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ORIGINAL PAPER

The Parenting Behaviors of Shy–Anxious Mothers: The Moderating Role of Vagal Tone

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Abstract There is a long history examining the antecedents of maladaptive parenting practices. Indeed, in both the developmental and clinical literature, maternal anxiety has been linked to maladaptive parenting behavior, including engaging in high levels of control during mother–child interactions. However, the association between anxiety and controlling parenting is not consistent throughout the literature. Therefore, we sought to examine potential moderators that may impact the relation between anxiety and parenting. Specifically, we investigated maternal physiological regulation as a moderator of the relations between mothers' characteristics of shyness–anxiety and their engagement in supportive parenting, restrictive parenting, and overprotective parenting. Sixty-six mothers of preschool-aged children participated. Mothers completed a questionnaire about their shyness–anxiety, and their respiratory sinus arrhythmia (RSA) was measured at baseline as an index of parasympathetic regulation. In addition, mothers completed the Childrearing Practices Q-Sort as an index of parenting. Analyses revealed that mothers' shyness–anxiety was positively predictive of overprotective parenting and negatively predictive of supportive parenting. In addition, RSA moderated the relation between mothers' shyness–anxiety and overprotective parenting, but not supportive or restrictive parenting. Results are discussed with regard to the significant role that maternal emotion regulation plays in parenting practices. Specifically, it appears that shy–anxious mothers' emotion regulation may be an important area of focus for parent-training programs designed to prevent children's anxiety.

Keywords Parenting · Anxiety · Emotion regulation · Respiratory sinus arrhythmia · Shyness

Introduction

Parents' exaggerated and inappropriate use of controlling behaviors has been associated positively with children's emotional and behavioral problems (McLeod et al. 2007), and negatively with academic success and social competence (Hastings et al. 2010; Walker and MacPhee 2011). These findings suggest that parental intrusiveness may be maladaptive; yet, many parents exhibit such actions with their young children (McLeod et al. 2007). What leads parents to use such behaviors, rather than engage in supportiveness, sensitivity and appropriate control that are effective for promoting children's well-being?

Supportive parenting is characterized by parenting that is sensitive to children's needs, and marked by warmth, responsiveness, and positivity. Supportive parenting has been linked to adaptive child outcomes, including emotional and social competence (see Root et al. 2012 for review). Intrusive, controlling parenting behaviors comprise two distinct dimensions of parenting: behavioral and psychological control (e.g., Mills and Rubin 1998). Behavioral control refers to parents' direct regulation of children's behavior and includes both adaptive (e.g., monitoring) and maladaptive (e.g., corporal punishment)

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practices. Specifically, at high levels, behavioral control is reflective of inflexible, harsh parenting that hinders children's autonomy (Kerr and Stattin 2000), while appropriate amounts of behavioral control are indicative of parents that set appropriate limits and socialize their children in a sensitive fashion (Grusec and Davidov 2007). While the adaptive components of behavioral control are associated with positive psychosocial adjustment, the maladaptive aspects of behavioral control, as measured by harsh, punitive parenting, are known to undermine children's development and have been linked to less prosocial behavior (Zahn-Waxler et al. 1979) and more aggression (Gershoff 2002). In contrast, psychological control reflects parents' attempts to control children's emotional state and undermine children's autonomy (Grusec and Davidov 2007). It can involve manipulative parenting behavior (Grusec and Davidov 2007) as well as anxious overintrusive behavior (Hastings et al. 2010). Psychological control is often measured via overprotective parenting behaviors, and has been linked to internalizing difficulties in children (Rubin et al. 2002) and adolescents (Barber 1996).

