From expecting to experiencing

The role of parenting self-efficacy in the transition to parenthood

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Parenting self-efficacy predicts perceptions of infant negative temperament characteristics, not vice versa

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Abstract

Infant temperamental characteristics have been found associated with decreasing Parenting Self-Efficacy (PSE) during the first year after birth, which has been generally interpreted as a child effect on the parent. To test direction of effects, PSE was assessed during the third trimester of pregnancy and twice after birth together with perceived infant temperament in a group of first-time pregnant women (N = 616). Cross-lagged path analysis showed that PSE, even when assessed prior to birth, predicted characteristics of infant negative temperament. Infant negative temperamental characteristics were concurrently, but not prospectively associated with decreased PSE. These findings indicate that perceptions of infant temperament may partly be shaped by parents’ self-perception, rather than the other way around.
Parenting self-efficacy, defined as “expectations parents hold about their ability to parent successfully” (Jones & Prinz, 2005, p. 342), is associated with parenting competence and child outcomes (for a review, see Jones & Prinz, 2005). Previous research has shown that parenting self-efficacy is also associated with children’s temperamental characteristics (e.g., Cutrona & Troutman, 1986; Lipscomb et al., 2011; Porter & Hsu, 2003): parents reported lower parenting self-efficacy when they perceived their children as more temperamentally difficult. This association might be explained by regarding infant negative temperament as negative performance feedback on the way parents try to take care of their children, with temperament being at the start of a negative cascade in the parent-infant relationship. However, given the cross-sectional designs of previous studies, the possibility cannot be excluded that parents with lower parenting self-efficacy tend to perceive more temperamental negativity in their children (Jones & Prinz, 2005), leading to the possibility that negative cascades may originate from parent-related factors. To test direction of effects, longitudinal associations between parenting self-efficacy and perceived temperamental characteristics were studied in the transition to parenthood.

According to Bandura (1977), self-efficacy is influenced by several sources, the most important of which is personal mastery experiences. When a person experiences success in a task, self-efficacy increases, whereas self-efficacy decreases after failure on a task. Several studies have supported this hypothesis (e.g., Bandura, 1982; Bandura, Reese, & Adams, 1982; Brezina & Topalli, 2012; Hernandez, Jimenez, & Martin, 2009). Personal mastery experiences have also been linked to self-efficacy in the parenting domain (de Montigny & Lacharite, 2005; Leahy-Warren & McCarthy, 2011). Studies have shown that parents with multiple children had higher parenting self-efficacy than parents with one child (Leahy-Warren & McCarthy, 2011). Also, parenting self-efficacy increased gradually over the first months after birth in first-time parents (Hudson, Elek, & Fleck, 2001; Porter & Hsu, 2003), consistent with the idea that higher parenting self-efficacy beliefs come with more experience.

After an infant is born, parents respond to the emotional state of their infant and use the infant’s cues to determine how successful they are in for example calming or exciting their infant. Infants differ in temperamental characteristics, which are defined as “constitutionally based individual differences in reactivity and regulation” (Rothbart, 1986, p. 356). Multiple dimensions of infant temperament have been identified, some of which are associated with positive behaviors, such as smiling and laughter, and some which are associated with more difficult behaviors, such as getting distressed by novel stimuli or limitations set by parents and crying inconsolably. Infants with more difficult temperamental characteristics are more likely to confront parents with signals that might be attributed by the parent as dissatisfaction with the parents’ responses (Bugental & Johnston, 2000). As a result, these parents may over time experience relatively lower parenting self-efficacy compared to parents who experience more satisfaction and positive affect of their infant.

Empirical studies on the concurrent association between parenting self-efficacy and infant temperamental characteristics showed that infant temperamental difficulties have a significant
negative association with mothers’ parenting self-efficacy (e.g., Cutrona & Troutman, 1986; Leerkes & Crockenberg, 2002; Teti & Gelfand, 1991). In addition to cross-sectional studies, three studies examined associations between parenting self-efficacy and infant temperamental characteristics at multiple time points. A study by Porter and Hsu (2003) on early parenthood showed that infant temperament was negatively associated with parenting self-efficacy at one and three months post partum. Gross, Conrad, Fogg and Wothke (1994) examined a longitudinal model on how maternal depression and perceived toddler temperament affected mothers’ parenting self-efficacy in two cohorts, that started either one or two years post partum. They found that negative temperament characteristics were concurrently associated with parenting self-efficacy at three time points over the course of one year. However, neither Gross et al. (1994) nor Porter and Hsu (2003) reported lagged associations between parenting self-efficacy and perceived child temperament and, therefore, no indications regarding the possible direction of this association can be deduced from their results. Lipscomb et al. (2011) assessed parenting self-efficacy, perceived child negative emotionality, and overreactive parenting in parents at 9, 18, and 27 months post partum. They showed that parents reporting a larger increase in child negative emotionality reported a larger decrease in parenting self-efficacy over this period. However, this study aimed to study co-occurring developmental processes, leaving aside direction of effects as well.

