational aggression may have some social benefits such as associations with positive friendship qualities (e.g., Banny, Heilbron, Ames, & Prinstein, 2011) and perceived popularity (e.g., Cillessen & Mayeux, 2004), but these same behaviors also appear to place children at risk for concurrent and future indicators of maladjustment such as peer rejection, eating disorders, borderline personality features, delinquency, depression, loneliness, and negative self-perceptions across development (for review, see Leadbeater & Sturgess, 2018; Murray-Close et al., 2016). Therefore, it is of importance to study risk factors for relational aggression and associated behaviors.

Social cognition

The social information processing (SIP) model of children's social adjustment (Crick & Dodge, 1994) provides a theoretical framework that is often applied to help understand how aggressive children perceive, interpret, and make decisions about social stimuli and situations that increase their likelihood of engaging in aggressive behavior in the future (Crick & Dodge, 1994). In this model, behavioral responses to social situations are based on a set of processing steps (Crick & Dodge, 1994; Quiggle, Garber, Panak, & Dodge, 1992). Hostile attribution biases occur at the interpretation of cues step of this model. Hostile attribution biases are operationally defined as over-attributing hostile intent to others' behaviors, even in situations where hostile attribution is not warranted such as when the intent is benign and the situation is ambiguous (Dodge & Frame, 1982; Dodge, 1980). Hostile attribution biases are most frequently investigated with physical or verbal aggression and ambiguous physical or verbal provocations (e.g., a child running past another child and getting mud on the other's new shoes). Attributions are implicated in causing or preceding physical aggression and are considered to have an important role in the maintenance or development of maladaptive behaviors (e.g., Orobio de Castro, Veerman, Koops, Bosch, & Monsouwer, 2002).

Hostile attribution biases for relational provocations

The past emphasis on physical aggression provocation scenarios does not include other developmentally salient situations that may be more relevant for the display of relational aggression such as not having received an invitation yet to an upcoming birthday party (Crick & Grotpeter, 1995; Martinelli, Ackermann, Bernhard, Freitag, & Schwenck, 2018). Overall, there has been limited research into SIP and hostile attribution biases for relational provocation situations. Several researchers (e.g., Crain, Finch, & Foster, 2005; Crick, 1995; Crick, Grotpeter, & Bigbee, 2002; MacBrayer, Milich, & Hundley, 2003; Mathieson et al., 2011) have investigated hostile attribution biases for relational provocations, but findings and methods have been mixed (for review, see Martinelli et al., 2018). Crick (1995) and Crick et al. (2002) demonstrated that children high in relational aggression reported significantly more hostile attributions to relational provocations. Although an association between relational aggression and hostile attribution biases for relational provocations is theoretically

hypothesized given the connection between physical aggression and hostile attribution biases for physical provocations (e.g., Orobio de Castro et al., 2002), this direct connection has not consistently been found and requires further examination (e.g., Crain et al., 2005; Nelson, Mitchell, & Yang, 2008). Furthermore, the majority of the research has been conducted during middle childhood and beyond, elucidating the need to understand earlier development of hostile attribution biases.

Early childhood period

Early childhood is a critical time for understanding several key cognitive and social developmental tasks (Gentile & Sesma, 2003; Thompson, 2006), which make it an especially important time for investigating parental influences and the development of social cognitive constructs such as hostile attribution biases (e.g., Ziv, 2012). Preschool-aged children are learning social norms for interactions (Fivush, 2002; Gentile & Sesma, 2003) and have been found to exhibit hostile attribution biases (Katsurada & Sugawara, 1998; Ziv, 2012) as well as relational aggression (for review, see Casas & Bower, 2018). The relation between aggression and hostile attribution biases has also been upheld during this developmental period (Katsurada & Sugawara, 1998; Ziv, 2012). Moreover, during early childhood, parents still exert important influence in helping their children to regulate their behavior (Cole, Michel, & Teti, 1994) and peer relationships are only beginning to form (Rubin, Bukowski, & Parker, 2006). Parents play an important role in coordinating their children's social interactions (Bhavnagri & Parke, 1991; Pettit & Mize, 1993). The current study investigated how parent factors are associated with child hostile attribution biases for relational provocations and relational aggression during a critical developmental period for later peer relationships and social competence (Herrod, 2007; Michiels, Grietens, Onghena, & Kuppens, 2008; Ziv, 2013).

Hostile attribution biases: mechanisms and theoretical framework

Based on SIP theory, it has been argued that children's social cognitive perspectives are based on previous social experiences (Crick & Dodge, 1994; MacKinnon-Lewis, Rabiner, & Starnes, 1999). However, the specific mechanisms through which social beliefs and expectations develop and subsequently influence the steps of the SIP model have been understudied (e.g., Dodge, 2006). For example, it is unclear what developmental processes lead to hostile attribution biases, which is considered a limitation of the research on social cognition and an area for important research (Orobio de Castro, 2004). The research on social cognition and the underlying mechanisms of such biases related to relational aggression is especially limited and inconclusive (e.g., Crain et al., 2005; Crick, 1995; Godleski & Ostrov, 2010; Martinelli et al., 2018; Ostrov & Godleski, 2013). The current study examined potential factors related to children's manifestation of hostile attribution biases for relational provocations and relational aggression.