Given that psychological and behavioral overcontrol are associated with, and predictive of, child and adolescent maladaptation, it seems fruitful to examine why some mothers display these behaviors. This line of inquiry may best be addressed with reference to Belsky's (1984) model of the multiple determinants of parenting in which constitutional, familial, and community factors are suggested to influence parenting. For example, maternal shyness, trait anxiety, and neuroticism have been associated with constructs related to psychological control, including intrusive overcontrol (Clark et al. 2000) and overprotection (Coplan et al. 2008). In addition, in clinical samples, anxious parents (typically measured as an aggregate of several diagnoses) are more intrusive (e.g., Ginsburg et al. 2004; van der Bruggen et al. 2010) and less warm and supportive (e.g., Drake and Ginsberg 2011; Ginsburg et al. 2004) than control parents. Moreover, some studies indicate that parents with anxiety disorders may also engage in more behavioral control (primarily operationalized as less autonomy granting) than parents without anxiety disorders (Ginsburg et al. 2004; Lindhout et al. 2006). However, some studies have not replicated links between intrusive overcontrol and parental anxiety or neuroticism (Bornstein et al. 2011). It has been argued that such inconsistencies might be due to researchers failing to examine "precise definitions of parenting dimensions" (Murray et al. 2012, p. 188), or the failure to distinguish between behavioral and psychological control in a single study. Thus, examining constructs that reflect these different types of control may provide the necessary precision to allow for an understanding of the links between anxious characteristics and maternal parenting, as well as clarify why some anxious mothers engage in maladaptive parenting practices and others do not.

Social anxiety disorder is common in adults and has been linked to dysfunctional interpersonal relationships (Stein and Kean 2000). There are some studies that have begun to focus on the links between social anxiety and parenting. For instance, Budinger et al. (2013) hypothesized that socially anxious mothers would have more difficulties engaging in adaptive parenting practices than mothers with other types of anxiety given they have difficulty expressing themselves in their relationships and tend to judge ambiguous social situations as negative. Specifically, they examined anxious mothers with and without social anxiety disorder as diagnosed by the Anxiety Disorders Interview Schedule of DSM-IV. Their findings indicated that socially anxious parents exhibited less warmth and more negativity during interactions with their children than anxious parents without social anxiety disorder (Budinger et al. 2013). It was also reported that socially anxious mothers are less encouraging of infants' exploration than control mothers (Murray et al. 2007), and express more anxiety during interactions with their preschoolers (Murray et al. 2012) than mothers with generalized anxiety disorder. Importantly, these studies provide evidence for focusing on social anxiety when investigating links between anxiety and parenting.

In addition, there are several studies that link intrapersonal traits related to social anxiety (e.g., neuroticism, Clark et al. 2000; shyness, Coplan et al. 2008) with parenting practices in the literature with non-clinical samples. For instance, individuals high in neuroticism exhibit high levels of power assertion and low levels of responsiveness with infants (Clark et al. 2000), show less positive and more insensitive behaviors during interactions with toddlers (Belsky et al. 1995), and report more overprotective parenting beliefs with preschoolers (Coplan et al. 2009).

Importantly, not all mothers with shy or anxious characteristics engage in maladaptive parenting. Thus, it seems important to identify moderators that may ameliorate or exacerbate the relation between anxiety and maladaptive parenting. In the clinical literature there is an increased interest in examining emotion regulatory difficulties in anxious individuals. For instance, it was recently reported that individuals with social anxiety disorder who fail to engage in adaptive emotion regulatory strategies exhibit more anxiety symptoms (Aldao et al. 2014). Similar findings have been reported in experimental studies of clinically depressed and anxious adults (Campbell-Sills et al. 2006). Other research has shown that women who are easily aroused and unable to regulate their emotions are prone to displaying ineffective, maladaptive parenting behavior (Bugental et al. 1999). More generally, it has been noted that in order to effectively engage with children

socially, parents must maintain an appropriate level of arousal, which requires emotion regulation (Barrett and Fleming 2011). Thus, socially anxious individuals with poor regulatory ability may demonstrate behaviors that impair their relationships. Therefore, it seems that emotion regulation may moderate the relation between shyness–anxiety and parenting.

