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Parents' Spontaneous Evaluations of Children and Symbolic Harmful Behaviors Toward Their Child

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Abstract

Parents' evaluations of children are believed to be a cognitive contributor to their subsequent child-directed harsh or physically abusive behaviors. The current research examined whether parents' ($N = 100$) evaluations of children were moderated by either (a) the child behavior on which the evaluation was based and (b) parents' measured risk for child physical abuse. The study also explored whether parents' evaluations of children were related to their tendencies to symbolically harm their child. The current study also used a novel method to indirectly assess parents' evaluations of children: A modified Affect Misattribution Procedure. Contrary to a priori expectations, negative evaluations of children were stronger for parents who were at low risk, relative to high risk, for child physical abuse. Nonetheless, we observed that high-risk parents were more likely than low-risk parents to inflict symbolic harm onto their child. In an exploratory analysis we observed that parents who formed more overall negative evaluations of children engaged in more symbolic harm to their child. Although high-risk parents were more likely to symbolically harm their child than low-risk parents, this effect does not seem to be due to high-risk parents' negative child evaluations from negative child behaviors.

Keywords

physical child abuse; child abuse potential; spontaneous trait inferences; Voodoo Doll Task

Parents routinely infer evaluative information when observing child behaviors (e.g., Risser, Skowronski, & Crouch, 2011). For example, observing a child who does not comply with a parent's request may elicit an inference that the child is "bad." Such inferences are believed to influence subsequent parenting behaviors, including behaviors that would be considered harsh or physically abusive (e.g., Milner, 1993). Building on this idea, the current research pursued three ideas about parents' evaluations of children. First, we sought to demonstrate both that parents *spontaneously* form evaluations while encoding children's behaviors (e.g., Schneid, Crawford, Skowronski, Irwin, & Carlston, 2015) and that the mere presence of a

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child about whom a previous evaluation has been formed is sufficient to elicit a measureable evaluative response (e.g., Risser et al., 2011). Second, we examined whether parents' child evaluative inferences differed based on parents' risk for child physical abuse (CPA)—an individual difference variable that is believed to reflect, among other things, differences in parents' schemas about children's behaviors (e.g., Crouch et al., 2010). Finally, we examined whether parents' evaluative inferences of children were related to their subsequent child-directed behaviors (e.g., Azar, 1986; Dopke & Milner, 2000).

The evaluations that parents form about children are believed to result from the application of child-relevant schemas to the interpretation of children's behaviors. Following this logic, it is believed that parents who hold *different* schemas about children will spontaneously form *different* evaluations of children, even if the behavioral information on which those inferences are based is identical (e.g., Crouch et al., 2010; Farc, Crouch, Skowronski, & Milner, 2008). One individual difference variable that may reflect such differences is parents' risk for CPA. Parents who are at high risk for CPA and parents who are at low risk for CPA are believed to differ in their schematic beliefs about children (Milner, 1993, 2003). According to the social information processing model of CPA (e.g., Milner, 2003), parents who are high-risk for CPA are believed to form more negative evaluations of children in response to children's negative behaviors, and less positive evaluations of children in response to children's positive behaviors, than low-risk parents. However, although CPA risk group differences have reliably emerged in parents' semantic inferences about children (e.g., Crouch et al., 2010; Irwin et al., 2014; McCarthy et al., 2013), such differences have not reliably emerged in parents' evaluative inferences about children (c.f., Farc, Crouch, Skowronski, & Milner, 2008; Risser et al., 2011).

In addition to parents' risk for CPA, we examined whether the ambiguity of child behaviors moderated the association between parental CPA risk and parents' evaluations about children. If parents who are at high risk for CPA have different schemas about children than parents who are at low risk for CPA, then differences between high-risk parents' evaluations of children and low-risk parents' evaluations of children are believed to be especially pronounced "when [parents] are interpreting and evaluating situations that involve ambiguous child behaviors" (Milner, 2003, p. 9). To test this assertion, the current research used behaviors that either strongly implied evaluative information about the child or that vaguely implied evaluative information about the child. Finally, we examined whether a parent's tendency to form negative evaluations of children predicted their subsequent behavior toward children. This finding would be consistent with social-cognitive models of general aggression (e.g., DeWall, Anderson, & Bushman, 2011) and social-cognitive models of CPA (e.g., Azar, 1986; Milner, 1993, 2003). However, to our knowledge, there has not been any research assessing whether parents' spontaneously-formed evaluations are related to their tendencies to inflict symbolic harm on their child (e.g., DeWall et al., 2013; McCarthy, Crouch, Basham, Milner, & Skowronski, 2016).

Hypotheses derived from each of these three perspectives were tested in the current research. First, given our behavior pretesting results, it was hypothesized that parents would be most likely to form negative evaluations of children who were paired with strongly negative behaviors and would be least likely to form negative evaluations of children who were paired

with strongly positive behaviors. Thus, we expected to observe an orderly monotonic relationship between the negativity of a child's behavior and the likelihood that a child would subsequently elicit a negative evaluative response.

Second, we hypothesized that parents' CPA risk status would affect their evaluations of children such that high-risk parents would be more likely than low risk parents to form negative evaluations of children. Moreover, this individual difference was hypothesized to be especially pronounced for children paired with ambiguous behaviors. That is, risk-group-related evaluation differences ought to be especially evident on the vague trials, with high risk parents expected to provide more negative evaluations of children than low risk parents.

Third, we believe that both the interpretation of ambiguous child behaviors and the symbolic harm of their child are both affected by parents' schemas. Thus, we hypothesized that parents' tendency to negatively evaluate children would be associated with their tendency to symbolically harm their child during a subsequent task.

