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Lauren Elizabeth Lindeen March 30, 2016

Children's Positive Affect in Relation to Positive Parenting:

Role of Informant and Gender

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Keywords: positive affect, positive parenting, middle childhood, gender

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Abstract

This study evaluated the association between positive affect (PA) and positive parenting in middle childhood (ages 8-11) and whether this association varied by child gender or informant. Participants were 55 mother-child pairs who engaged in a ten-minute play session. Recordings of the session were coded for children's observed affect, ranging from a high positive to a high negative valence. PA was calculated by determining the percentage of time in which the child was observed to be expressing positive affect. Children completed the Parent Perception Inventory (PPI-C), a self-report measure of parents' positive parenting, while mothers completed the parent version (PPI-P) of the same measure. Correlational analyses revealed no significant association between child PA and positive parenting for either child or parent report: $r(55) = .10$, $p = .48$. and $r(54) = -.09$, $p = .54$, respectively. There was no significant association between positive parenting and child PA for either measure. There was also no significant association when examining data exclusively for boys or girls, suggesting no difference in association by gender. Together, these findings suggest the absence of an association between positive parenting and child positive affect regardless of child gender or the source of information on positive parenting.

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Children's Positive Affect in Relation to Positive Parenting: Role of Informant and Gender

Positive affect (PA) is increasingly understood to be an important construct in the study of children's adaptive and maladaptive functioning. PA can be defined as a "a set of hedonic, behavioral, motivational, and physiological features related to the pursuit and enjoyment of rewards" (Forbes & Dahl, 2005). Children's higher PA is associated with adaptive outcomes both cross-sectionally (e.g. with greater creativity and problem solving) and longitudinally (e.g. with greater well-being, social competence, sociability, and stronger immune response) (for a review, see Davis & Suveg, 2014; Greene & Noice, 1988; Lengua, 2003; Lyubomirsky, King, & Diener, 2005). Conversely, children's lower PA has been found to be prospectively associated with their later development of externalizing problems, conduct problems, aggression, and depression (for a review see Davis & Suveg, 2014; Kim & Hamann, 2007; Lahey et al., 2008; Olino et al., 2011; Rothbart, Ahadi, & Hershey, 1994). Given the clinical implications of these findings, it is necessary to better understand PA expression in childhood. In particular, although positive emotionality has been found to be relatively stable over the transition from early childhood to middle childhood and to significantly increase in adolescence (Chaplin & Aldao, 2013; Neppl et al., 2010), there is a gap in knowledge about levels of in PA expression during middle childhood (for a review, see Davis & Suveg, 2014). In this study, we examine associations between observed PA and parents' level of positive parenting during middle childhood.

In an effort to understand how and why children's PA might be associated with positive parenting style, it is relevant to consider the broader literature on children's temperament and parenting. Belsky's process model of parenting, which has received strong empirical support, suggests that parental functioning is influenced by the parents' own psychological resources, contextual elements (e.g. marital relations, work, social networks), and child characteristics (Belsky, 1984). Moreover, researchers have found support for both a link between parenting behaviors and offspring PA expression and for a bidirectional relationship between parenting behavior and child temperament (Lengua & Kovacs, 2005). The bidirectionality of the relationship between parenting and child temperament makes it difficult to isolate the association between specific parenting behaviors and child affect, particularly when parenting behavior is not specifically defined. Past studies have used parenting style to describe parents' general behavioral tendencies (Leung, Sanders, Leung, Mak, & Lau, 2003; Sanders, 1999; Sanders, Turner, & Markie-Dadds, 2002). In this study, we use parenting style as our variable of interest when examining parental behavior. We focus particularly on positive parenting because of its known association with positive child outcomes and the potential for parental modeling of positive affect; positive parenting has been demonstrated to provide benefits to children relative to negative, harsh parenting (Bruce et al., 2006).

Positive parenting consists of parents' expression of warmth, self-confidence, engagement, and responsiveness (Bruce et al., 2006). Positive parenting may involve the parent modeling the child's positive affect, for example smiling, laughing,

or speaking in a warm tone (Sanders, 1999). Parents who engage in more positive parenting have been found to be more emotionally stable (low neuroticism) and higher on extraversion (Oppenheimer, Hankin, Jenness, Young, & Smolen, 2013). Moreover, greater positive parenting has been found to be associated with children's lower levels of observed anger and negative affect in offspring (Oppenheimer et al., 2013).