Parental influences, especially those that occur prior to the development of significant peer relationships, may help to set the stage for hostile attribution biases. Specifically, parents may influence beliefs and cognitive frameworks regarding social interactions that are held in the database and play an important role in influencing their children's SIP (MacBrayer et al., 2003; Nelson et al., 2008; Ziv, 2012). It was hypothesized that parents influence their children through several socialization methods, including modeling and discipline (Dodge, 2006).

Social learning theory

Social learning theory posits that children learn through socialization by their parents, both indirectly through modeling and more directly through parenting practices that will reinforce or punish certain behaviors (Akers, 1977; Bandura, 1969, 1977; Bandura, Ross, & Ross, 1961). Parents engaging in particular behaviors in the presence of their children may carry the implicit message that such behaviors are desirable and appropriate (Bandura, 1977). Modeling by parents of hostile attributions has also been proposed as a method through which children will develop hostile intent attributions (Dodge, 2006). Thus, children may learn to attribute hostile intent to others through observing their parents (MacBrayer et al., 2003; Nelson et al., 2008; Ziv, 2012) such as a parent expressing a negative verbal reaction to a peer's ambiguous social behavior (Nelson & Coyne, 2009). Research has demonstrated significant links between parents' and children's hostile attribution biases that are small to

moderate in magnitude (e.g., MacBrayer et al., 2003; Nelson et al., 2008) during middle childhood (i.e., 8–12 years of age). MacBrayer et al. (2003) found that mothers' attributions were associated with their daughters' hostile intent attributions in physical/overt, but not relational, provocations. Nelson et al. (2008) found that mothers' overall intent attributions were significantly associated with their children's intent attributions. Fathers' intent attributions, however, were associated with children engaging in relational aggression (Nelson et al., 2008). Importantly, intent attributions were not separated into form (i.e., relational and physical) in either of the two studies that investigated the role of parental hostile attributions, and as such the specific impact of parent hostile attribution biases for relational provocations was not addressed. Furthermore, MacBrayer et al. (2003) and Nelson et al. (2008) did not control for parental relational aggression when considering the impact of hostile attribution biases, and because these constructs are theoretically (Crick & Dodge, 1994) and empirically (Crick et al., 2002; Crick, 1995) considered to be associated, these parent constructs may need to be considered simultaneously.

Children may be indirectly affected by their parents' hostile attribution biases or aggression, potentially through interactions with parents (MacBrayer et al., 2003; Nelson et al., 2008). Repeated negative and coercive interactions, such as through discipline, may represent an important path between parents' and children's behavior and cognitions (Dodge, 2006; Labella & Masten, 2018; Lansford et al., 2014; MacBrayer et al., 2003; Nelson et al., 2008; Patterson, 1982; Ziv, Kupermintz, & Aviezer, 2016). In support of this assertion, Nix et al. (1999) demonstrated that mothers' hostile attribution biases for physical provocations were associated with harsh discipline practices and that these practices mediated the relation between mothers' hostile intent attributions and child externalizing behavior. Thus, parenting may have an important role in the development of maladaptive child behaviors. Given that parent social behavior, relationships, and cognitions have been found to directly affect their children's aggression and intent attributions (e.g., MacBrayer et al., 2003; Nelson et al., 2008) as well as affect or spill over to inconsistent or controlling parenting behavior (e.g., Barry, Dunlap, Lochman, & Wells, 2009; Nix et al., 1999), both direct and indirect paths were examined.

Parents may also reinforce behaviors or interpretations that are consistent with their own value system given that parents may subtly reinforce children's hostile attributions (Bickett, Milich, & Brown, 1996). Therefore, parents who are relationally aggressive and/or demonstrate a hostile attribution bias for relational provocations may then reinforce or shape their children's behaviors through their discipline practices. For example, parents of elementary school- and middle school-aged children who are relationally aggressive have been found to use negative parenting strategies (Reed, Goldstein, Morris, & Keyes, 2008), and harsh, punitive, and inconsistent parenting has often been associated with child physical aggression (for review, see Coie & Dodge, 1998; Dodge et al., 2006) as well as maladaptive child social cognition (i.e., positive view of aggression) in preschoolers (Ziv et al., 2016). Parents' social cognition and behaviors in their adult peer relationships may spill over to their parent–child interactions (e.g., Li, Putallaz, & Su, 2011). Inconsistent parenting is thought to be associated with aggression because inconsistency leads to negative reinforcement of aggressive behaviors, whereas harsh controlling parenting disrupts the parent–child bond and, thus, the internalization of behavioral control and rule-abiding behavior (Patterson, Debaryshe, & Ramsey, 1990). Psychological control, in particular, is a form of harsh parenting that is thought to be similar conceptually to relational aggression (Nelson & Coyne, 2009; Nelson & Crick, 2002; for review, see Kuppens, Laurent, Heyvaert, & Onghena, 2013) because many of the parenting behaviors mimic relational aggression such as relationship manipulation and love withdrawal (e.g., Barber, 1996; Nelson & Crick, 2002; Nelson & Coyne, 2009). Parent psychological control has been demonstrated to predict child relational aggression during middle childhood and adolescence (Kuppens et al., 2013; Kuppens, Grietens, Onghena, & Michiels, 2009a, 2009b). Reed et al. (2008) found parent use of psychological control and relational aggression to be significantly correlated. However, Reed et al. (2008) did not control for parent hostile attribution biases for relational provocations. Casas et al. (2006) found that parents' use of psychological control, through strategies such as invalidating of feelings, was associated with girls' use of relational aggression during early childhood. Inconsistent discipline overlaps with psychological control in how these parenting styles may manifest such as emotional or attentional disengagement (Kawabata, Alink, Tseng, van IJzendoorn, & Crick, 2011). As such, considering both psychological control and inconsistent discipline as parenting influences that could affect child relational aggression is important (see Fig. 1).