Finally, because we were interested in the idea that parents' evaluations are formed spontaneously during the encoding of child behaviors, the current study used a method that appropriately allowed us to assess those spontaneous evaluative inferences. The method used was a modified Affect Misattribution Procedure (Payne, Cheng, Govorun, & Stewart, 2005) and, to our knowledge, it has not been previously used to examine parents' evaluations of children.

Methods

The research described in this article was approved by the human subjects review board at the authors' institution prior to data collection. All materials and stimuli needed to replicate the study as well as the raw data for the current study, can be acquired either by contacting the first author or by visiting this project's page on the Open Science Framework (<https://osf.io/vmumi/>).

Child Behavior Development and Pretest

In the current research, we were interested in the evaluations that parents form after observing each of a variety of child behaviors. This interest necessitated development of a pool of child behaviors for the current research.

To do so, we first generated 100 descriptions of child behaviors that varied in evaluative implications. Forty-two participants who were recruited from Amazon's Mechanical Turk viewed and rated each behavior description on a seven-point scale ($-3 = \textit{extremely negative}$ and $+3 = \textit{extremely positive}$). The 10 behaviors with the most positive ratings and the 10 behaviors with the most negative ratings were selected and designated as the *strongly positive behaviors* and *strongly negative behaviors*. Two additional sets of 10 behaviors were designated as *vaguely positive behaviors* and *vaguely negative behaviors*. Vague positive behaviors and vague negative behaviors were selected if their average ratings were above/below the mid-point of the scale (as appropriate to the behavior categorization) and if the variances of the ratings were higher than the variances of the strongly-implicative behaviors.

Thus, the vague behaviors were rated as less extreme and with less consensus than the strongly positive or strongly negative behaviors. Finally, ten behaviors that were believed by the researchers to be uninformative as to the child's disposition were created and used as our *neutral child behaviors*.

This development and selection procedure produced five different "types" of child behaviors: strongly positive (e.g., "*The child always says 'please' and 'thank you'*"), vaguely positive (e.g., "*The child swept the kitchen floor'*"), neutral (e.g., "*The child wore a shirt and pants'*"), vaguely negative (e.g., "*The child wouldn't stop talking during dinner'*"), and strongly negative (e.g., "*The child took money from their friend's mom'*").

Assessing Evaluative Inferences Using the Affect Misattribution Procedure

In the current research we assessed evaluative inferences using a variant of the Affect Misattribution Procedure (AMP). In the traditional AMP (e.g., Payne, Cheng, Govorun, & Stewart, 2005), participants complete several trials wherein an affect-laden stimulus is briefly presented prior to an ambiguous stimulus. On each trial participants are instructed to ignore the affect-laden stimulus and attempt to classify the ambiguous stimulus as either relatively pleasant or relatively unpleasant. To the extent that participants misattribute their affective reaction elicited by the first stimulus to the second stimulus, one can infer an individual's evaluative response to the first stimulus by examining their classification of the second stimulus. A concrete example is illustrative. Participants in Experiment 1 of Payne et al. (2005) classified Chinese ideographs (i.e., ambiguous stimuli) as more pleasant when they were immediately preceded by normatively positive stimuli (e.g., babies, puppies) than when they were immediately preceded by normatively negative stimuli (e.g., snakes, spiders).

This method was adapted to our use in the current research. In the first stage of the current research participants encountered child photographs paired with the pretested child behaviors. In the second stage, participants completed a version of the AMP in which the child photos presented in the first stage were presented again, followed by Chinese ideographs. Participants were asked to intuit whether each ideograph was a word used to describe a "good child" or a "bad child." We examined the extent to which ideograph interpretations were influenced by behaviors paired with the child photos during the exposure stage. Our expectation was that viewing a photograph of a child who was perceived to have behaved badly prior to a Chinese ideograph would increase the likelihood the ideograph would be interpreted as meaning a "bad child," and that viewing a photograph of a child who was perceived to have behaved positively prior to a Chinese ideograph would increase the likelihood the ideograph would be interpreted as meaning a "good child."

Note that this procedure departs from the traditional AMP in two minor ways. First, the traditional AMP often uses stimuli that elicit individuals' pre-existing evaluative reactions to stimuli (e.g., a photo of a kitten). In contrast, individuals in the current research *acquired* evaluations of children by viewing child photos paired with behaviors. Second, on each trial of the traditional AMP, participants classify the second stimulus as "pleasant" or "unpleasant." Because we were specifically interested in the extent to which an evaluation

was linked to a child, in our procedure participants responded to the Chinese ideographs as either meaning a word used to describe a “good child” or a “bad child.” Research suggests these modifications should not alter results (e.g., Payne et al., 2013; Rydell & Gawronski, 2009).

Pilot Study

We conducted a pilot study to ensure that participants could properly understand the study instructions, that our computer program ran successfully, that the outcome data were properly recorded by the computer program, etc. However, the main purpose of the pilot study was to see if exposing participants to children paired with the behavior descriptions would affect their AMP performance.

Participants

A convenience sample of 97 undergraduate students enrolled in an Introductory Psychology class were recruited for the pilot study (50% female; 45% male; 3% preferred not to disclose their gender; 2% did not report their gender; $M_{age} = 19.41$ years, $SD = 1.53$). Participants were compensated with partial credit toward a course research requirement.

Procedure

The pilot study consisted of 3 stages: An *exposure stage*, an *interpretation stage*, and a *questionnaire completion stage*.