One index of emotion regulation that may be important to consider in studies of mothers with socially anxious characteristics is respiratory sinus arrhythmia (RSA), which is an index of parasympathetic regulation (Porges 2007). Resting-state levels of RSA index individuals' trait-like capacities to regulate emotion and to remain calmly engaged during social interactions (Hastings and Miller 2014; Porges 2011). Two measures of the vagal system have been used as indices of emotion regulation: baseline cardiac vagal tone and vagal suppression, or the change between baseline RSA and RSA during a task (typically a challenging task). Baseline cardiac vagal tone reflects an individual's ability to return the body to homeostasis after arousal, and has been associated with individual differences in regulation/soothability and attention/persistence in children and adults (Calkins 1997; Calkins and Fox 1992; Demaree et al. 2004; Stifter and Fox 1990; Stifter and Jain 1996; Suess et al. 1994). Measures of vagal suppression reflect an individual's ability to arouse oneself to engage during a challenging task (or the release of the vagal brake), and has been associated with individual differences in emotion regulation (e.g., Pu et al. 2010). Importantly, research has shown that self-reported anxiety is negatively associated with RSA at baseline and an increase in RSA (Friedman 2007; Scott and Weems 2014).

Moreover, studies have linked parenting practices to physiological traits. The majority of these studies have linked physiological regulation to supportive parenting and physiological dysregulation to punitive parenting. For instance, mothers with greater baseline vagal regulation respond supportively to their children's emotions (Perlman et al. 2008); however, autonomic arousal (heart rate increases; electrodermal activity) is associated with maladaptive parenting behaviors, including punitive interactions with children (Bugental et al. 1999). Few studies have investigated physiological correlates of intrusive, overprotective parenting practices; in one related exception, Mills-Koonce et al. (2009) reported that when stressed (as indexed via cortisol), mothers with lower vagal tone suppression (used as an index of dysregulation) exhibited the highest levels of intrusive behavior.

In sum, it seems likely that maternal emotion regulation will impact parenting, and it may be especially important to consider when examining the parenting practices of shy–anxious mothers. Indeed, previous research has indicated links between clinical and non-clinical social anxiety and parenting practices (e.g., Budinger et al. 2013; Coplan et al. 2008; Murray et al. 2007, 2012), as well as links between emotion regulation and parenting (Perlman et al. 2008). However, no studies have examined how these two intrapersonal characteristics may interact to predict parenting practices. To this end, we investigated the relations between mothers' shyness–anxiety, physiological regulation of emotion via parasympathetic influence, and child-rearing practices in a non-clinical sample. Given that child characteristics influence how mothers respond to their children (e.g., child effects, Bell and Chapman 1986), we included child age and child gender as covariates in our analyses. Although we had a narrow age-range in the study, development is rapid in very early childhood, and parents adjust their interactions with their children based on their child's developmental level (Bougher et al. 2015; Collins et al. 2001). Moreover, it is well-documented that child gender can exert both subtle and clear influences on how parents interact with their children (e.g., Leaper and Farkas 2015).

We expected that maternal shyness–anxiety would negatively predict supportive parenting and positively predict overprotective parenting. We also expected vagal regulation to moderate the relation between shyness–anxiety and parenting. Specifically, we predicted that more shy–anxious mothers would report less supportive parenting only when they had relatively poor emotion regulation, as reflected in lower baseline vagal tone. Similarly, we expected that more shy–anxious mothers would be particularly likely to report more overprotective parenting practices when they had lower baseline vagal tone. Given that intrusive behavioral control has not been consistently linked to maternal shyness–anxiety, these analyses were exploratory in nature.

Method

Participants

Participants were drawn from a larger study on children's socio-emotional development (e.g., Rubin et al. 2002). Those individuals with complete data on the variables of interest included 66 mothers ($M = 33.51$ years, $SD = 4.32$) of preschool-aged children who visited the laboratory within 6 months of their child's 4th birthday (38 males; $M = 50.95$ months, $SD = 1.35$). Participants were identified by birth announcements in the local newspaper and recruited by telephone solicitation in a moderately-populated metropolitan area in Canada. Participants were restricted to two-parent families. Of all families recruited, 75 % consented. Ninety-seven percent ($n = 64$) of the participants were Caucasian (the remaining 3 % did not

report race/ethnicity, $n = 2$). On average, mothers had some college education [73 % of mothers reported at least some college education ($n = 48$), 26 % reported completing high school ($n = 17$), 1 % reported completing partial high school ($n = 1$)]. The families had a mean score of 46.46 (SD = 10.80, range = 18–66) on the Hollingshead Social Status Index (Hollingshead and Redlich 1958).