The relationship between positive parenting and low levels of anger and negative affect in children has led researchers to explore the possibility that programs designed to enhance positive parenting may be one means of reducing behavioral problems in childhood. Positive parenting interventions have successfully reduced problem behavior to subclinical levels in preschool and early childhood (Dishion et al., 2008; Leung et al., 2003; Sanders, 1999; Sanders et al., 2002). These interventions have been replicated in multiple nations and with at risk-populations (Dishion et al., 2008; Leung et al., 2003; Sanders, 1999; Sanders et al., 2002). Additionally, improvements were maintained over a 3 year period following the intervention (Sanders, Bor, & Morawska, 2007). These intervention studies provide an excellent frame of reference for operationalizing positive parenting, yet have emphasized investigation of the relationship between positive parenting and negative outcomes in children. Better understanding the extent to which positive parenting and children's PA are associated in middle childhood will serve to clarify the importance of positive parenting to children's PA expression and whether interventions to enhance positive parenting in the middle childhood developmental period are justified on this basis.

Middle childhood is an important developmental period preceding the significant changes in the diversity and impact of relationships with others that take place in adolescence (Collins, Madsen, & Susman-Stillman, 2005). In middle childhood, children enter roles beyond the home environment and begin to establish relationships in a wider social context. They are able to foray into a larger social world outside the home environment, yet they still have relatively less autonomy than in adolescence. In those relationships in new contexts, children encounter situations that shape their sense of self and well-being (Collins et al., 2005). During this transition children begin to define their identity not only as individuals, but as members of a group as well (Collins et al., 2005). Throughout this transition, parents continue to be a source of social support (Hunter & Youniss, 1982) and continue to influence children's independence, self-esteem, moral development, anxiety, conduct problems, adaptation and school achievement (Tein, Roosa, & Michaels, 1994)

Despite the ongoing importance of the parent-child relationship, the nature of the relationship changes significantly during middle childhood; changes occur in both the affective style of the relationship and the amount of time spent with each parent (Collins et al., 2005). Previous research indicates that both parents and children overtly express less affection and negative emotion in parent-child interactions in middle childhood than in the preceding years (Collins et al., 2005). Researchers have yet to identify a reason for this decline. During middle childhood, children spend significantly less time at home in the company of their parents (Collins et al., 2005). As a result of decreased shared time, parent-child interactions

become less frequent in middle childhood (Hill & Stafford, 1980). When examining these associations it is important to consider that the amount of parent-child interaction time varies by parent gender.

Overall, researchers have found that mother-child relationships, relative to father-child relationships, are characterized by more time spent together, interaction, and involvement in caregiving tasks (Collins & Russell, 1991). Mothers engage in caretaking tasks such as asking about the child's day, talking, and cuddling with greater frequency than fathers (Russell & Russell, 1987). Mothers are also more likely to engage in behavior that promotes achievement-oriented behaviors in offspring, such as using directives and consulting the child (Russell & Russell, 1987). Although father-child relationships are also important, given the differences in interaction and socialization techniques in middle childhood this study was designed to examine exclusively mother-child relationships. In studies of infants, researchers have found support for a link between maternal positive parenting and children's PA. In particular, mothers' greater sensitivity to changes in infant PA (Kivijärvi, Räihä, Kaljonen, Tamminen, & Piha, 2005) and their responsiveness to these changes (Malatesta, Grigoryev, Lamb, Albin, & Culver, 1986) are associated with infant PA. Parental sensitivity and responsiveness are two behaviors that characterize positive parenting. Given that maternal positive parenting behavior is association with changes in infant PA, it makes sense to investigate whether there is a relationship between maternal positive parenting behavior and child PA later in childhood as well.

Building on the literature about the association between positive parenting and fewer negative and more positive child outcomes, we examined the relationship between postive parenting and child PA. During the middle childhood years, parent-child interactions have a strong influence on children; children are more autonomous than in early childhood, yet have not yet developed the greater sense of self-independence that emerges during adolescence (Collins et al., 2005). Parents act as a mechanism of socialization during this period; their behavior provides a model for emotional and social competence, self-regulation and coping strategies (Bruce et al., 2006; Collins et al., 2005; Eisenberg, Cumberland, & Spinrad, 1998). Positive parenting might be one avenue through which children learn to express positive affect. Given the similarities between positive parenting and child PA, mothers' greater involvement in caretaking, and the formative nature of parental socialization during middle childhood, we hypothesized that *maternal positive parenting will be positively associated with child PA in middle childhood*.