The entire study was completed on a computer at an individual work station. First, in the exposure stage participants were told they would be exposed to the types of stimuli that would be used in the study. Specifically, participants were told to view the child photographs and read the behavior descriptions because these types of stimuli would be used later in the study. These familiarization instructions encourage participants to attend to the stimuli presented to them, but do not encourage participants to form an evaluation of the described children. Therefore, any evaluative inferences would be formed spontaneously.

In the exposure stage, participants viewed 50 trials containing a child photograph (shown in the upper half of the screen) paired with a child behavior (shown in the lower half of the screen). Each child photograph-child behavior dyad appeared on the screen for nine seconds before the computer automatically advanced to the next trial. In all, participants viewed 10 trials of each of the five different types of child photograph-child behavior dyads: Each child behavior was classified in the pretest as either *strongly positive*, *vaguely positive*, *neutral*, *vaguely negative*, or *strongly negative*. All child photographs only appeared once during the exposure stage and, hence, were paired with only one behavior description. The child photograph, child behavior, and the presentation order of the child photograph-child behavior dyad were randomized by the computer for each participant. Thus, any individual child photograph, individual child behavior, or idiosyncratic pairing of the photographs and behaviors could not have systematically altered the overall results of the study. After viewing all 50 trials, participants engaged in a brief filler task intended to interfere with working memory (i.e., classifying a series of nouns as being either a “place” or a “thing”).

Participants then moved to the *interpretation stage*. Participants were told they would view brief presentations of Chinese ideographs. Participants were told that each ideograph had a meaning that could be used to describe a “bad child” or a “good child” and their task was to intuit the meaning of the ideograph presented on each trial. Participants were told that a child photograph would briefly appear before each ideograph. They also were told to ignore the child photographs and to focus on trying to intuit the meaning of the ideographs.

Each of the 50 trials in the interpretation stage presented a child photograph from the exposure stage (shown for 75 ms), a blank screen (125 ms), a randomly-selected Chinese ideograph (100 ms), a mask of randomly arranged white and black pixels, and a prompt for the participants to intuit the meaning of the ideograph. All stimuli were presented in the center of the screen. These stimulus presentation conditions and the Chinese ideographs were the same as those used in Payne et al. (2005).

For each trial, participants responded by pressing the “z” key if they believed the ideograph was a word used to describe a “bad child” or “/” if they believed the ideograph was a word used to describe a “good child.” When making their choice, labels appeared on the bottom of the screen to remind participants of their response options. Participants were instructed to respond with their best guess if they were unsure (i.e., a response was forced). Within the 50 interpretation trials, participants completed 10 trials each when the ideograph was preceded by a child who was previously-paired with a strongly negative, vaguely negative, neutral, vaguely positive, or strongly positive behavior in the exposure stage. The order of the trials during the AMP was randomized for each participant by the computer. After the last AMP trial, participants indicated (*yes* or *no*) whether they spoke Chinese or knew the meaning of any of the ideographs. These questions were used to identify and exclude from analyses participants who possibly knew the meaning of the ideographs.

Finally, in the *questionnaire stage* participants completed the Brief Aggression Questionnaire (e.g., Webster et al., 2013), which is a short version of the Buss-Perry Aggression Questionnaire BPAQ (Buss & Perry, 1992), and reported demographic information. The BAQ is a measure of trait aggression that may indicate the extent to which participants have aggressive schemas. Although not a focus of our pilot study, for exploratory purposes we examined whether the BAQ moderated participants’ AMP performance.

Results and discussion

Four participants were omitted from the analyses: One participant experienced a computer malfunction during the experiment and did not provide complete data, and 3 participants indicated they spoke Chinese or knew the meaning of at least one Chinese character seen during the AMP. This left us with a final sample of 93 participants.

Because our focus in this article is on negative evaluations to children, the number of trials on which a participant interpreted the Chinese ideograph as a word to describe a “bad child” was used as the dependent variable. For each behavior type, participants could have made between zero and 10 “bad child” interpretations. We predicted that “bad child” interpretations would be greatest for trials with child photos that were earlier paired with the

strongly negative behaviors, with a decrease in “bad child” interpretations as one progressed from strongly negative behaviors to strongly positive behaviors (strongly negative behaviors > vaguely negative behaviors > neutral behaviors > vaguely positive behaviors > strongly positive behaviors). This approximate pattern emerged in the descriptive data. Participants responded using the term “bad child” to describe the Chinese character most often (possible scores ranged from 0 to 10) when a child photo was previously paired with strongly negative behaviors ($M = 5.38$, $SD = 1.76$), and generally decreased as the child behaviors became less negative (vaguely negative [$M = 4.74$, $SD = 1.77$], neutral [$M = 3.83$, $SD = 1.74$], vaguely positive [$M = 3.69$, $SD = 1.84$], strongly positive [$M = 3.74$, $SD = 1.89$]).

In an initial exploration of these data we entered the “bad child” interpretations into a repeated-measures ANOVA, with the repeated-measures being the five different behavior trial types. We observed a main effect for the behavior trial type variable, $F(4, 368) = 18.04$, $p < .001$, $\eta^2 = .12$. Post-hoc comparisons revealed that the strongly positive trials and vaguely positive trials did not differ from the neutral trials (Bonferroni corrected p 's > .99), and the vaguely negative trials ($p = .008$) and strongly negative trials ($p < .001$) were significantly higher than the neutral trials.