The current study

The current study was designed to empirically investigate the parental influences that could contribute to children's hostile attribution biases given the importance of investigating social cognition (e.g., Crick & Dodge, 1994). Overall, the current study attempted to address several gaps in the SIP literature and, more specifically, the hostile attribution biases for relational provocations literature. The first goal of this study was to test whether parent hostile attribution biases and parent relational aggression were significantly associated with child hostile attribution biases and aggression. It was hypothesized that higher parent relational aggression and hostile attribution biases for relational provocations would be associated with higher levels of child relational aggression and hostile attribution biases for relational provocations. The second goal was to test whether harsh parental discipline and erratic parental discipline are significant indirect pathways between both the association of parent relational aggression and child hostile attribution biases for relational provocations as well as the association between parent and child hostile attribution biases for relational provocations.

Method

Participants

Participants were 121 preschool-aged (i.e., approximately 3–5 years of age) children (63 girls), who were on average 51.21 months old (*SD* = 9.35, range = 35.25–72.15), and their parents from a northeastern U.S. city. All children attended preschool or day care. The sample was primarily European American (81%). The remainder of the sample was African American (3.3%), Asian or Pacific Islander (1.65%), Hispanic or Latinx (2.5%), multiracial (9.9%), or other (1.65%). The majority of the sample had a total household income in the past year of $55,000–$100,000 or above (75%). The remainder was under $15,000 (2%), between $15,000 and $24,999 (6%), between $25,000 and $35,999 (4%), and between $36,000 and $54,999 (12%), with 1% not reported. Although special attention was paid to achieving an ethnically and economically diverse sample, the majority of the sample was European American and was middle class or higher in socioeconomic status. Furthermore, the majority of parents who participated were mothers (*n* = 118, *n* = 3 fathers) and currently married (90%). The remainder of the sample was divorced (2%), separated (3%), single (3%), or other (2%). Most participating parents had a 4-year college degree (35.7%) or a graduate or professional degree (39.5%). The remainder of the sample had some high school education (1.6%), a high school diploma or equivalent (2.3%), some college (12.4%), or a 2-year degree (8.5%). Participating parents worked in positions that could be described as executive (12%), professional (33%), technical (2%), sales (0.8%), administrative/clerical support (5%), service (1.6%), operators (1.6%), or other (44%).

Measures

Parent report of hostile attribution biases

Parent report of hostile attribution biases was assessed using the Social Situations Survey (Nelson et al., 2008), which was based on a previously published child measure, the Assessment of Intent Attributions (Crick et al., 2002; Crick, 1995). Vignettes were revised by Nelson et al. (2008) to be

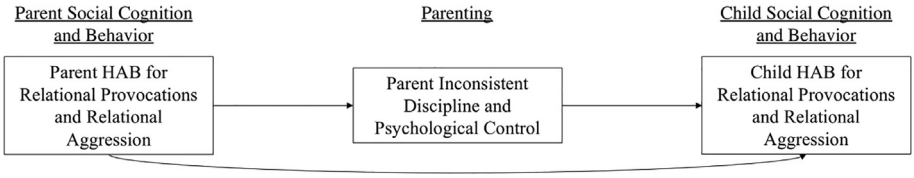

Fig. 1. Conceptual model. To address limitations of previous research, parent and child hostile attribution biases for physical provocations and child physical aggression were included as covariates. HAB, hostile attribution biases.

ecologically valid for use with adults (e.g., more relevant stimuli [such as a car] and settings [such as the break room at work]). Three stories depict relational provocations focusing on potential rejection (e.g., "Imagine that you are walking toward the break room at work and you hear some of your coworkers talking. When you enter the room, the conversation stops."). An additional three stories depict physical provocations (e.g., "Imagine that you move to a new neighborhood and one day you are looking out the window. You see one of your neighbors back out of his/her driveway and into your car, which is parked on the side of the street. Your neighbor does not stop to assess the damage but drives away."). For each provocation, a question then assesses the intention of the actor within the vignette (i.e., two hostile responses and two benign responses). Hostile responses were scored as 1, and benign responses were scored as 0. Another question assesses whether the actor was trying to be mean or not on a scale of 1 (*not mean*) to 5 (*very mean*). Finally, a question asks how upset or mad the participant would be if they were actually in the situation, rated on a scale of 1 (*not upset or mad at all*) to 3 (*very upset or mad*). Scores were calculated by adding the three responses to each provocation vignette. Parent hostile attribution biases for relational and physical provocations were significantly correlated ($r = .51$, $p < .001$). Related measures have demonstrated discriminant validity (e.g., Bailey & Ostrov, 2008) and appropriate internal consistency using a similar methodology with an emerging adult sample ($N = 112$; i.e., $\alpha = .72$ for relational provocations and $\alpha = .71$ for physical provocations; Godleski, Ostrov, Houston, & Schlienz, 2010). In the current study, parent hostile attribution biases for relational provocations demonstrated acceptable internal consistency ($\alpha = .76$) and hostile attribution biases for physical provocations demonstrated marginal internal consistency ($\alpha = .58$). Parent hostile attribution biases for physical provocations were used as a covariate.