Procedure

Mothers and children visited the laboratory as part of a larger, longitudinal study (see Rubin et al. 2002). The focus of the current investigation was on data from an assessment when children were 4 years ($M = 51$ months, $SD = 1.33$). At this timepoint, 88 children (42 females) from the original sample participated. Sixteen mother–child dyads from the original sample were not available at this time point. Attrition appeared to be non-selective. The attrition group did not differ significantly on demographic (parental education, familial SES) and behavioral variables.

Of relevance to the present investigation were the procedures at the 4-year assessment. At 4 years, mothers and their children visited the laboratory for a multi-segment visit. In addition, mothers completed a battery of questionnaires when children were 4-years of age. The measures utilized herein are described below.

Measures

Respiratory Sinus Arrhythmia

Mothers' RSA was measured using a UFI iso/Fetrode signal amplifier connected to a Delta-Biometrics Vagal Tone Monitor-II (VTM; Porges 1985). Three electrodes were attached to the mother's chest in a triangular pattern, and mothers were given 1–2 min to adjust to the setting and then baseline RSA was assessed for 1 min. The VTM found the peak of the R-wave to the nearest msec and timed the interval between successive R-waves, or heart periods, to the nearest msec. Mxedit software (Delta-Biometrics, Inc.) was used to clean and analyze heart period data. Mxedit used a moving polynomial algorithm with frequency band-pass parameters set from .12 to .40 Hz to quantify RSA, which is Porges' index of V_{NA}, in units of ln $(\text{msec})^2$. The mean of the sequential 20-second intervals for each mother was used as an estimate of baseline V_{NA}.

Maternal Shyness–Anxiety

Mothers' shy and anxious characteristics were assessed via the *Revised Cheek and Buss Shyness Scale* (Cheek 1983; Cheek and Buss 1981) and the *Leary Interaction Anxiousness Scale* (Leary and Kowalski 1993). Given that many have argued that shyness and social anxiety are overlapping constructs (Hopko et al. 2005; Turner et al. 1990), an aggregate measure of shyness and social anxiety was administered. Specifically, the *Cheek and Buss Shyness Scale* is a 13-item questionnaire where adults are asked to rate themselves on a Likert scale on how characteristic or uncharacteristic statements are about their level of shyness (e.g., "I feel inhibited in social situations." "I feel tense when I'm with people I don't know well."); this measure has been shown to be a reliable and valid measure of shyness in non-clinical samples (e.g., Hopko et al. 2005). The *Leary Interaction Anxiousness Scale* is a 15-item questionnaire where adults are asked to rate statements on a Likert scare on how characteristic or uncharacteristic statements regarding social anxiety are about them (e.g., "I often feel nervous when calling someone I don't know very well on the telephone." "I wish I had more confidence in social situations."); previous studies have indicated that this is a reliable and valid measure of social anxiety (Leary and Kowalski 1993). The items from both scales were presented as a single questionnaire. The scales were correlated ($r = .84$, $p = .001$), and subsequently summed to create an index of maternal shyness–anxiety ($\alpha = .77$).

Maternal Parenting Practices

Mothers completed the Child-Rearing Practices Report Q-Sort (CRPR; Block 1981; Block et al. 1981) at home. The CRPR requires mothers to sort 91 cards, each containing one statement describing a parenting practice, into 7 piles of 13 cards each, with the labels for the piles ranging from "Not at all descriptive of me" (1) to "Extremely descriptive of me" (7). From the 91 CRPR items, three measures of parenting were computed. From the original scoring described by Block (1981), supportive parenting was based on 16 items (e.g., "I talk or reason with my child when she/he is misbehaving." $\alpha = .63$), and restrictive parenting was based on 10 items ("My child is not allowed to question my decisions." $\alpha = .62$). From Chen et al. (1998), overprotective parenting was characterized by 14 items reflecting discouragement of independence (e.g., "I encourage my child be curious, to explore, and question things."—Reversed) and protectiveness (e.g., "I do not go out if I have to leave my child with a stranger." $\alpha = .66$).