To test for whether participants' trait aggression moderated their AMP performance, we conducted a multi-level linear regression analysis on these data with the five types of AMP trials (which represent the five behavior types) as Level 1 variables nested within individuals at Level 2. Performance on all trials was grand mean-centered. Because we believed the performance on “neutral” trials was an informative reference, we used a dummy coding scheme that compared participants' performance on strongly positive, vaguely positive, vaguely negative, and strongly negative trials (coded as 1 for their respective trial type) to the neutral trials (coded as 0).

We computed a model that contained the dummy codes for trial types on the AMP, participants' trait aggression as a Level 2 predictor, and the cross-level Trait Aggression $\times$ Trial Type interactions for each trial type (compared to the neutral trials). The model allowed slopes and intercepts to vary randomly. The coefficients for the strongly negative trials, $b = 1.55$, $t(364) = 6.26$, $p < .001$, $r = .31$, and the vaguely negative trials, $b = 0.91$, $t(364) = 3.43$, $p < .001$, $r = .18$, were significant. These results show that parents selected more “bad child” interpretations on trials in which the child photos were paired with negative behaviors than on trials in which the child photos were paired with neutral behaviors. The effect sizes for these coefficients are conventionally considered small to medium in magnitude (Cohen, 1988). However, the coefficients for the strongly positive trials, $b = -0.09$, $t(364) = -0.40$, $p = .69$, $r = -.02$, and the vaguely positive trials, $b = -0.14$, $t(364) = -0.65$, $p = .51$, $r = -.03$, were not significant. Further, participants' (mean-centered) trait aggression did not moderate their AMP performance (trait aggression main effect, $b = -0.11$, $t(91) = -0.40$, $p = .69$, $r = .04$; each Trait Aggression $\times$ Trial Type interaction was non-significant).

In summary, the pilot study demonstrated that participants' AMP performance was sensitive to the evaluative implications of the behaviors paired with child photographs, but these results were not moderated by participants' levels of trait aggression. The general success of

the pilot study encouraged us to use the procedure with a sample of parents. The critical ideas tested in this main study were (a) whether AMP performance was related to a parent's measured CPA risk (b) and whether CPA risk group differences in AMP performance were related to the extent to which a parent would inflict symbolic harm on their child.

Main Study

Participants

Parents ($N = 197$) who engaged in the main study were the same as those in Study 6 of McCarthy et al. (2016); however, results from analyses described herein have not been published before. One person reported they were a non-parent at the time of the study and their data were omitted from analyses. The remaining 196 parents were mostly (70%) mothers (30% fathers), African-American/Black (60%; 31% White; 5% Hispanic/Latino(a); 3% Native American; 1% Pacific Islander; <1% Asian-American; <1% missing) and not married (30%; 28% dating; 27% married; 9% divorced; 4% separated; 2% widowed; and <1% missing). Ninety-five percent of parents graduated from high school (<1% 1–8th grade; 5% some high school; 31% high school graduate; 45% some college/technical school; 11% college graduate; 8% advanced degree; <1% missing), and their average age was 34.1 years ($SD = 11.90$).

The extent to which each parent was at risk for CPA was determined from their responses to the Child Abuse Potential (CAP) inventory (Milner, 1986). For the current study, parents were classified as high-risk if their CAP abuse scale score was greater than or equal to 166 and were classified as low-risk if their CAP abuse scale score was less than 166. This CAP abuse scale score represents the signal detection theory score recommended by Milner (1986) and is consistent with scores used in previous research on parents' spontaneous inferences of children (e.g., Crouch et al., 2010). In the full sample, 141 parents (72% of full sample) exhibited CAP abuse scale scores less than 166 and 51 parents (26% of full sample) exhibited CAP abuse scale scores equal to or greater than 166. Four parents (2% of full sample) had too many missing values in their responses to the CAP scale to compute a CAP abuse scale score.

The CAP inventory also contains several response distortion scales that determine whether parents' classification as high-risk or low-risk is deemed valid or invalid. Data from parents were omitted from analyses if (a) their responses to the CAP were deemed to be invalid, (b) they indicated that they spoke Chinese, or (c) they indicated they knew the meaning of at least one of the Chinese characters used during the AMP. Eighty-one parents had an invalid CAP, four parents indicated they either spoke Chinese or recognized one of the Chinese characters, and 11 parents exhibited both. After omissions, data from 100 parents were included in the final sample. This rate of exclusion due to invalid CAP inventories is consistent with exclusion rates observed in previous research (e.g., Carr, Moretti, & Cue, 2005; McCarthy et al., 2013). Of parents with a valid CAP abuse scale score, 60 parents (60% of full sample) had CAP abuse scale scores less than 166 and were deemed "low-risk" and 40 parents (40% of full sample) had CAP abuse scale scores equal to or greater than 166 and were deemed "high-risk."

In the final sample, most (70%) were mothers (30% fathers) and African-American/Black (52%; 41% White; 5% Hispanic/Latino/a; 1% Native American; 1% Pacific Islander; 0% Asian-American; <1% missing). The most common relationship status was dating (29%; 27% married; 23% never married; 14% divorced; 4% separated; 2% widowed; and 1% missing); and 95% of parents in the final sample had graduated from high school (1% 1–8th grade; 4% some high school; 26% high school graduate; 46% some college/technical school; 8% college graduate; 14% advanced degree; 1% missing). Finally, mean age was 36.9 years ($SD = 11.6$).

Procedure

Parent participants were recruited from the local DeKalb, IL community to participate in a parenting study. All parents had either previously completed a parenting study and agreed to be contacted for future study opportunities, or responded to a recruitment flyer posted at various sites in the local community. All study sessions were run individually.