Parent relational and physical aggression

The Self-Report of Aggression and Social Behavior Measure (SRASBM) was used to assess the parent's peer social behavior such as relational and physical aggression (Linder, Crick, & Collins, 2002; Morales & Crick, 1998). This measure has a total of 52 items, with 11 that assess relational aggression with peers (e.g., "When I am not invited to do something with a group of people, I will exclude those people from future activities") and 6 items that assess physical aggression with peers (e.g., "When someone makes me really angry, I push or shove the person"; "When I have been provoked by something a person has said or done, I have retaliated by threatening to physically harm that person"). Each of these items is rated on how true it is on a 7 point scale, with 1 representing *not at all true* and 7 representing *very true.* Total scores were computed by summing all the items within the subscale, such that higher scores indicate higher levels of aggression. The SRASBM has demonstrated appropriate internal consistency within an emerging adult college population (e.g., Bailey & Ostrov, 2008; Linder et al., 2002). In the current study, parent relational aggression ($\alpha = .77$) and physical aggression ($\alpha = .65$) were internally consistent. Furthermore, parent relational aggression and parent hostile attribution biases for relational provocations were significantly positively correlated with each other ($r = .44$, $p < .001$), as would be anticipated.

Inconsistent discipline

Parent report of parenting practices related to inconsistent discipline was assessed using the Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). The APQ consists of 32 items and several subscales, including the inconsistent discipline subscale (6 items; e.g., "You let your child out of a punishment early [like lift restrictions earlier than you originally said]"). Each item is rated on a 5-point scale based on how often each of these parenting behaviors occurs in the home, such that 1 represents *never* and 5 represents *always.* In previous research, Cronbach's α levels for the subscales have ranged between .67 and .80 (Shelton et al., 1996). In the current study, the inconsistent discipline subscale was internally consistent ($\alpha = .72$).

Psychological control

Parent report of parenting practices related to critical and rejecting forms of psychological control were assessed using the Parenting Styles and Dimensions Questionnaire (PSDQ; Nelson & Coyne, 2009; Robinson, Mandleco, Olsen, & Hart, 2001). The PSDQ is a self-report parenting questionnaire composed of items adapted from measures of authoritarian and authoritative dimensions of parenting

(Robinson et al., 2001) as well as psychological control (see Barber, 1996; Nelson & Crick, 2002). Parents report on the frequency with which they engage in specific parenting behaviors toward the participating children on a 5-point Likert scale from 1 (*never*) to 5 (*always*). The psychological control dimension for this study was composed of 33 items reflecting parenting behaviors such as love withdrawal, erratic emotional behavior, and guilt induction (e.g., "I go back and forth between being warm and critical toward my child"). This dimension has been found to have adequate internal consistency in past research (Nelson, Yang, Coyne, Olsen, & Hart, 2013). In the current study, psychological control was found to be internally consistent (α = .89).

Child report of hostile attribution biases

Children's self-report of hostile intent attributions was assessed using a modified measure of the Assessment of Intent Attributions (Crick, 1995). Based on child report of hostile attribution bias assessments (Casas & Crick, 1999; Crick, 1995), this measure was adapted to be appropriate for early childhood and involves brief hypothetical situation vignettes of socially ambiguous relational and physical provocations. Children were read the very brief stories and asked to imagine that the events in the stories were happening to them. Four stories depicted relational provocation focusing on potential rejection or ambiguous intent relational victimization (e.g., discovering that a friend has not invited you to his or her birthday party), and four stories depict physical provocation focusing on ambiguous intent physical victimization and property destruction (e.g., another child bumps you from behind and you fall down). For each story, children were asked whether the child in the story was "trying to be mean" or "not trying to be mean." If children indicated that the child in the vignette was trying to be mean, a follow-up question was asked about whether they felt it was "a little mean" or "really mean." A response of "not trying to be mean" was scored as 0, "a little mean" was scored as 1, and "really mean" was scored as 2. Responses were summed to create a subscale score. Children always indicated their response verbally or by using developmentally appropriate picture anchors (i.e., cartoon faces depicting the appropriate emotion) that they were trained to use before administration. These response scales have been used successfully in the past in research with preschoolers (Crick et al., 2006; Hart et al., 2000). In several samples during middle childhood, Cronbach's α levels have ranged from .65 to .78 for the items assessing hostile intent attributions for relational provocation situations, and Cronbach's α levels have ranged from .77 to .86 for items assessing hostile intent attributions for physical provocation (Crick et al., 2002; Crick, 1995; Leff et al., 2006). Similar measures have also demonstrated adequate test–retest reliability over 2 weeks (Leff et al., 2006). In the current study, child report of hostile attribution biases for relational provocations was internally consistent (α = .75) if one of the vignettes was removed, and child report of hostile attribution biases for physical provocations demonstrated acceptable internal consistency (α = .67) if one story was removed. The two removed items were the first two items in the assessment. Data on hostile attribution biases for physical provocations were collected primarily for use as a covariate.