Data Analyses

All data were inspected for outliers and distribution; no adjustments were needed. Means, standard deviations, and correlations are presented in Table 1. Regression analyses

Table 1 Means, SD, and correlations for all measures

	1.	2.	3.	4.	5.	*M*	*SD*	*Min*	*Max*
1. Maternal shyness–anxiety	–	−.18	.07	−.28*	.21^{t}	1.33	.47	.50	2.86
2. Baseline RSA		–	−.01	.18	−.12	.07	1.19	−4.39	2.53
3. CRPR—restrictive			–	−.57**	.009	2.47	.52	1.70	4.00
4. CRPR—supportive				–	−.16	6.01	.40	5.00	6.63
5. CRPR—overprotective				–		3.54	.60	2.36	5.00

* $p < .05$, two-tailed; ** $p < .01$, two-tailed; ^{t} $p < .10$

were conducted to examine the individual and interactive contributions of maternal shyness–anxiety and maternal baseline RSA to the three parenting scores; child age and gender were controlled for in all analyses give that parents alter their parenting practices based on these child characteristics (Collins and Madsen 2003; Leaper 2002, 2013). Predictor variables in the regression analyses were centered prior to computing the interaction term, and centered values were used in the regression models. The predictors were entered as follows: child age and gender were entered on the first step; maternal social anxiety, maternal vagal tone, and the interaction between maternal shyness–anxiety and maternal vagal tone were entered on the second step.

Results

The model predicting supportive parenting approached significance (adj$R^2 = .092$, $\Delta F(3, 60) = 2.67$, $p = .06$). The presence of a negative beta weight ($\beta = -.25$) indicated that mothers who were more shy–anxious mothers tended to be less supportive; maternal vagal tone and the interaction between maternal shyness–anxiety and vagal tone were not significant predictors of supportive parenting (Table 2).

The model predicting maternal restrictive parenting was not significant, adj$R^2 = -.06$, $\Delta F(3, 60) = .05$, *ns*; specifically, maternal shyness–anxiety, maternal vagal tone, and the interaction between the two were not significant predictors of restrictive parenting (Table 2).

The model overprotective parenting was significant, adj$R^2 = .16$, $\Delta F(3, 60) = 3.39$, $p = .02$). The interaction between maternal baseline vagal tone and shyness–anxiety significantly predicted overprotective parenting. This interaction was explored following recommendations of Cohen et al. (2003); specifically, RSA was modeled at low (1 *SD*) and high (+1 *SD*) levels (see Fig. 1). The simple slope was significant for low RSA ($\beta = .50$, $p < .001$), but not high RSA ($\beta = -.11$, *ns*). Thus, mothers who exhibited high levels of shyness–anxiety and had lower vagal regulation reported the highest levels of overprotective parenting. In addition, there was a simple effect in the prediction of overprotective parenting by maternal shyness–anxiety. The presence of a positive beta weight indicated that mothers who were more shy–anxious reported more overprotective parenting ($\beta = .24$); the association between maternal vagal tone and overprotective parenting was non-significant (Table 2).

Discussion

The primary purpose of this study was to examine the links between maternal shyness–anxiety and parenting practices by examining the moderating role of maternal parasympathetic regulation. Consistent with previous reports (e.g., Coplan et al. 2008), more shy–anxious mothers were more overprotective and tended to be less supportive of their preschool-aged children. Importantly, the relation between

Table 2 Predictions of parenting practices from maternal shyness–anxiety and baseline RSA