Although there is a significant amount of literature supporting differences in parenting according to parent gender, there is conflicting evidence as to whether the nature of parent-child interactions is shaped by child gender. Collins and Russell (1991) indicated that mother-son interactions may be characterized by greater emotional expression than mother-daughter interactions; however, there is conflicting evidence as to whether this expressed emotion is more positive or negative (Collins et al., 2005). Differences in parenting behavior towards boys and girls may be one reason that parent-child interactions differ by child gender. Lytton and Romney (1991) conducted a meta-analytic review of differences in child rearing

in relation to child gender and concluded that effect sizes for these differences are generally small and non-significant; this is the most recent meta-analytic review of differences in parenting by child gender. Other studies have since identified significant variation in parental encouragement of opportunities and activities, guided instruction, and monitoring by gender (as reviewed in Leaper, 2005). The conflicting findings regarding differences in parenting behavior by child gender suggest further investigation is needed in order to determine if a difference exists. If differential parenting exists between genders, it might play a role in shaping the affective style of parent-child interactions.

Despite the lack of consensus about the affective nature of parent-child interactions by child gender, literature provides support for gender differences in positive emotion expression in middle childhood. The Chaplin and Aldao (2013) meta analytic review evaluating differences in emotion expression by gender in middle childhood found a significant difference in positive emotionality between boys and girls during middle childhood. They operationalized positive emotionality as happiness, surprise or positive emotion-unspecified; only data that used an established coding system or reflected established behavioral cues of positive affect in the literature was included in the review. Specifically, girls were found to show more positive emotion relative to boys with a mean effect size of g = -.08. This difference was moderated by age, becoming more pronounced in middle childhood relative to younger children (Chaplin & Aldao, 2013). The difference in positive emotionality and the variation in parenting between genders found in recent studies

provide reason to *explore whether the association between child PA and positive parenting will differ by gender.*

This study specifically examined the behavioral aspect of PA by measuring observed affect. Zaslow (1998) has demonstrated that structured observational ratings during childhood predict child outcomes more effectively than maternal or interviewer report (as cited by Weinfield, Ogawa, & Egeland, 2002; Zaslow, 1998). We maintained measurement variance in our study by comparing an observational measure of PA with two questionnaire measures of positive parenting. Including reports of positive parenting from multiple sources allowed us not only to maintain measurement variance, but to evaluate whether the association between PA and positive parenting varied by informant as well. We chose to evaluate the association between child PA and positive parenting from both the parent and child perspective because prior research has indicated that parent-child convergent validity is an ongoing issue in reports of parent behavior (Korelitz, 2016).

Report discrepancy is a common problem for research assessing parental behavior (Tein et al., 1994). Perceptions of parenting vary depending on whether the child or the parent is the informant. Researchers typically find low convergent validity between parent and child reports of parent behavior (Korelitz, 2016; Tein et al., 1994). Korelitz's meta-analytic review of differences between parent and child reports of parenting behavior revealed that congruency between informants varied systematically in accordance with parent gender (i.e. father-child, mother-child). Furthermore, it indicated that the extent of informant agreement is related to a number of variables including age, parent sex, and the parenting construct under

investigation. In order to examine the role of informant, we obtained data on mothers' positive parenting from both children and their mothers. Determining if mother or child perception of positive parenting is more associated with child PA provides us with indications about whether child and parent perspectives need to be examined separately in future studies of child PA and positive parenting.

Although our hypothesis is specific to children's positive affect, we checked on the specificity of our hypothesis by also examining the extent to which the association between PA and positive parenting is specific to positive affect rather than to children's overall expressivity. Evaluating the relationship between positive parenting and overall expressivity provides a clearer perspective on the relationship between positive parenting and child PA.

In summary, we hypothesized that *positive parenting was positively associated with child observed PA in middle childhood* given the formative nature of parental socialization during this developmental period. Differences in positive emotion expression between boys and girls in middle childhood and conflicting evidence about differential parenting by gender encouraged us to *evaluate whether association between child PA and positive parenting varies according to child gender.* Finally, given evidence of discrepancies between parent and child reports on parenting, *we aimed to explore whether the association between child PA and positive parenting varies by the source of information on positive parenting.*

Method

Participants

Participants included mothers and their children ages 8-10 years old. Our data was a subset from a larger two-site study taking place at Emory University and Vanderbilt University, in which some mothers had a history of depression. Only children whose mothers had not experienced depression in the child's lifetime were included in this sub-study. The sample for this sub-study consisted of 55 mother-child pairs; 26 of which were recruited from the Vanderbilt study location and 29 from the Emory location. If there were multiple children in the family who met the criteria necessary to participate in the study, one child was randomly selected to participate. Sociodemographic characteristics of our sample are shown in Table 1.

Exclusion criteria. Mothers who were depressed, suicidal, psychotic, substance abusing, or who have ever had bipolar I disorder at the time of recruitment were excluded. Additionally, any children with pervasive developmental disorder, intellectual disability, psychosis, autism, bipolar disorder, or who have ever met criteria for major depressive disorder or dysthymia were excluded from the sample. Monolingual, non-English speaking children were also excluded from the study, in order to ensure that coders would be able to understand the verbal content of parent-child interactions and that children and mothers were able to complete the questionnaire.