Child report of aggression

The Child Social Behavior Scale–Revised (CSBS-R), which was based on the original CSBS measure reported by Crick and Grotpeter (1995), assessed children's self-reported physical aggression (4 items; e.g., "Some kids push and shove other kids at school. Do you do this? YES or NO?") and relational aggression (4 items; e.g., "Some kids say 'you are not my friend anymore.' Do you do this? YES or NO?") as well as prosocial behavior (4 items; e.g., "Some kids help out other kids when they need it. Do you do this? YES or NO?"). The revised measure includes 12 items that were based on the original Crick and Grotpeter (1995) measure as well as the addition of related items that were based on a developmentally appropriate measure (i.e., the Preschool Social Behavior Scale–Teacher Report; Crick, Casas, & Mosher, 1997). Each of the items uses developmentally appropriate response scales (e.g., a stoplight and a race track with red, yellow, and green cars) to represent *no* (red), *yes–a little* (yellow), and *yes–a lot* (green), such that children will use the cars or the stoplight to point to the color that corresponds to their answer or will use a verbal response to indicate how much they engage in each behavior (Crick et al., 2006). These response scales have been used in the past in research with preschool children and were found to be effective and developmentally appropriate (Crick et al., 2006). In the current study, child report of relational aggression was found to be internally consistent if

one item (i.e., excluding children from play) was removed (α = .69), and child report of physical aggression was found to be internally consistent (α = .72). Similar to the other child measure, this was the first item of the measure.

Procedure

The current study was approved by the local institutional review board. Recruitment from the community occurred through advertisements in local parent periodicals and flyers at local schools and libraries. Parents provided written informed consent, and only children who provided verbal assent were included in the study. Of the 104 children who came to the laboratory, 5 children did not provide assent and, thus, were not interviewed. Once consent and assent were obtained, parents completed their paper-and-pencil parent rating forms in an adjacent room to their children. Children were interviewed by a trained research assistant or graduate student. This interview took between 10 and 15 min for most children, and a break was provided halfway through.

To supplement the number of participating families in the study, parent packets were sent home to families participating in a concurrent study based in local child-care centers. As part of this project, the same child-report interview was being conducted with participating children in the schools. In response, 25 parents returned these packets through the mail, and their data were combined with the laboratory visit data. For these families, the only difference in procedures was that parent data and child data were not collected on the same day, as was done in the laboratory, but rather were collected within a few weeks of each other. No significant differences were found between those who completed the packets in the laboratory and those who completed them at home on any of the child or parent variables, age or gender of participating children, or family income (*ps* > .09).

Analytic strategy

According to the guidelines provided by Kline (2016), data were subject to several phases of data cleaning prior to any analysis. First, distributions of the study variables were examined. All variables demonstrated univariate normality, such that each variable was less than 3 for skew and less than 8 for kurtosis. Given that non-normality was not of concern, maximum likelihood estimation was deemed appropriate. Furthermore, no significant differences were found between those participants with missing data and those without missing data on the variables of interest (e.g., child hostile attribution biases for relational provocations, *ps* > .18) or between demographic variables such as gender, ethnicity, and income (*ps* > .10). The data also met criteria for missing at random (Little, 1988). The lack of differences suggests that it was reasonable to consider data to be missing at random; accordingly, missing data were handled using full information maximum likelihood estimation (Arbuckle, 1996). Path analysis was used to test the conceptual model and was conducted using Mplus Version 8 software (Muthen & Muthen, 1998, 2018). A total of 5000 bootstrap samples (Preacher & Hayes, 2004, 2010) and 95% bias-corrected confidence intervals were used to test the significance of the specific indirect effects (Efron & Tibshirani, 1993; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Results

Preliminary analyses

Descriptive statistics and correlations are presented in Table 1. Given the theoretical and empirical importance of considering alternate forms of aggression and attributional biases, both parent and child physical aggression and hostile attribution biases for physical provocations were included as covariates (e.g., Nelson et al., 2008). The respective constructs were moderately correlated in the current study (i.e., child physical and relational aggression and child hostile attribution biases for relational and physical provocations; see Table 1). Although no differences were found for child gender on any of the key variables when compared with *t* tests (*ps* > .17), child gender was included in the

Table 1
Descriptive statistics and correlations for key study variables.

	CR RHAB	CR RAGG	PR RHAB	PR RAGG	PC	ID	CR PHAB	CR PAGG	PR PHAB	PR PAGG	Child age
CR RAGG	−.12	–									
PR RHAB	.11	−.02	–								
PR RAGG	−.09	.06	.44***	–							
PC	−.08	−.17	.11	.39***	–						
ID	−.07	−.10	.22*	.41***	.25*	–					
CR PHAB	.57***	.01	−.00	−.04	−.00	−.02	–				
CR PAGG	−.06	.56***	−.00	.03	−.11	−.03	.02	–			
PR PHAB	.07	.12	.51***	.42***	.29**	.14	.15	.08	–		
PR PAGG	−.05	.08	−.07	.24**	.13	.06	−.13	.07	.03	–	
Child age	.20*	−.36***	.04	−.18*	−.04	.02	−.03	−.32***	.08	−.19*	–
M	2.73	1.65	10.25	16.10	65.26	13.20	2.63	1.19	9.48	5.26	51.21
SD	2.08	1.96	3.30	5.37	12.03	3.35	1.92	1.89	2.12	0.93	9.35
Range	0.00–6.00	0.00–6.00	6.00–19.00	11.00–37.00	41.00–112.00	6.00–22.00	0.00–6.00	0.00–8.00	7.00–16.00	5.00–12.00	35.25–72.15

Note. CR, child report; RHAB, hostile attribution biases for relational provocations; RAGG, relational aggression; PR, parent report; PC, psychological control; ID, inconsistent discipline; PHAB, hostile attribution biases for physical provocations; PAGG, physical aggression.