Prior to beginning each session, the researcher greeted each participant, explained the procedure, and obtained participant consent. The study was described as being interested in the way parents think about children and how those thoughts may affect parent-child relationships. No mention of CPA or CPA risk was mentioned during recruitment.

The study consisted of four parts. Each part was completed in a room that contained only a computer and a table on which a parent could work. The researcher was not present in the room at the time participants completed any measures or tasks. First, parents completed several paper-and-pencil questionnaires that assessed constructs relevant to CPA: The Center for Epidemiological Studies Depression Scale, the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992), and the Self-Control Scale (Tangney, Baumeister, & Boone, 2004). These measures are unrelated to the current research, but are reported in McCarthy et al. (2016).

In the second part of the study, the researcher entered the room, took the questionnaires from the first part of the study, and started the parents on the computer. This second part of the study was completed entirely on the computer. During this second part of the study, parents completed the AMP in exactly the same way as described in the pilot study. As in the pilot study, after completing the 50 trials of the AMP parents indicated (*yes* or *no*) whether they spoke Chinese or knew the meaning of any of the ideographs they saw.

In the third part of the study, the researcher re-entered the room and gave the parent another packet of questionnaires. In this packet was a paper-and-pencil version of the parent-child Voodoo Doll task. This task was derived from previous research that adapted the task for use in the parenting domain (e.g., McCarthy, Crouch, Basham, Milner, & Skowronski, 2016). In our version of this task, parents wrote about a time their child had angered them. Then, on a separate page, parents viewed an outline of a person and were instructed to imagine the outline represented the child about whom they had just written. Each parent was then given an opportunity to symbolically “harm” the child. This was accomplished by parents physically placing small, round stickers onto the outline. Parents were told this was much “like sticking pins into a Voodoo doll.” Previous research has demonstrated that pin usage on

the Voodoo Doll Task is positively associated with measures such as parents' trait aggression, state hostility, and attitudes towards corporal punishment. Moreover, parents are more likely to use pins in response negative child behaviors than in response to positive child behaviors (McCarthy et al., 2016). Thus, as with this past research, in our main study a greater number of stickers placed onto the outline of the child by parents is interpreted as a greater inclination to harm their imagined child.

In the fourth part of the study parents completed the CAP inventory, answered a brief questionnaire about their study experience, and reported their demographic information. Finally, parents were debriefed and were given \$20 as compensation for participation.

Results

Comparisons of included parents and excluded parents

Parents who were included in the final sample did not differ from parents who were excluded in terms of gender, $\chi^2(1) = 0.00, p = .98$, Cramér's $V = .002$, or marital status, $\chi^2(6) = 9.10, p = .17$, Cramér's $V = .22$. However, there was a difference between included parents' and excluded parents' ethnicity, $\chi^2(5) = 13.17, p = .02$, Cramér's $V = .26$, which was largely due to a relatively low proportion of White parents being excluded (19/60 = 32%): African-American/Black, 65/117 = 55% excluded; Hispanic/Latino/a 4/9 = 44% excluded; Native American 5/6 = 83% excluded; Pacific Islander 1/2 = 50% excluded; Asian-American 1/1 = 100% excluded. There also was a difference in included parents' and excluded parents' education, $\chi^2(5) = 15.04, p = .01$, Cramér's $V = .28$, which was due to a low proportion of those with advanced degrees (1/15 = 7%) being excluded: 1–8th grade 0/1 = 0% excluded; some high school 5/9 = 55% excluded; high school graduate 35/61 = 57% excluded; some college/technical school 42/88 = 47% excluded; college graduate 13/21 = 62% excluded. Finally, included parents were 39.92 years old, whereas excluded parents were 31.20 years old, $t(191.74) = 3.44, p < .001, d = 0.49, 95\% \text{ CI}[0.21, 0.78]$.

Comparisons of high-risk parents and low-risk parents

Table 1 contains a comparison of high-risk parents' and low-risk parents' demographics. High-risk parents' gender did not differ from low-risk parents' gender. However, there were significant CPA risk group differences on parents' ethnicity, marital status, and education level. Further, high-risk parents' mean age of 33.15 years ($SD = 9.43$) was significantly lower than low-risk parents' mean age was 39.37 ($SD = 12.30$) years, $t(94.25) = 2.84, p = .006, d = 0.58, 95\% \text{ CI}[0.17, 0.99]$.

AMP performance

As in the pilot study, the number of trials on which parents interpreted the Chinese ideograph as a word describing a "bad child" was computed separately for each of the five behavior types (scores ranged from 0 to 10). In an initial analysis, these values were entered into a 5 (Behavior Type) $\times$ 2 (CPA Risk Group) mixed-model ANOVA (see Table 2 for means). There was not a significant main effect for CPA risk group, $F(1, 98) = 0.12, p = .73, \eta^2 < .01$, but we did observe a main effect for the behavior trial type variable, $F(4, 392) = 3.35, p = .01, \eta^2 = .02$. However, this main effect was qualified by a significant Behavior

Type $\times$ Parent Risk Group interaction, $F(4, 392) = 5.07, p < .001, \eta^2 = .03$. This interaction was decomposed by separately examining the risk group effect for each behavior type. An alpha level of .01 was used to maintain an overall Type I error rate of 5% (Bonferroni correction) for this family of simple comparisons. The only significant CPA risk group effect was that high-risk parents made fewer “bad child” interpretations on strongly negative trials than low-risk parents (see Table 2). The magnitude of the difference was about one-half of one standard deviation, $d = -0.54, 95\% \text{ CI}[-0.94, -0.13]$, and was opposite to the direction of our prediction.