Recruitment. Data collection for this study took place at both Emory University and Vanderbilt University. Participants were identified through multiple sources. At the Emory site, the sample was recruited primarily through the Emory University Child Study Center (EUCSC) database, as well as online social media (e.g. Facebook) and referrals. EUCSC recruits families primarily through print, email,

community newsletters, online social media, and local schools. The Vanderbilt site recruited their sample via a Tennessee birth records database, the Vanderbilt participant database, and through participant referrals. A trained individual conducted phone-screening interviews with assenting mothers in order to determine whether they met inclusion and exclusion criteria.

Procedure

All participants signed an informed consent form explicitly outlining the potential benefits and risks of participation. Mothers were asked to fill out the Parent Perception Inventory- Parent Version (PPI-P) prior to their scheduled lab visit. If they had not done so when they arrived at the scheduled lab visit, they completed it then. The mother and child engaged in a 10-minute play session, in which they were provided a standardized set of age appropriate crafts and construction toys. Specifically these included crayons and paper, Legos, and a foam photo frame craft. The mother and child sat directly across from each other at a 3'x3' table, with separate video cameras aimed at each of them. The session was monitored by a research assistant through a one-way glass window in order to ensure that participants complied with instructions. Prior to the interaction, children filled out the Parent Perception Inventory (PPI) with an undergraduate research assistant reading the questions, to eliminate potential issues with reading ability, and the child entering their response on a computer, to maintain confidentiality.

Measures

Parent perception inventory- child version (PPI-C). Children's perceptions of their mothers' positive parenting were assessed using the child version of the Parent Perception Inventory (PPI-C)(Bruce et al., 2006). Bruce and colleagues designed the PPI based on 18 behaviors indexed in the Parent Perception Interview (Hazzard, Christensen, & Margolin, 1983). The internal consistency of the original PPI has been supported by two independent studies (Glaser, Horne, & Myers, 1995; Hazzard et al., 1983). The PPI is a 34 item self-report measure that asks children to score their parent's positive and negative behaviors on a frequency scale from 1 (never) to 5 (all the time). The PPI is designed to index both positive and negative parenting; 18 questions are designed to address positive parenting behaviors, such as "How often does this person say something nice about you?", while 16 address negative behaviors such as "How often does this person yell at you?". In this study, we only use the positive parenting scale. In a sample of 7 to 13 year olds, factor analysis supported a two-factor solution for all but 2 of the initial items and thus these two items were excluded from the final version of the scale (Bruce et al., 2006). The PPI yields a total score for positive parenting on a scale 18 to 90, with higher scores indicating more positive parenting. The PPI has demonstrated good internal consistency for both types of parenting in multiple studies, with a Cronbach's alpha ranging from.78-.82, and 0.81 to 0.83 for positive parenting (Bilsky et al., 2013; Bruce et al., 2006). The PPI-C demonstrated high internal consistency for this set of data (α = .82).

Parent perception inventory- parent version (PPI-P). Mothers' perceptions of the frequency in which they engage in positive and negative

parenting behaviors with their child were assessed using the Parent Version of the Parent Perception Inventory (PPI-P). The items on the PPI-P match those on the PPI, but are assessed from the parent perspective; the item how often does this person "Say something nice about you?" from the PPI-C is asked in the PPI-P as how often do you "Say nice things to your child?." Again, only the positive parenting scale was used in this study. The PPI-P indexes levels of parental positive behavior in the same manner as the PPI; scores for positive behaviors are calculated as the sum of questions assessing positive behavior on a scale of 1 to 5, with a possible range from 18 to 90; higher scores indicate more positive behavior. The PPI-P positive parenting scale demonstrated high internal consistency for this set of data (α = .87).

Child affect coding. Child affect was measured through observational coding of facial, behavioral, and vocal expressions of positive and negative affect, with an emphasis placed on facial expression. Facial, vocal, and behavioral expressions of positive affect, including smiling, laughing, and warm tone of voice, were used as our measure of positive affect. Negative affect (NA) was represented by behavior indicative of one of three types of negative affectivity: anger, sadness, or anxiety, such as a whiny voice, furrowed brows, or lip biting. Intensity of PA and NA (high, moderate, or low) was scored according to the behavioral criteria for each level (see Appendix). Vocal coding was based exclusively on tone rather than content. The coding rubric was developed based on those used in previous published studies (Dougherty, Klein, Durbin, Hayden, & Olino, 2010; Olino et al., 2011). Affect was coded on a second-by-second basis. The score for positive affect was the overall percent of time the child spent in PA out of the ten minutes observed and coded;

percent time was calculated by adding the number of seconds spent in low, moderate, and high intensity and dividing this number by the number of total codeable seconds for each participant.