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

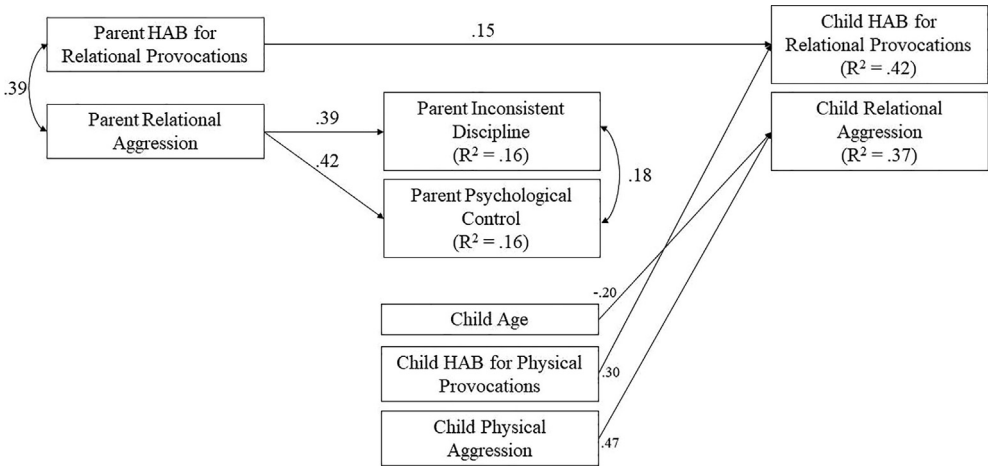

Fig. 2. Path model predicting child-reported relational aggression and hostile attribution biases for relational provocations. Standardized path coefficients are presented. Child age and gender, as well as parent- and child-reported hostile attribution biases for physical provocations and physical aggression, were included as covariates (see text), with significant associations with the primary outcome variables presented. Child aggression and hostile attribution biases did not significantly covary (−.05, *ns*). Solid lines are significant ($p < .05$). Nonsignificant pathways are not depicted. HAB, hostile attribution biases.

model given the potential gender differences in aggression and hostile attribution biases, particularly during early childhood (Mathieson et al., 2011; Ostrov & Godleski, 2010). The influence of child age (in months) was explored and was significantly correlated with both child-reported relational aggression ($r = -.36$, $p < .001$) and hostile attribution biases for relational provocations ($r = .20$, $p < .05$), so age was also included.

Hypothesized model

In the model, child-reported hostile attribution biases for relational provocations and relational aggression were regressed on each of the parenting constructs as well as parent relational aggression and parent hostile attribution biases for relational provocations. Paths between parent relational aggression and hostile attribution biases and each of the parenting constructs were also tested (see Fig. 2).

Goodness-of-fit indices indicated that this hypothesized model fit the data well, $\chi^2(28) = 44.42$, $p = .03$, comparative fit index (CFI) = .92, root mean square error of approximation (RMSEA) = .07, 95% confidence interval (CI) [.03, .11], standardized root mean square residual (SRMR) = .09. Parent relational aggression was significantly positively associated with inconsistent discipline and psychological control. In addition, parent hostile attribution biases for relational provocations was a significant predictor of child hostile attribution biases, such that high levels of parent hostile attribution biases for relational provocations was associated with high levels of child hostile attribution biases for relational provocations. These effects held when controlling for gender, child age, physical aggression, and hostile attribution biases for physical provocations. Contrary to expectation, parent relational aggression, inconsistent discipline, and psychological control did not significantly predict child hostile attribution biases for relational provocations (βs = −.09, −.12, and .03, respectively) or relational aggression (βs = .14, −.11, and −.13, respectively). Indirect effects were found to be nonsignificant.

Discussion

The purpose of the current study was to empirically investigate the parent factors that could contribute to hostile attribution biases among children given the importance of investigating social cog-