The comparisons in the previous paragraph do not account for parents’ demographics. Table 3 contains the correlations between parent demographics and AMP performance. This table suggests there were sizable relations between parents’ demographic variables and AMP performance. Thus, subsequent analyses attempted to account for these demographic effects when assessing the relation between the parent risk group variable and AMP performance.

In one such set of analyses, the “bad child” response counts were entered into a multi-level linear regression model in which the five behavior trial types were nested within individual parents. Because we believed the performance on “neutral” trials was an informative reference, we used a dummy coding scheme that compared participants’ performance on strongly positive, vaguely positive, vaguely negative, and strongly negative trials (coded as 1 for their respective trial type) to the neutral trials (coded as 0). To account for parents’ demographics, we also entered dummy codes for parents’ gender (coded mothers = 0 and fathers = 1), ethnicity (African-American = 0, other = 1), education (high school education or less = 0, some college or more = 1), and relationship status (married = 0, other = 1). We also included each parent’s (mean-centered) age as an additional predictor.

Results from this set of analyses appear in Table 4. The primary model of interest contains parents’ CPA risk status, the dummy codes for the AMP behavior type, and the CPA Risk Status $\times$ Behavior Type interactions. This model allowed both the slopes and intercepts to vary randomly. This model of primary interest fit the data significantly better than the model that contained only the dummy codes for individual behaviors and CPA risk status main effect, $\chi^2(4) = 14.04, p < .001$, suggesting that AMP performance was significantly moderated by parent’s CPA risk status. The only significant individual coefficient was for the CPA Risk Status $\times$ Strongly Negative (vs. neutral) trials, $b = 1.67, t(380) = 3.23, p = .001, r = .16$. The interpretation of this coefficient is consistent with the conclusions from the simple comparisons shown in Table 2: Relative to the neutral trials, high-risk parents’ evinced fewer “bad child” interpretations during the AMP on the strongly negative trials than low-risk parents. This result contradicts our *a priori* hypothesis.

Predicting Voodoo Doll Task performance

We also were interested in the extent to which parents’ AMP performance was associated with their tendency to symbolically inflict harm on a child in the Voodoo Doll task. The outcome variable for these analyses was derived from the number of “pins” (i.e., stickers) that parents placed onto the child during the Voodoo Doll task. Because the distribution of the number of pins that parents chose had a positive skew with a mode of zero, we predicted pin usage using negative binomial regression. Further, each of the models in this section

contained the dummy codes for parents' gender (coded mothers = 0 and fathers = 1), ethnicity (African-American = 0, other = 1), education (high school education or less = 0, some college or more = 1), and relationship status (married = 0, other = 1); and we also included each parent's (mean-centered) age as an additional predictor.

Our a priori analyses followed from our belief that individual differences in parents' behaviors should be especially influenced by cognitive structures that alter interpretations of ambiguous information. Therefore, using negative binomial regression, we predicted parents' pin usage from their (mean-centered) "bad child" interpretations on the vaguely positive trials, their (mean-centered) "bad child" interpretations on the vaguely negative trials, and their CPA risk status (coded as 0 = high-risk and 1 = low-risk). The only significant predictor of pin usage was a main effect for parent gender, $b = 1.38$, $p = .04$, wherein fathers were more likely to use pins than mothers. There was not a main effect for parents' CPA risk status, $b = -1.10$, $p = .10$, nor was there a main effect for the number of "bad child" interpretations for the vaguely positive trials, $b = -0.37$, $p = .17$, or vaguely negative trials, $b = 0.24$, $p = .27$. The predicted Vaguely Positive Trials $\times$ Vaguely Negative Trials interaction also was not significant, $b = -0.16$, $p = .24$.

As an exploratory analysis, we paralleled the analyses from the previous paragraph, but used only the data from the strongly-implicative behavior trials. Using negative binomial regression, we predicted parents' pin usage from their (mean-centered) "bad child" interpretations on the strongly positive trials, their (mean-centered) "bad child" interpretations on the strongly negative trials, and their CPA risk status. We observed three significant effects. First, we observed a significant main effect for parents' gender, $b = 1.36$, $p = .04$, wherein fathers were more likely to use pins than mothers. Second, we observed a main effect for parents' CPA risk status, $b = -1.73$, $p = .02$, wherein high-risk parents were more likely to use pins than low-risk parents. Finally, we observed a significant CPA Risk Status $\times$ Strongly Positive Trial interaction, $b = 0.88$, $p = .03$. This interaction shows that the relationship between the number of "bad child" interpretations for strongly positive trials and pin usage was stronger for low-risk parents, $b = 0.75$, $p = .02$, than high-risk parents, $b = -0.31$, $p = .24$.

Discussion

The current research had three goals: To demonstrate that parents' evaluations of children (a) can spontaneously emerge during the encoding of children's behaviors, (b) would be moderated by parental CPA risk status, and (c) would be related to their tendencies to engage in symbolic child-directed harsh behaviors.

The first of these goals was met. Viewing child behaviors affected parents' subsequent AMP performance. More specifically, our results showed that parents interpreted ambiguous stimuli as a word describing a "bad child" when those stimuli were preceded by child photographs that were previously paired with negative behaviors. This pattern of results is consistent with three ideas: (a) Parents spontaneously formed negative evaluations about the children from those children's negative behaviors; (b) the subsequent presence of those

children made those negative evaluations accessible; and (c) those accessible negative evaluations were misattributed to the ambiguous stimuli during the AMP.