Videos were coded in a random order by coders unaware of the study hypotheses and, in particular, of the mothers' and children's scores on the PPI. Reliability was calculated based on a randomly selected 15% subset of videos from each data collection site that were coded independently by two raters. The reliability for this subset of videos was $\kappa = .78$. Coders underwent a training program in which their coding was compared to an established coder until they consistently demonstrated at least 80% reliability. Reliability was assessed and videos were reviewed on an ongoing basis in weekly coding meetings in order to maintain consistency across coders. Uncodable and problem data (16.5% of total data) were excluded from the child affect data in analyses. Data were excluded due to poor camera quality, obscured features, researcher interference, and other unsuitable conditions.

Results

Preliminary/Descriptive Statistics

Analyses of each variable and association of interest were conducted separately by child gender and combined across gender. Full descriptive statistics for the PPI-C and PPI-P, are shown in Table 2. An ANOVA test revealed no variation as a function of gender for the PPI-C, PPI-P, or Total PA (see table 3). A Pearson correlation between scores on the PPI-P and the PPI-C revealed no significant

correlations between parent and child reports either for the group as a whole or separately by gender (see table 4).

There was no significant association between age and child PA, $r(55) = -.09$, $p = .53$, age and the PPI-P, $r(90) = -.15$, $p = .15$, or age and the PPI-C, $r(90) = -.04$, $p = .74$. Table 5 shows the distribution of time children were observed to be in different affective states during the ten-minute mother-child interaction.

Hypothesis Testing

Level of mothers' positive parenting will be positively associated with observed child PA in middle childhood. We ran two Pearson correlations to examine separately the relationships between children's percent time in observed PA and the PPI-C and children's percent time in observed PA and the PPI-P. Neither the correlation between PPI-C and time spent in positive affect, $r(55) = .10$, $p = .48$, nor the association between PPI-P and time spent in positive affect, $r(54) = -.09$, $p = -.54$, were significant.

Exploratory Analyses

To evaluate whether association between child PA and positive parenting varies according to child gender. The correlation between child PA and positive parenting for the PPI-P was $r(25) = .03$, $p = .91$ for males and $r(29) = -.05$, $p = .81$ for females. Results indicated no significant difference in the correlation coefficients between child PA and the PPI-C between genders ($z = -1.33$, $p = .18$). The correlation between PA and PPI-C scores for males was $r(26) = -.32$, $p = .11$, while for females it was $r(29) = .05$, $p = .80$. There was also no significant difference in the correlation coefficients between child PA and the PPI-C for between genders ($z =$

1.07, p = .28). Correlations for overall expressivity (percent time spent in a non-neutral affective state) and both measures of positive parenting are outlined in Table 4.

To explore whether informant changes the association between child PA and positive parenting. The correlation between child PA and PPI-P score was $r(54)$ = .10 , p = .48. The correlation between child PA and PPI-C score was $r(55)$ = -.09, p = .54.

Discussion

Overall, we found no significant association between positive parenting and observed child positive affect, regardless of the informant on positive parenting and regardless of child gender. In Belsky's process model, child characteristics are one of three sets of constructs that are conceptualized as predictors of parenting (Belsky, 1984). Our failure to find the expected association between child observed PA and maternal positive parenting may reflect that an understanding of maternal positive parenting requires full consideration of all three of Belsky's constructs: mothers' characteristics and context in addition to child characteristics.

We found no support for gender difference in observed PA. This result is surprising given the literature supporting greater PA expression for girls compared to boys in middle childhood (Chaplin & Aldao, 2013). Previous research offers a few possible explanations for this lack of association within our sample. Some have proposed that the valence of a situation may influence gender differences in emotion expression (Chaplin & Aldao, 2013; LaFrance, Hecht, & Paluck, 2003). Other studies examining gender differences in child affect have employed interaction

guidelines designed to elicit affect from the participants, such as discussing a conflict, or winning/losing a game (Chaplin & Aldao, 2013). Gender differences tend to be more pronounced in uncomfortable or tense situations; in accordance with female gender roles, girls may be more likely to minimize negative affect and increase PA expression in order to relieve tension in negatively-valenced situations (Chaplin & Aldao, 2013; Hall & Halberstadt, 1986; LaFrance et al., 2003). The current study was specifically designed to involve a mother-child interaction around an activity intended to be pleasant for both participants. Our open-ended instructions for play and the materials provided offer one possible explanation for the lack of difference between male and female child participants.