	Overprotective			Supportive			Restrictive		
Predictor	ΔR^2	β	*t*	ΔR^2	β	*t*	ΔR^2	β	*t*
Step 1									
Age	.090^{t}	.09	.78	.051	.23	1.83^{t}	−.01	.04	.29
Gender[a]		.28	2.29*		−.03	−.27		−.12	−.95
Step 2									
Shyness–anxiety	.13	.24	2.08*	.11^{t}	−.25	−2.03*	.02	.009	.07
RSA		−.05	.38		.11	.91		−.04	−.31
Shyness–anxiety × RSA		−.27	−2.30*		.13	1.05		−.006	−.05

* $p < .05$, two-tailed; ^{t} $p < .10$

[a] Gender: 1 = male; 2 = female

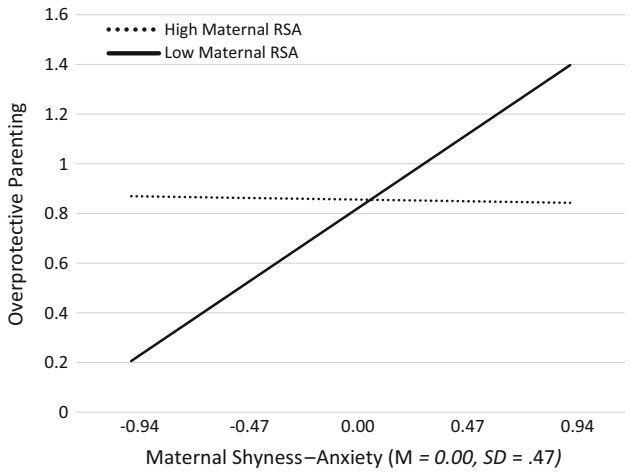

Fig. 1 Maternal overprotective parenting as a function of maternal shyness–anxiety at levels of low and high baseline RSA. Simple slopes were significant only for low RSA ($\beta = .50$, $p < .001$; high RSA: $\beta = -.12$, *ns*)

social anxiety and overprotection was tempered by maternal baseline RSA, as it was only when mothers had relatively weak parasympathetic regulation of arousal that maternal shyness–anxiety predicted overprotective parenting. Conversely, maternal shyness–anxiety was not related to overprotection when mothers had more robust parasympathetic regulatory capacity; mothers with higher RSA displayed average levels of overprotection, regardless of their shyness–anxiety. Thus, those mothers who are shy–anxious and emotionally dysregulated appear to be most likely to engage in intrusive parenting.

We did not posit specific hypotheses regarding the prediction of restrictive parenting from maternal shyness–anxiety given that previous research has yielded mixed findings when examining the link between clinical social anxiety and behavioral control. Therefore, the fact that the model predicting restrictive parenting was non-significant was not surprising and provides further evidence of the specificity of relations between maternal shyness–anxiety and mothers' use of psychologically controlling practices with their children. However, it is curious that the interaction between maternal shyness–anxiety and maternal vagal regulation did not predict supportive parenting. Indeed, it seems likely that mothers low in shyness–anxiety and good at regulating arousal would engage in more supportive, sensitive parenting than mothers who are high in anxiety and poor at regulating emotions. It may also be that in non-clinical, middle class samples parents report relatively high levels of supportive, warm parenting. This appears to be the case in this sample.

It is noteworthy that baseline RSA was not directly associated with parenting. Indeed, it was the interaction between shyness–anxiety and RSA that influenced parenting. Thus, it may be that mothers who are both prone to experiencing shyness–anxiety and who have a limited capacity for physiological self-regulation of arousal view the typical tasks of childhood as potentially threatening. They could be unduly concerned about situations that present developmentally normative challenges that children should be able to handle (e.g., encountering unfamiliar peers), with some effort. Perceiving such contexts to be distressing, shy–anxious and poorly regulated mothers might preemptively intervene to shelter their children from potentially difficult experiences. Although perhaps carried out with good intentions, maternal overprotection prevents children from attempting to master these challenges themselves, thereby undermining children's development of autonomy and emotional competence (Fabes et al. 2002; Hastings et al. 2010; Rubin et al. 2010). Thus, the delineation between psychological and behavioral control of children was crucial for identifying this pattern (Murray et al. 2012). Behavioral control may extend from factors other than maternal shyness–anxiety and RSA, such as negative parental belief systems about child behavior and irritability (Coplan et al. 2002; Hastings and Rubin 1999).