We also hypothesized that differences in parents' AMP performance would be moderated by their CPA risk status. This hypothesis was based on the belief that parents who are at high-risk for CPA possess different child-relevant schemas than parents who are at low-risk for CPA, and on the expectation that these different schemas would affect the way in which the child information was encoded and subsequently expressed during the AMP. Low-risk parents' responses during the AMP suggested they interpreted the stimuli in a manner that was generally consistent with the pretested implications of the behaviors (i.e., child photos paired with negative behaviors elicited "bad child" responses). In contrast, high-risk parents' AMP performance was generally invariant across the different behavior types. Further, and in direct contrast to our a priori hypothesis, we observed that parents who were at low risk for CPA formed more negative evaluations from children's strongly negative behaviors than high-risk parents.

We offer three speculations, all of which can be explored in future research, for high-risk parents' evaluation response invariance across the different misattribution paradigm trials. One possibility is that high-risk parents were insensitive to the acquisition of any new evaluative child information. However, this interpretation seems unlikely given that CPA risk group differences are commonly observed from similar paradigms examining parents' semantic inferences about children (c.f., Crouch et al., 2010; McCarthy et al., 2013).

A second possibility is that because of the task-specific cognitive processes that contribute to the AMP performance, the pattern of results for the current research has revealed a previously-unknown difference between high-risk parents and low-risk parents. Effects on the AMP rest on the logic that the mere presence of the child is sufficient to activate evaluative information associated with that child and that activated evaluative information is then misattributed to the ambiguous stimuli. It is possible that the current results either demonstrate differences between high-risk parents and low-risk parents in the extent to which the mere presence of a child activates this evaluative child information, or demonstrate differences in those parents' tendencies to misattribute that information to an ambiguous stimulus. However, this interpretation is slightly inconsistent with previous research: Farc et al. (2008) demonstrated that the mere presence of children is sufficient to activate evaluative information about those children. However, Farc et al. compared evaluations elicited by child stimuli to evaluations elicited by adult stimuli. Further, Farc et al. examined parents' pre-existing evaluations of stimuli and did not examine the evaluations that parents *acquire* in response to child behaviors. Because of these methodological differences, the complete extent to which the current results are consistent with those of Farc et al. is difficult to discern.

A final possibility for the insensitivity of high-risk parents to child behavior information is that their AMP performance may have reflected high-risk parents' lack of attention or effort at some point during the study. Simply put, if parents do not attend to the child behaviors during the exposure stage, or if parents mindlessly respond during the AMP, there will be no evidence for evaluative inferences formed from the child behaviors. This possibility should

have been minimized because we omitted parents who had invalid CAP inventories, which includes several parents who were identified as “responding randomly” (one of the CAP validity indices). However, we have no data that directly contradicts this hypothesis.

The final goal of the current study was to examine whether parents’ AMP performance was associated with their subsequent child-directed harsh behaviors. Parents’ child-related schemas were expected to substantially influence parents’ interpretations of ambiguous child behaviors. Thus, we expected that parents’ responses to ambiguous child information would best predict their pin usage during the Voodoo Doll task. Although parents who were classified as high-risk for CPA selected more pins than low-risk parents, which is consistent with Voodoo Doll Task performance differences being due to differences in parents’ pre-existing child schemas, parents’ AMP performance generally did not predict their pin usage during the Voodoo Doll task. These results were inconsistent with our expectations.

However, in exploratory analyses we observed that low-risk parents’ responses to the strongly positive trials during the AMP was associated with pin usage during the VDT. More specifically, this association indicated that a lack of positive evaluative inferences in response to a child’s strongly positive behavior was associated with those parents’ tendencies to inflict symbolic harm onto their child for low-risk parents, a finding consistent with prior theorizing about the relationship between hostile attributions and aggressive behaviors (e.g., Crouch et al., 2010; Dodge, 2006). These analyses were not predicted a priori; therefore, confidence in these results should be tempered until they are properly replicated.

Finally, the results suggest several areas for future research. First, the current study tested whether parents’ tendencies to form certain types of evaluations were associated with their symbolic harm of their child. Future research should be designed to associate parents’ evaluations of a specific child with their behaviors towards that same child. Second, it is unclear whether the current results generalize to parents’ inferences of their own child. To the extent that parents have different schemas about their own child(ren) than they have about children in general, it is possible that parents would be more or less likely to form negative evaluations of their own child than they form about children in general. Similarly, previous research (e.g., Risser et al., 2011) has juxtaposed the evaluative responses that parents have towards children and adults, which allow researchers to discern whether the results are due to something child-specific or due to a more general characteristic of the way in which parents process information. It is these types of future research that could build upon the current results to demonstrate causal cognitive factors that influence parents’ child-directed behaviors and serve as the foundation for evidence-based interventions to be developed to improve parent-child relationships.

The results of the current study are inconsistent with a hypothesis derived from the social information processing model of CPA (e.g., Milner, 2003) and with the notion that high-risk parents form more negative evaluations of children than low-risk parents. Accordingly, confidence in these ideas may need to be appropriately modified. Future research will hopefully clarify whether the current results failed to detect the predicted effect because of sampling error or whether something about the current methods identified a real boundary

condition about the way in which high-risk parents and low-risk parents form inferences about children.