There was no significant difference in the correlation coefficients between positive parenting (for either the PPI-C or the PPI-P) and observed child PA for boys relative to girls. This is surprising given that prior research has found differences in the affective style of interactions between mothers and their children depending on child gender (Collins et al., 2005). This finding may reflect the size of our sample, which may not have been large enough to detect such a difference in mother-child interactions by child gender.

We did not find a significant correlation between mean reported scores on the PPI-P and the PPI-C. The lack of association between PPI-P and PPI-C scores is not surprising given theoretical concerns about report discrepancy and the history of low convergent validity between parent and child reports of parent behavior (Tein et al., 1994). The lack of associations between parent and child reports suggests that parents and children have differing perceptions of parental behavior

(Korelitz, 2016). The difference between parent and child reports of positive parenting has significant implications for the design and utilization of reports of parenting behavior in middle childhood; poor convergent validity should be considered when evaluating the construct validity of the targeted variable.

There are several reasons why parent and child self-reports of parenting behavior may differ from one another. Parent-child congruence in report of parenting behavior has been found to be moderated by a number of factors including child age, race/ethnicity, and family intactness; any one of these variables might influence the congruence between reports (Korelitz, 2016). Korelitz found that parents tend to rate their behavior more favorably than do their children. Additionally, data on parenting behavior collected from the parent perspective reflects the individual giving the report. Self-referential reports of data are susceptible to a number of different psychometric measurement issues; both intentionally and subconsciously motivated distortions of answers are issues that may arise when an individual reports on oneself (Larsen & Buss, 2013). Differences between child and parent reports of parenting behavior may be distorted by the self-referential nature of parent report in addition to differing informant perspectives (Korelitz, 2016). It is important to acknowledge that low convergent validity between parent and child reports continues to be an issue in the development of parent behavior assessments.

Limitations

Limitations to the study must be addressed. First, this study was conducted as part of a larger study and was without the benefit of the full sample, as data

collection had not yet been completed at the time these analyses were run. However, the effect sizes revealed by the analyses we conducted suggest that the larger sample is unlikely to change the finding of lack of support for the hypotheses.

Second, the PPI-C had the benefit of psychometric work conducted; specifically, a factor analyses revealed a structure that supported both a positive and negative parenting scale. Parallel work on the PPI-P has not yet been completed. Factor analysis of the PPI-P might lead to changes in how the positive and negative parenting scores are calculated. Changes to score calculation could have a bearing on any of the associations in this study involving the PPI-P.

Finally, our coding system gave privilege to facial expression over vocal and bodily expression of PA. Future studies might investigate whether parenting influences these modalities of PA expression differently, or consider them equally important when evaluating PA expression.

Future Directions

Given our failure to support our hypothesized association between children's observed PA and mothers' positive parenting, regardless of gender of child or source of report on positive parenting, future research should work to identify other aspects of parenting that might be associated with child PA. Future research might also examine the relationship between positive parenting and child PA in clinical populations where parent psychopathology is thought to relate to child PA, such as mothers with a history of depression and their children (Olino et al., 2011).

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Table 1

Sample Demographics

	n	%	
Race/ethnicity			
White or Caucasian	40		72.2
Black or African American	11		20.4
Asian	3		5.6
Hispanic or Latino	1		1.8
American Indian or Native Alaskan	0		0
Native American or Pacific Islander	0		0
Sex			
Male	26		47
Female	29		53
Mother Marital Status			
Married	49		88.9
Separated	3		5.6
Divorced/Annulled	2		3.7
Never Married	1		1.9
Mother Education			
4-year college degree	24		44.4
	M (SD)	Min	Max
Household Income	$100,001-$110,000		
Age (in years)			
Child	9.45 (0.83)	8	10.9
Mother	40.35 (6.09)	26	57

Table 2

Positive Parenting Scores for the PPI-C and PPI-P by Gender

			95% CI			
		M (SD)	*LL*	*UL*	Min	Max
PPI-C						
	Male	67.2 (10.1)	64.0	70.4	41	86
	Female	67.9(12.4)	64.3	71.5	30	90
	Total	67.6 (11.3)	65.2	67.0	30	90
PPI-P						
	Male	74.3(7.6)	71.9	76.8	59	88
	Female	76.1 (7.0)	74.1	78.1	60	88
	Total	75.3 (7.3)	73.8	76.85	59	88

Note. PPI-C = Parent Perception Inventory (Child Version); PPI-P = Parent Perception Inventory (Parent Version)