In addition, in a preliminary investigation with the same sample (Root et al. 2011), vagal suppression during four emotion films (happy, fear, sad, anger) was also examined (suppression scores were computed by subtracting vagal tone during the emotionally-evocative segment from baseline). Importantly, vagal suppression during the emotion films moderated the relation between shyness–anxiety and overprotective parenting in a similar fashion as baseline vagal tone did herein. However, these associations were no longer significant when baseline vagal tone was accounted for in the models. Thus, it may be that trait regulatory ability (baseline RSA) is key in tempering the relation between shyness–anxiety and maladaptive parenting. However, future studies should focus on examining maternal RSA suppression in child-rearing contexts (i.e., measure maternal RSA during parent–child interactions) rather than in response to an emotionally evocative stimulus.

Moreover, maternal physiological regulation at baseline did not directly affect mothers' report of parenting. Previous research has indicated that changes in vagal regulation in response to challenge have some effects on parenting (e.g., Mills-Koonce et al. 2007). Thus, the null findings herein may be attributable to the use of a baseline measure of cardiac vagal tone. It is also possible that the relatively short interval of baseline data collected may have contributed as other studies have indicated direct relations between resting RSA and parenting when baseline vagal tone was assessed for longer intervals (e.g., Perlman et al. 2008). Moreover, the reliability for the parenting scales, although consistent with previous work with this instrument (Hastings and Rubin 1999), was moderate.

It should be recognized that this study did not directly test causal models of the determinants of parenting. Moreover, mothers reported on both shyness–anxiety and parenting behaviors so there might have been shared method variance in the associations documented. Therefore, future studies should replicate a study of this ilk with observed parenting behaviors where parenting can be assessed in the moment. In addition, it seems that further examinations with experimental or repeated-measures longitudinal designs that can begin to test the causal contributions of parental intrapersonal traits to socialization are a logical next step. It is also important to note that the magnitude of the effects detected in the prediction of overprotection were not large. Thus, the findings should be interpreted with some caution. It may be that a better understanding of these processes would be obtained from examining maternal and child vagal co-regulation. Indeed, previous work has suggested that mother–child physiological synchrony (or asynchrony) may be a key to better predicting sensitive parenting (Moore et al. 2009). Moreover, we did not examine these processes in a clinical sample, and it is likely that physiological regulation also moderates the relation other types of anxiety/psychopathology and parenting practices. There is some work indicating that parents with generalized anxiety disorder also demonstrate maladaptive parenting behaviors (e.g., Budinger et al. 2013). Thus, it may be prudent for future studies to examine these processes in clinical samples. It is also important to note that the examination of these processes in fathers is imperative (e.g., Bogels et al. 2008), as is the consideration of how child characteristics interact with parental traits to shape family interactions and relationships (e.g., Schrock and Woodruff-Borden 2010).

Researchers should also consider examining children's dispositional traits (i.e., children who are inhibited) as it is well-documented that children's own traits influence the way caregivers interact with them (e.g., child effects; Bell and Chapman 1986; Crockenberg 1987). Investigations (e.g., Schrock and Woodruff-Borden 2010) focused on the relation between maternal anxiety and parenting have shown that children's anxiety status (i.e., if children themselves were anxious) was an important moderator. Furthermore, it seems a logical next step would be to examine the impact of maternal shyness–anxiety, maternal physiological regulation, and parenting practices on children's development.

In conclusion, our findings contribute to the literature on the determinants of parenting by providing evidence for the importance of examining physiological markers of parents' emotion regulation, as well as distinguishing between behavioral and psychological control. Finding that shy–anxious mothers with strong parasympathetic self-regulatory capacity were not prone to being overprotective might point to another option for parent-training programs designed to prevent children's anxious difficulties. Fostering emotion regulation in these parents might help them to avoid using the forms of sheltering and limiting behaviors that interfere with the development of children's autonomy and competence.

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