Although it has not been studied before, the question of directionality of the association between parenting self-efficacy and child temperamental characteristics has implications for knowledge on the underlying mechanisms in the adaptation to parenthood and for the design of prevention and intervention programs. Even though perceived infant negative temperament is likely as a source of parenting self-efficacy based on Bandura’s theory (1977), the remarkable finding by Lipscomb et al. (2011) that higher initial negative emotionality predicted an increase in parenting self-efficacy suggests that the linkages are complex. Other mechanisms linking perceived temperament and parenting self-efficacy may therefore be considered. Based on findings that parents with low parenting self-efficacy were less competent at parenting (Jones & Prinz, 2005), low parenting self-efficacy may indirectly contribute to increasing problems in self-regulation, which might be experienced by parents as difficult temperament (Bugental & Johnston, 2000). The association between parenting self-efficacy and infant temperament characteristics may be bidirectional, with effects of experienced temperament on parenting self-efficacy and effects of parenting self-efficacy on experienced temperament as components of a cascading appraisal process, with ultimately consequences for the developing child (Bugental & Johnston, 2000). To tease out the likelihood of the possible pathways, it is necessary to investigate parenting self-efficacy and perceived temperament longitudinally, compare cross-paths, and, at least for parenting self-efficacy, to start measurement before children are born in order to control for child effects on parenting self-efficacy.
Figure 1. Hypothesized cross-lagged path model relating parenting self-efficacy to infant negative reactivity and infant soothability.

Note. PSE = parenting self-efficacy, NR = Negative Reactivity, Sooth = Soothability, T1 = 32 weeks of pregnancy, T2 = 3 months after birth, T3 = 12 months after birth.

As depicted in Figure 1, the hypothesis was tested that higher infant negative reactivity and lower infant soothability, two characteristics of a difficult temperament, would be concurrently associated with lower parenting self-efficacy at both 3 and 12 months post partum. Furthermore, it was hypothesized that parenting self-efficacy during pregnancy and at 3 months after birth would be predictive of infant negative reactivity and infant soothability at 3 months after birth and at 12 months after birth. It was also hypothesized that infant negative reactivity and infant soothability at 3 months after birth would be predictive of parenting self-efficacy at 12 months after birth. Because studies have shown that heightened maternal depressive symptoms are associated with both lowered parenting self-efficacy and heightened perceived negative reactivity (e.g., Gross et al., 1994), maternal depressive symptoms were included in the analyses to control for the effects of this potential confounder.

Method

Participants

Participants were 616 women (age 15 - 43 years, $M = 30.61$, $SD = 4.15$) who were pregnant with their first child at the beginning of the study. Based on their parents’ country of birth, 86% of the participants were Dutch. Of the remaining 14% of participants, 36% had a non-Western background. Participants were highly educated: 71% of the women finished higher education (Bachelors or Masters degree) compared with 32% of the general female Dutch population (Bureau of Statistics Netherlands, 2011). Of all women, 43% were married, 53% were cohabiting with their partner, 2% were single, and 2% did not live with their partner. Boy/girl ratio born in the study was 50:50.
Procedure
Participants were recruited via midwifery practices and the research website to take part in a longitudinal study from early pregnancy until one year after birth. After obtaining informed consent, women filled out questionnaire packages at approximately 32 weeks of pregnancy ($M = 32.25$ weeks, $SD = 2.01$), at 3 months after birth ($M = 3.05$, $SD = 0.37$), and at 12 months after birth ($M = 12.16$, $SD = 0.54$). Parenting self-efficacy and depressive symptoms were measured at all time points, whereas questionnaires on infant temperament were added post partum. Permission for this study was granted by the Medical Ethics Committee of the VU University Medical Center.

Questionnaires were sent back to the research facility. If questionnaires were not received, participants were sent a reminder e-mail and contacted several times by telephone. Questionnaires were included when filled out before birth (prenatal measurement), before 6 months post partum (3 months measurement), and before 15 months post partum (12 months measurement). When questionnaires were filled out too late, data were considered ‘missing’ in the analyses.