nition (Crick & Dodge, 1994; Leff et al., 2006). The first goal of this study was to test whether parent hostile attribution biases and relational aggression were significantly associated with child hostile attribution biases. Given the extant developmental and clinical literature, whether parent relational aggression and associated social cognition, such as hostile attribution biases for relational provocations, are related to children's aggression and social cognition is a conceptually and empirically important relation that is not fully understood (Bickett et al., 1996; Nelson et al., 2008). However, theoretically there is support that parents may model such thoughts and behaviors for their children (Bandura, 1977; MacBrayer et al., 2003; Nelson et al., 2008; Reed et al., 2008) through their aggressive or hostile actions with strangers, peers, or partners or through how they describe or comment on others' behavior in front of their children. Contrary to expectation, the hypothesis that parent relational aggression would be associated with child hostile attribution biases for relational provocations was not supported. This is also contrary to past research with parent hostile attribution biases predicting child hostile attribution biases (e.g., MacBrayer et al., 2003) and work that suggests the role of exposure and modeling in children's aggressive behavior (e.g., Bandura, 1977; Ziv, 2012). Yet parent relational aggression was not significantly related to child relational aggression. This finding partially replicates past research that did not find a significant association between parent and child relational aggression (Reed et al., 2008). However, this is the first study to investigate parent relational aggression as well as child hostile attribution biases for relational provocations and relational aggression while simultaneously controlling for parent hostile attribution biases and parenting practices. It may be that for relational aggression, preschool-aged children do not understand some of the subtler covert behaviors that parents may exhibit, such as spreading rumors, or these young children might not be privy to parents engaging in relational aggression in the context of a friendship or romantic relationship. Furthermore, the association between aggression and hostile intent attributions has been found to be of inconsistent and varying strength (Verhoef, Alsem, Verhulp, & De Castro, 2019), especially in past research that incorporates hostile intent attributions for relational provocations (e.g., Crain et al., 2005; Godleski & Ostrov, 2010; Nelson et al., 2008). The connection between a general disposition to inferring hostility might not consistently directly relate to engaging in aggressive action (e.g., Quiggle et al., 1992), especially for aggression that may be arguably more skillful (Heilbron & Prinstein, 2008) and involve greater language ability (e.g., Estrem, 2005) as well as higher executive function and cognitive load such as relational aggression (McQuade, Breaux, Miller, & Mathias, 2017). This may help to explain the lack of association between aggression and hostile intent attributions both across parent and child reports and within child report (e.g., Nelson et al., 2008). In addition, it may be that the relation between aggression and hostile intent attributions is not as robust during the early childhood period, or perhaps that anger may be experienced or hostile intent inferred, but that this does not directly or immediately lead to relational aggression (Nelson et al., 2008). Finally, it is conceivable that if the functions of aggression (i.e., proactive and reactive) were examined, significant effects may emerge between negative parenting/negative emotionality and reactive functions of relational aggression (i.e., impulsive, hostile, or retaliatory displays). Future research should build on the existing literature in this area (e.g., Vitaro, Barker, Boivin, Brendgen, & Tremblay, 2006) and test these more specific predictions with both physical and relational forms of aggression.

The hypothesis that parent hostile attribution biases for relational provocations would be associated with child hostile attribution biases for relational provocations was supported. Parent hostile attribution biases for relational provocations were significantly related to child hostile attribution biases for relational provocations, such that high levels of parent hostile attribution biases predicted high levels of child hostile attribution biases. Investigating the unique role of parent hostile attribution biases for relational provocations is a significant advancement in the literature. Nelson et al. (2008) was unable to examine hostile attribution biases for relational provocations specifically due to multicollinearity concerns with hostile attribution biases for relational provocations and physical provocations, suggesting that parents in their sample were not differentiating between the relational and physical scenarios in their study. The current study replicates past research that has demonstrated a direct link between parent and child hostile intent attributions (e.g., MacBrayer et al., 2003) and extends this finding to relational provocations and early childhood (e.g., MacBrayer et al., 2003; Nelson et al., 2008). Parents may be directly teaching their young children to be distrustful of others' intentions or to assume hostility in others' behavior (Nelson & Coyne, 2009) or may be indirectly

modeling hostile intent attributions. Direct teaching or observational learning may potentially occur through children observing parents explain others' behavior toward them as hostile or reacting to ambiguous behavior with anger and hostility (e.g., observing a parent respond angrily when the parents finds out that he or she has not yet received an invitation to a neighbor's party or is not part of an event posted on social media). Hostile intent attributions are a general disposition globally applied across relational contexts, which may lead to parents' hostile dispositions being more apparent to children due to the prevalence of hostile affect, verbalizations, and behavior across situations (Verhoef et al., 2019). Children's observations of their parents and parent explanations may then be encoded into children's database, as described by the SIP model, and then subsequently incorporated children's general scripts and schemas for social interactions (Crick & Dodge, 1994). However, parents' actually engaging in relational aggression may be more likely to manifest in their close peer and romantic relationships (e.g., Goldstein, 2011), where inflicting such harm would be more likely to be impactful. As indicated, young children may be less aware of or involved in their parents' interpersonal relationships where relational aggression is more likely to occur, leading to less exposure to and potential modeling of these behaviors. Furthermore, it is interesting that parent hostile attribution biases for relational provocations were not associated with maladaptive parenting practices given that past research has demonstrated this to be the case with hostile attribution biases for physical provocations and harsh discipline practices (Nix et al., 1999). It may be that parent hostile attribution biases for relational provocations do not have the same impact on parenting practices as those for physical provocations during this developmental period or more globally throughout later developmental periods.

The second goal of the current study was to test whether inconsistent, erratic, or negative parental discipline is an indirect pathway for the association between parent and child relational aggression and hostile attribution biases for relational provocations. Although no significant indirect pathways were found between parent and child aggression and hostile attribution biases, parent relational aggression was significantly positively associated with inconsistent discipline, such that high levels of parent relational aggression were predictive of high levels of inconsistent discipline. Parents who engage in relational aggression may be less predictable within the parent–child relationship and may be more reactive in their responses to others' behaviors than consistent and controlled in their approaches to parenting and social relationships. As for the lack of association between inconsistent discipline and child hostile attribution biases for relational provocations and relational aggression, this is contrary to past research with physical aggression (e.g., Barry et al., 2009). It is theorized that parents using inconsistent discipline are noncontingent in their uses of reinforcement and punishment and, as such, positive behaviors might not be reinforced when appropriate, whereas coercive behaviors are reinforced through lack of consistency or escape conditioning (Patterson et al., 1990). It may be that inconsistent discipline is similar to parent relational aggression and hostile attribution biases for relational provocations in that parents may be unpredictably angered by situations with others or with their children but that the mechanism of this relation is not through parenting practices but rather parents' more global negative perception of others' behavior and general hostile disposition.