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Table 1

Comparing high-risk parents' and low-risk parents' demographic information

	Risk Classification			χ^2	Crámer's V
	<i>n</i>	Low-risk	High-risk		
Gender				0.20 ^a	.05
Mothers	70	43	27		
Fathers	30	13	17		
Ethnicity				11.00 ^b	.33
African-American	52	26	26		
Asian-American	0	0	0		
Hispanic/Latino/a	5	1	4		
Native American	1	1	0		
Pacific Islander	1	1	0		
White	41	31	10		
Education				14.67 ^c	.38
< High school	5	1	4		
High school	26	11	15		
Some college	46	31	15		
4-year degree	8	4	4		
Advanced degree	14	13	1		
Relationship Status				33.32 ^d	.58
Dating 0–6 months	6	3	3		
Dating +6 months	23	16	7		
Divorced	14	8	6		
Married	27	23	4		
Single, never married	23	3	20		
Separated	4	4	0		
Widowed	2	2	0		

Note. This table represents parents' demographic information and parents' demographic information.

^a $df = 1$, $p = .66$.

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b $df=4, p=.03.$
 c $df=5, p=.04.$
 d $df=6, p<.001.$

Table 2

Descriptive Statistics for Parents' AMP Performance

	Parent CPA Risk Status		Pairwise comparison			
	Low Risk	High Risk	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i> , 95% CI[LL, UL]
Strong-Positive	3.02(2.04)	3.75(1.79)	1.90	90.63	.06	0.37, [-0.02, 0.79]
Vague-Positive	3.23(2.07)	3.70(1.99)	1.13	85.98	.26	0.23, [-0.17, 0.63]
Neutral	2.88(1.95)	3.48(1.80)	1.56	88.27	.12	0.31, [-0.09, 0.72]
Vague-Negative	3.82(2.01)	3.55(2.16)	-0.62	79.60	.54	-0.12, [-0.53, 0.27]
Strong-Negative	4.48(2.27)	3.45(1.65)	-2.63	97.26	.01	-0.54, [-0.94, -0.13]

Note. CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit. Parents' AMP performance. The dependent variable reflects the number of trials a parent interpreted the Chinese ideograph as meaning "bad child." Pairwise comparisons were analyzed with Welch's two-sample *t*-tests and each individual comparison had a Type I error rate of $\alpha = .05$. Standardized mean differences (i.e., *d*) were computed using the pooled standard deviation as the denominator.

Table 3

Correlations between parents' demographic variables and AMP performance

	Strongly positive	Vaguely positive	Neutral	Vaguely negative	Strongly negative
Gender	-.04	.18	.17	-.06	.03
Ethnicity	-.21 [*]	-.07	-.05	.09	-.07
Marital Status	.18	.03	.03	-.13	-.04
Education	.06	-.10	.04	.13	.05
Age	-.40 [*]	-.24 [*]	-.17	-.15	-.18
Strongly positive	-	.49 [*]	.48 [*]	.27 [*]	.23 [*]
Vaguely positive		-	.53 [*]	.30 [*]	.29 [*]
Neutral			-	.25 [*]	.23 [*]
Vaguely negative				-	.34 [*]
Strongly negative					-

Note. Correlations between parents' demographic information and AMP performance. The demographic variables were dummy coded: parents' gender (coded 0 = mothers and 1 = fathers), parent's ethnicity (African-American = 0, other = 1), education (high school education or less = 0, some college or more = 1), relationship status (married = 0, other = 1). We also included parents' (mean-centered) age as a predictor.

^{*} $p < .05$.

Table 4

Parents' CPA Risk Status and AMP Performance

Multi-Level Model									
Demographics Only			Behavior Type		CPA Risk		CPA Risk × Behavior Type		
<i>b</i>	<i>SE</i>		<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	
Intercept	-0.11	0.38	-0.53	0.41	-0.63	0.43	0.32	0.47	
Age (mean-centered)	-0.04	0.01 *	-0.04	0.01 *	-0.05	0.01 *	-0.05	0.01 *	
Gender	0.57	0.27 *	0.57	0.27 *	0.52	0.27	0.52	0.27	
Ethnicity	-0.09	0.26	-0.09	0.26	-0.13	0.26	-0.13	0.26	
Marital status	-0.24	0.30	-0.24	0.30	-0.19	0.30	-0.19	0.30	
Education	0.32	0.28	0.32	0.28	0.37	0.28	0.37	0.28	
Strong-positive behaviors			0.21	0.24	0.21	0.21	0.32	0.33	
Vague-positive behaviors			0.30	0.24	0.29	0.20	0.21	0.32	
Vague-negative behaviors			0.64	0.24 *	0.64	0.25 *	0.16	0.40	
Strong-negative behaviors			0.99	0.24 *	0.99	0.26 *	0.00	0.39	
CPA risk					0.10	0.27	-0.41	0.39	
Strong-Positive × CPA Risk							-0.18	0.42	
Vague-Positive × CPA Risk							0.15	0.41	
Vague-Negative × CPA Risk							0.79	0.51	
Strong-Negative × CPA Risk							1.63	0.50 *	

Note. Multi-level regression examining whether parents' AMP performance is moderated by their CPA risk status (coded as 0 = high-risk and 1 = low-risk). The dependent variable reflects the number of trials a parent interpreted the Chinese ideograph as meaning "bad child." The intercepts and slopes were allowed to vary randomly. Demographics were dummy coded: parents' gender (coded 0 = mothers and 1 = fathers), parent's ethnicity (African-American = 0, other = 1), education (high school education or less = 0, some college or more = 1), relationship status (married = 0, other = 1). We also included parents' (mean-centered) age as a predictor. Type of behavior in the misattribution procedure was examined with a dummy-coding scheme by comparing the strongly positive, vaguely positive, negative, and strongly negative trials (which were coded as 1) to the neutral trials (which was coded with a 0). CPA = child physical abuse.

* $p < .05$.