Measures
Parenting self-efficacy. Parenting self-efficacy was measured with a Dutch translation of the Maternal Self-Efficacy in the Nurturing Role Questionnaire (SENR; Pedersen, Bryan, Huffman, & Del Carmen, 1989). The SENR consisted of 16 items measured on a 7-point Likert scale ranging from 1 (Not at all representative of me) to 7 (Strongly representative of me). All items were statements regarding feelings of competence in caring for an infant, such as “I feel I can catch on quickly to the basic skills of caring for my child” and “I wonder if I really can understand my baby’s needs”. Scores on all items were summed to obtain a total score, with a higher score reflecting higher parenting self-efficacy. Two versions of the SENR were used to measure prenatal and postnatal parenting self-efficacy. Items on the prenatal and postnatal versions of the SENR were identical except for minor reframing to reflect expectations in the prenatal version and actual experiences in the postnatal version. Both versions of the SENR have been used in previous research and test-retest reliability and internal consistency of the scales were moderate to high (Hsu & Sung, 2008; Pedersen et al., 1989; Porter & Hsu, 2003). Internal consistency (Cronbach’s alpha) in the current study ranged from .86 to .89.

Infant temperament. Infant temperament was measured with the Dutch version of the Infant Behavior Questionnaire (IBQ; Rothbart, 1981). The IBQ consisted of 94 items measured on a 7-point Likert scale. All items contained judgments of the infants behavior during the last two weeks, such as “During feeding, how often did the baby fuss or cry when he or she had enough to eat?” and “When introduced to a strange person, how often did the baby cling to parent?”. Scores on scale items were averaged to form six scale scores: Distress to limitations (20 items), Distress and latency to approach sudden or novel stimuli (16 items), Smiling and Laughter (15 items),
Soothability (11 items), Activity level (17 items), Duration of Orienting (11 items). Four items were not included in the scales. Three scales were used in the current study: Distress to limitations, Distress and latency to approach sudden or novel stimuli, and Soothability. The subscales Distress to limitations and Distress and latency to approach sudden or novel stimuli were averaged to form the Negative Reactivity composite score, as was suggested by Rothbart (1986). These scales were chosen based on their similarity with scales used in previous longitudinal studies, such as the scale used by Lipscomb et al. (2011) to measure fussiness, difficulty to soothe, and irritability and the scales used by Gross et al. (1994) measuring withdrawal, adaptability, and mood. The IBQ is a widely used measure of infant temperament with high internal consistency (Leerkes & Crockenberg, 2002; Rothbart, 1981, 1986). Internal consistency (Cronbach’s alpha) in the current study was between .78 and .87. Negative Reactivity and Soothability were not correlated at both 3 months after birth ($r = .01, p = .85$) and 12 months after birth ($r = -.09, p = .06$), suggesting that these scales reflected different components of infant temperament.

**Maternal depressive symptoms.** Maternal depressive symptoms were measured at all time points with the Dutch version of the Beck Depression Inventory-II (BDI-II; Beck, Erbaugh, Ward, Mock, & Mendelsohn, 1961; Beck, Steer, & Brown, 1996; Van der Does, 2002). The BDI is a 21-item questionnaire measured on a 4-point Likert scale. Items on the scale represent various symptoms of depression and for each symptom, 4 graded statements can be chosen to reflect the absence or presence and severity of these symptoms. Scores per item range from 0 (absence of symptom) to 3 (severe symptom presence). The BDI is widely used as a self-report questionnaire in research of non-clinical samples, but has also proven valid in distinguishing clinical from non-clinical cases of depression (Beck et al., 1961). Furthermore, the BDI-II has been validated in a sample of pregnant women and has high external validity with other frequently used depression screens used in the postpartum period (Van der Does, 2002). Validity and reliability of the BDI-II have been previously demonstrated (Osman et al., 1997). Internal consistency (Cronbach’s alpha) in the current study ranged from .82 to .88.

**Data analysis**
The analyses for this study were completed using MPlus 6.11 (Muthén & Muthén, 1998-2010). A cross-lagged panel design within a structural equation modeling framework was employed to assess the associations between parenting self-efficacy and infant temperamental characteristics as outlined in Figure 1. A model with autoregressive paths (in which parenting self-efficacy, negative reactivity, and soothability were regressed on their prior values to study stability of these variables over time) and cross-sectional correlations between variables at the same time point was fitted. In addition, cross-lagged paths between variables at different times (e.g., parenting self-efficacy at 32 weeks of pregnancy to negative reactivity at 3 months after birth) were allowed for. Significant cross-lagged paths can be interpreted as indicative of an effect of parenting self-efficacy at 32 weeks of pregnancy on change in infant negative reactivity at
3 months. Cross-lagged models therefore make it possible to draw inferences about temporal relations between variables.