Similar to inconsistent discipline, psychological control was not found to be a significant indirect pathway between parent and child hostile attribution biases or aggression. However, parent relational aggression was significantly positively associated with psychological control, such that high levels of parent relational aggression were associated with high levels of psychological control. This was anticipated given the conceptual similarity between psychological control and parent relational aggression in behavioral topography (e.g., love withdrawal, erratic emotional behavior), and this finding is consistent with past research (Reed et al., 2008). However, demonstrating this association during the early childhood period given the psychologically damaging nature of this form of parenting makes it an important construct to investigate. It has been hypothesized that parents may perceive their use of relational aggression as successful with their peers and subsequently may use similar strategies with their children (Reed et al., 2008). The lack of significant association between psychological control and child hostile attribution biases for relational provocations and relational aggression in the current study is surprising given past research. However, past research has found the association between psychological control and children's hostile relational and physical intent attributions only for father–son dyads (Nelson & Coyne, 2009), which we were not able to examine. In addition, past work has specifically found the association between parent psychological control and parent report of child

relational aggression, potentially due to higher levels of relational aggression in the home context as opposed to peer interactions (Kuppens, Grietens, Onghena, & Michiels, 2009b) or higher salience of relational aggression in closer relationships (Kuppens et al., 2013). Furthermore, the impact of parent harsh and power-assertive discipline strategies may be moderated by the emotional climate of the parent–child relationship, such that these discipline strategies have a greater negative impact on child behavior particularly when parents are less emotionally involved with their children (Towe-Goodman & Teti, 2008). This association may also be moderated by developmental period and child age given that the strength of the association between parent psychological control and child relational aggression increases during adolescence (Kuppens et al., 2013). Therefore, future research may want to investigate developmental timing and the emotional context of the family environment.

Limitations and future directions

The conclusions that can be drawn and the generalizability of the findings are affected by potential limitations. To begin, there are methodological issues that warrant discussion. First, there was a small part of the sample that did not complete all measures or experience identical procedures because some parents completed parent packets at home and some children completed the interview in school; however, analyses did not suggest any significant differences between those who participated in the laboratory and those who did not. Furthermore, a longitudinal study should be conducted to test the indirect pathways. Including additional possible mechanisms or moderators of the associations between parental influences and child intent attributions during early childhood would also be beneficial and could include, for example, the quality of the parent–child relationship (Casas et al., 2006; Towe-Goodman & Teti, 2008) or reciprocal effects between parents and children over time (Kuppens et al., 2009b), genetic risk (Tackett, Smack, & Reardon, 2018), hostile family environments (Fitzgerald, McKelvey, Schiffman, & Montañez, 2006), parent normative beliefs about the use of relational aggression (Werner & Grant, 2008), or parent distress (Barry et al., 2009). Incorporating experimental or observational assessment methodologies of aggression and hostile intent attributions as well as parent–child interactions is an additional important area for future research. However, the current study provides an important step in understanding possible parent behaviors and cognitions that may be implicated in parenting and child outcomes.

It is also important to note that the sample was fairly homogeneous in regard to socioeconomic status and race/ethnicity, reflecting the community from which the study sample was drawn, and the study recruitment was conducted in part by advertising and recruiting directly from the local community. Furthermore, all participating children attended day care or preschool. Therefore, future research should have increased emphasis on recruiting a diverse sample in order to increase the generalizability of the findings and to potentially increase the variability in parenting practices and parent behavior represented. This is especially important given that sociodemographic risk may lead to higher levels of familial stress that could subsequently affect parenting (e.g., Ziv & Sorongon, 2011), and past research has noted differences in rates of relational aggression in preschoolers based on socioeconomic status (i.e., higher rates in children from families of higher socioeconomic status; e.g., McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996). However, a strength of the current study is that the homogeneity of the sample reduced concern regarding the influence of unmeasured moderators. In addition, given that fathers have had an important role in past research in predicting child relational aggression and hostile attribution biases for relational provocations (e.g., Kuppens et al., 2009a, 2009b; Nelson & Coyne, 2009; Nelson et al., 2008), the low participation of fathers for the current study is a limitation. Future research should pay particular attention to recruiting fathers.

Implications and conclusions

The current study has several implications. First, it is a novel study that concurrently considered the impact of several parent behaviors and discipline in predicting child hostile attribution biases for relational provocations beyond past research. For early childhood research, this multi-informant multimethod study, including a novel child interview methodology, adds to the literature on specific roles of parents during this period in social development. The study also supports the existence of hos-

tile attribution biases for relational provocations in young children and adds to the limited research that has been conducted during this period (Katsurada & Sugawara, 1998; Ziv, 2012).

Overall, the current study attempted to address several gaps in the hostile attribution biases for relational provocations literature in order to inform future research on the development of these constructs and efforts aimed at reducing the negative consequences of relational aggression and hostile intent attributions (e.g., Boulton, 2012). In particular, this study addressed relevant questions in an especially important developmental period for future social relationships. Therefore, despite limitations, the current study has elucidated a correlate of child hostile attribution biases for relational provocations during early childhood as well as factors associated with parental use of negative parenting practices.

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