Table 3

ANOVA for PPI-C, PPI-P, and Total PA Between Genders

		df	*SS*	*MS*	*F*	*p*
PPI-C						
	Between Groups	1	4.75	4.75	0.04	.85
	Within Groups	53	6512.23	12.87		
	Total	54	6516.98			
PPI-P						
	Between Groups	1	98.63	98.63	2.31	.14
	Within Groups	52	2224.21	42.77		
	Total	53	2322.83			
Total PA						
	Between Groups	1	0.00	0.00	0.01	.94
	Within Groups	53	1.20	0.02		
	Total	54	1.20			

Note. PPI-C = Parent Perception Inventory (Child Version); PPI-P = Parent Perception Inventory (Parent Version)

Table 4

Pearson Correlation Between Affect and Positive Parenting

	PPI-P		PPI-C	
Variable	*r*	*p*	*r*	*p*
Child PA	.10	.48	-.09	.54
Male	.26	.21	-.32	.11
Female	-.05	.81	.05	.80
Overall Expressivity	.06	.70	-.02	.90
Male	.21	.31	-.34	.09
Female	-.11	.59	.17	.37

Table 5

Descriptive Statistics for Child Affect

	Percent Time Spent In			
Variable	*Mean*	*SD*	Min	Max
Total PA	.55	.15	.17	.87
Low PA	.50	.14	.16	.85
Moderate PA	.05	.05	.00	.20
High PA	.01	.02	.00	.11
Neutral Affect	.40	.15	.10	.10
Overall Expressivity	.60	.15	.20	.90

Appendix

Positive Affect*

***Bolded = necessary and sufficient. If there is more than one bolded descriptor within a mode, only one needs to be present to meet criteria for a particular level of affect.**

+4	**High Intensity Positive Affect**
Face	**Outward laughter** or **giggling** (Inward contained chuckles should not be scored as + 4)
Voice	Very enthusiastic and excited. Highly animated, pitched, positive/sing-songy tone. May talk at a markedly rapid rate or loud volume in a pleasant/excited manner.
Body	Behavioral indicators of excitement/joy (e.g., jumping, clapping, and cheering). Or display of physical affection stronger than a +3 (e.g. hug, kiss, etc.) Animated gestures.

+3	**Moderate Intensity Positive Affect**
Face	**Smiles with any eye involvement (sparkle or crinkles), or smiles with raised eyebrows.** May include bright eyes and/or affectionate gaze. Includes **chuckles** – inward, briefer, and more contained than laughter.
Voice	May include somewhat high pitched, warm/pleasant/soft, or enthusiastic/moderately excited tone of voice. May talk at moderately rapid rate or louder volume in a pleasant/excited manner.
Body	Moderate physical affection (touch, pat on back). Somewhat animated gestures. Nodding. May include open body posture and leaning in.

+2	**Low Intensity Positive Affect**
Face	Slight smile without eye involvement. Includes brief, ambiguous mouth or facial movements (i.e. smirks, twitches, broadening of the mouth, or other clear expressions that are not clearly smiles). Expressions of surprise (i.e. open mouth with raised eyebrows).
Voice	May include expressing interest through a slightly high pitched, warm/pleasant/soft tone of voice even in the absence of a clear smile. Includes humming.
Body*	Body should be somewhat engaged and not withdrawn or tense. May include leaning in or nodding.

* Body alone would not be sufficient

Neutral Affect

1 = None/Neutral Affect
No indicators of positive or negative affect. Neutral face, voice, and body. Includes coughs, sneezes, and yawns. Rate "1" if you cannot tell if an expression is positive or negative. Rule: May be making good eye contact but if no smile or warm/pleasant/upbeat tone of voice then rate as "1".

Negative Affect*

***For all levels of NA, must show evidence of either anger or sadness or anxiety.**

-2 Low Intensity Negative Affect

Face	Anger	Slight or vague look of anger. Brows slightly slanted or furrowed. Eyelids appear slightly tense, and/or eyes appear slightly hard or blank. Mouth may be straight, pursed, or slightly open as if gritting teeth.
	Sadness	Slight or vague look of sadness. Inside of the eyebrows are raised slightly. Lower eyelid may be slightly raised and eyes may appear slightly downcast and/or droopy. Lip corners may be turned down slightly.
	Anxiety	Slight or vague look of being uncomfortable, anxious, worried, or concerned. Eyebrows are approximately straight and somewhat raised, and the inner corners of the brow are drawn together. Eyes may appear somewhat more open than normal, and tense (the upper eyelid is raised and the lower lid is tense) Mild look of worry or concern. Mouth may be slightly open and the lips may be tense and drawn back, or may include ambiguous mouth movements May include lip biting and pressed lips.
Voice	Anger	Slightly hostile, sarcastic, tense, or otherwise moderately negative tone of voice.
	Sadness	Slightly sad tone of voice. Soft tone of voice. Mild whining or sighing.
	Anxiety	Slightly concerned/worried tone of voice.
Body	Anger	Slight body tensing or crossed arms.
	Sadness	Slight body sadness (e.g., slight angling down of head or slump of shoulders).
	Anxiety	Slight body anxiety (e.g., minor fidgeting).