Three model fit indices were used: (1) the comparative fit index (CFI; Bentler, 1990), which indicates good fit if values are above .95, (2) the standardized root mean square residual (SRMR), with values less than .08 indicating good model fit, and (3) the root mean square error of approximation (RMSEA), which indicates good fit if values are below .06 (Hu & Bentler, 1998).

To account for the effects of potential third variables, demographic variables (maternal age, education, marital status, immigrant status, and infant gender) were added to the model as covariates. Maternal scores on the BDI were added as covariates for each concurring time point. All cases were retained using the Full Information Maximum Likelihood (FIML) method of handling missing data, which has shown to be the better choice in handling missing data in structural equation modeling (Enders & Bandalos, 2001). None of the variables had more than 11% missing data.

Results

Preliminary analyses

Although FIML allowed all cases to be retained in the model, women with complete data (N = 521) were compared with women with incomplete data (N = 95) on all study variables and demographic variables to assess whether selective attrition had occurred. Responders differed from non-responders in only one aspect: responders were more highly educated than non-responders (% Bachelor or Masters degree: 73% versus 56%, χ² = 13.74, df = 2, p < .01).

Table 1 shows the means and standard deviations for parenting self-efficacy, infant negative reactivity, infant soothability, and the control variables. Mean scores were in line with scores found with the same questionnaires in other studies with community samples (Huffman et al., 1998; Porter & Hsu, 2003; Rothbart, 1986). Repeated Measures ANOVA showed that parenting self-efficacy significantly differed between time points (Wilks λ = .72, F(2,536) = 106.42, p < .001, η² = .28). Post hoc analyses indicated that parenting self-efficacy increased significantly from 32 weeks of pregnancy to 3 months after birth (F(1,537) = 66.47, p < .001) and from 3 to 12 months after birth (F(1,537) = 45.50, p < .001). T-tests showed an increase in negative reactivity as well (t(538) = 11.74, p < .001), whereas soothability remained stable (p = .22). Correlations between study variables are also shown in Table 1. Correlations between depressive symptoms and parenting self-efficacy were significant (between r = -.29 and r = -.48, all p < .01), as were correlations between depressive symptoms and infant negative reactivity (r = .15 and r = .17, both p < .01). Depressive symptoms were not correlated with soothability (r = .00, r = -.01, both p > .74).
Table 1. Descriptive statistics and correlations among parenting self-efficacy, infant negative reactivity, infant soothability, and control variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
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<tr>
<td>1. PSE T1</td>
<td>91.97</td>
<td>10.61</td>
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<td>2. PSE T2</td>
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<td>3. PSE T3</td>
<td>97.40</td>
<td>9.62</td>
<td>.61**</td>
<td>.74**</td>
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<td>4. NR T2</td>
<td>2.61</td>
<td>0.54</td>
<td>-.15**</td>
<td>-.27**</td>
<td>-.19**</td>
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<td>5. NR T3</td>
<td>2.92</td>
<td>0.59</td>
<td>-.21**</td>
<td>-.25**</td>
<td>-.30**</td>
<td>-.46**</td>
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<td>6. Sooth T2</td>
<td>4.73</td>
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<td>.19**</td>
<td>.17**</td>
<td>.14**</td>
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<td>7. Sooth T3</td>
<td>4.82</td>
<td>1.03</td>
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<td>.11**</td>
<td>.11**</td>
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<td>.36**</td>
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<td>8. BDI T1</td>
<td>8.88</td>
<td>4.76</td>
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<td>-.21**</td>
<td>-.22**</td>
<td>.10*</td>
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<td>-.34**</td>
<td>-.43**</td>
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<td>.45**</td>
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<tr>
<td>11. Age T1</td>
<td>30.61</td>
<td>4.15</td>
<td>-.09*</td>
<td>-.15**</td>
<td>-.11**</td>
<td>.04</td>
<td>-.01</td>
<td>-.01</td>
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Note. PSE = parenting self-efficacy, NR = Negative Reactivity, Sooth = Soothability, BDI = Beck Depression Inventory, T1 = 32 weeks of pregnancy, T2 = 3 months after birth, T3 = 12 months after birth. *p < .05, **p < .01

Interrelationships between parenting self-efficacy, infant negative reactivity, and soothability

The cross-lagged panel model as outlined in Figure 1 was fitted to the data. Model fit was good (CFI = .99, SRMR = .03, RMSEA = .04). The results are depicted in Figure 2. Autoregressive paths indicated significant stability in parenting self-efficacy, infant negative reactivity and infant soothability over time. Concurrent correlations between infant negative reactivity and parenting self-efficacy and between infant soothability and parenting self-efficacy at both time points were also significant.