Regarding "sarcasm", if tone of voice and face are suggesting -2 – then go with that.

-3	**Moderate Intensity Negative Affect**	
Face	Anger	Moderate look of anger. Same as for -2, but higher in intensity. May include raised cheeks or rolling eyes. Grimaces (gritted smiles with furrowed brow) and sneers also included.
	Sadness	Moderate look of sadness. Same as for -2, but higher in intensity. Inner corners of eyebrows raised and may be drawn together. Eyes may crinkle with lower lid raised. May include bottom lip protruding as if pouting.
	Anxiety	Moderate look of anxiety. Same as for -2, but higher in intensity. May include: tightening of lips, grimacing, or tense/non-angry mouth.
Voice	Anger	Same as for -2 but higher in intensity. May include frustrated sighs or raised voice (as indicated by increased volume paired with forcefulness).
	Sadness	Same as for -2 but higher in intensity.
	Anxiety	Same as for -2 but higher in intensity.
Body	Anger	Same as for -2 but higher in intensity. May include: moderate body tensing (balled fists, tight gripping, little raise of the shoulders, neck tensing), head shaking, or frustrated gestures.
	Sadness	Same as for -2 but higher in intensity (e.g., noticeable drop of head or slump in shoulders)
	Anxiety	Same as for -2 but higher in intensity. May include: tense or rigid posture. Rapid and repetitive movements (e.g., jiggling foot). Trembling hands, lips, or mouth.

-4	**High Intensity Negative Affect**	
Face	Anger	Marked look of anger. Same as for -3, but higher in intensity. Brows are slanted or furrowed and cheeks may be raised, likely includes some bulging or wrinkling around the brows.
	Sadness	Marked look of sadness. Same as for -3, but higher in intensity. Lip corners are distinctly turned down and cheek area droops down. May include bottom lip shaking or crying.
	Anxiety	Marked look of anxiety or fear. Same as for -3, but higher in intensity. Marked look of worry, fear, or concern.
Voice	Anger	Same as for -3, but higher in intensity. May include: yelling, loud "guff", screaming, or otherwise high negativity.
	Sadness	Same as for -3, but higher in intensity. May include: voice quavering or crying, very soft, slow, monotone, depressed voice, or intense whining or sighing.
	Anxiety	Same as for -3, but higher in intensity. Markedly anxious or fearful tone of voice. May include: elevated voice tone, very frantic and rapid speech, or extreme stuttering or difficulty in speaking.
Body	Anger	Same as for -3, but higher in intensity. May include: Banging of fists, kicking, stomping, throwing/forceful tossing of objects/ materials, hitting self/mom, or forceful, threatening gestures.
	Sadness	Same as for -3, but higher in intensity. May include: putting head down, in hands, or on table in a manner that conveys sadness. Obvious slump of body/shoulders.
	Anxiety	Same as for -3, but higher in intensity. May include: tightening of lips, intense biting of the lip(s), putting hand to mouth, excessive fidgeting/restlessness, hard swallowing. Extreme cowering or flight behaviors.

Ratings for uncodeable or not ratable segments

Uncodeable (U)	Face is partially or completely out of view due to face angle in the camera or hair in the face. Use this only when the child is out of view or looks away so the coder cannot see her face or any affect or clear, obvious bodily indicators (e.g., noticeably tense shoulder may be enough to support a negative code) AND you have no vocal cues to the emotion for at least 3 seconds. Includes being under the table. Uncodeable would end as soon as a codeable emotion (e.g., expression or tone) is observed. One should not try to guess state if face is partially or completely out of view due to face angle (i.e., less than profile – at least 1 eye and ½ of mouth) in the camera or hair in the face – UNLESS there is a clear expression (e.g., pronounced cheek raise)
Not Ratable (XX)	Use this when there are circumstances that violate the standards for the particular situation you are observing, such as when there are other people in the room or the child/mother pair is not following the essential instructions or any other ways in which the protocol is not being followed. Includes intentional facial obstruction (e.g., child uses prop to cover face) from camera. Also to be used in the case of any consumption - food or drink – when the item is making contact with the child's face or if the child is still engaged in the act of consumption (e.g., chewing).