Figure 2. Cross-lagged path model results for parenting self-efficacy, infant negative reactivity and infant soothability.

Note. PSE = parenting self-efficacy, NR = Negative Reactivity, Sooth = Soothability, T1 = 32 weeks of pregnancy, T2 = 3 months after birth, T3 = 12 months after birth. *p < .05, **p < .01, ***p < .001
This indicates that higher infant negative reactivity and lower soothability were associated with lower concurrent parenting self-efficacy. Cross-lagged paths showed that higher parenting self-efficacy at 32 weeks of pregnancy and at 3 months after birth were associated with lower consequent ratings of infant negative reactivity. Higher parenting self-efficacy at 32 weeks of pregnancy was also associated with higher ratings of soothability at 3 months after birth. However, infant negative reactivity and infant soothability at 3 months after birth were not significantly associated with parenting self-efficacy at 12 months after birth.

**Discussion**

The cross-lagged results for parenting self-efficacy and perceived infant temperament in the transition to parenthood did not support an effect of infant temperament on parenting self-efficacy, but an effect of parenting self-efficacy on infant temperament. Not only did prenatal parenting self-efficacy predict perceived infant negative reactivity and soothability, parenting self-efficacy at 3 months after birth also predicted changes in negative reactivity from 3 to 12 months, not the other way around. These findings suggest that parent factors may drive a turn for the better or the worse in the perception of infants’ temperament within the first year. If infant characteristics do influence parents’ self-efficacy, it is unlikely that this influence is mediated by maternal temperament perceptions.

A recent study found that mothers with prepartum depression perceived their children as displaying more negative temperamental characteristics post partum (Kerstis, Engstrom, Edlund, & Aarts, 2013). The current study controlled for maternal mood, and therefore parenting self-efficacy and perceived infant temperamental characteristics may be regarded as additional factors that feed into the appraisals and cognitions that develop in the transition to parenthood. The mechanisms behind the association between parenting self-efficacy and perceived temperament might be similar to those underlying the results of the study by Kerstis et al. (2013). Perceptions are altered by mood state, making an easy task such as getting up in the morning seem challenging for people with negative affect and cognitions. Low parenting self-efficacy might cause similar alterations in the perceptions of tasks related to parenting, when parents perceive their children in terms of their own expected parenting abilities. An important next step would be to investigate to what extent individual differences in these cognitive adaptations to parenthood are related to infant development.

Several limitations of the current study should be noted. Although the study focused on the transition to parenthood, participants were only new mothers and not fathers, making it impossible to generalize the results of the study to all new parents. Lipscomb et al. (2011) showed that, even though fathers reported slightly lower parenting self-efficacy, mothers and fathers exhibited similar patterns in associations between parenting self-efficacy and infant negative emotionality. Whether similar processes can also be found longitudinally remains to be investigated. Another limitation was that, although demographic variables and maternal
depressive symptoms were controlled for in the analyses, it is impossible to eliminate effects of all potential third variables that could have influenced the association between parenting self-efficacy and perceived infant temperament, such as relationship satisfaction and indices of the co-parenting relationship. Therefore, causal effects should be discussed with caution.

The current study showed that mothers generally gain in the confidence about their abilities to help their infant regulate and calm their feelings during the transition to parenthood. The findings also suggest that, even over time, characteristics of infant temperament are perceived in more challenging terms by women with lower parenting self-efficacy, whereas infant temperamental characteristics do not appear to be used as a source of parenting self-efficacy in the long term. Because effects were already found from prenatal parenting self-efficacy, causes as well as avenues for interventions may be sought in pre-existing factors in the pregnant women or their situation. The findings of the current study therefore strengthen the case for early interventions and support for women who experience deteriorating confidence in themselves as parents, in order to prevent that their children may experience the consequences of being increasingly perceived as temperamentally difficult (Scott & Dadds, 2009).

References


Porter, C. L., & Hsu, H. C. (2003). First-time mothers’ perceptions of efficacy during the transition to motherhood: Links to infant temperament. *Journal of Family Psychology,* 17(1), 54-64. doi: 10.1037/0893-3200.17.1.54


