

FEAR AND POSITIVE AFFECTIVITY IN INFANCY: CONVERGENCE/DISCREPANCY  
BETWEEN PARENT-REPORT AND LABORATORY-BASED INDICATORS

By

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A thesis submitted in partial fulfillment of  
the requirements for the degree of  
MASTER OF SCIENCE IN PSYCHOLOGY

WASHINGTON STATE UNIVERSITY  
Department of Psychology

DECEMBER 2004

To the Faculty of Washington State University:

The members of the Committee appointed to examine the thesis of JULIA MARMION find it satisfactory and recommend that it be accepted.

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## ACKNOWLEDGEMENT

I would like to thank Dr. Maria Gartstein for her support and advice.

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Abstract

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December 2004

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This study examined convergence between temperament indicators derived via parent-report and those obtained in the context of structured laboratory observations conducted in infancy. Discrepancies between scores resulting from these methodological approaches, the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003) and a modified version of the prelocomotor LAB-TAB, were examined in an attempt to explain divergent results by considering parent, child, and interactional factors (e.g., parent depression and temperament, reciprocity of parent-child interactions). Convergence between the two sources of information was hypothesized; however, discrepancies were also expected. Thus, it was also hypothesized that a number of variables deemed important in understanding potential bias in parent-report would explain discrepancies between scores based on parent-report and laboratory observations. This study was aimed at examining whether increased maternal depression and low parenting self-efficacy were related to higher levels of Fear and decreased Positive Affectivity scores on the IBQ-R, relative to the scores derived from the laboratory procedure. The sample consisted of 76 families of infants who were 6, 9, and 12 months of age. Parents completed the IBQ-R and infants participated in ten laboratory episodes that assessed temperament characteristics parallel to the questionnaire (i.e., the prelocomotor LAB-TAB procedure was modified to be more

consistent with the IBQ-R). Data reflecting dimensions of Fear and aspects of Positive Affectivity were examined in this study.

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# CHAPTER ONE

## INTRODUCTION

### **Temperament**

Temperament has been discussed as far back as the time of ancient Greece, when it was linked to bodily fluids (Derryberry & Rothbart, 1984). Since then diverging views of what temperament truly is and what traits make up temperament have emerged. There is a consensus that temperament encompasses a number of domains, and is largely determined by an interplay of several traits (Goldsmith et al., 1987). However, thus far there has been little agreement regarding specific traits that make up the temperament of the individual (Goldsmith et al., 1987). The dimensions of activity level and emotionality were the only ones that major researchers could completely agree on in a roundtable discussion (Goldsmith et al., 1987). In general, however, temperament can be defined as “one’s disposition toward experiencing and expressing emotions, as well as one’s general level of activity and attentional control of emotions and actions” (Gartstein & Rothbart, 1999, p. 657).

Although the construct of temperament has been explored for a long time, the study of temperament in children, focusing on its developmental course, represents a relatively recent endeavor. Rothbart and Bates (1998) write that research by child developmental scientists in the 1920s and 30s contributed to the research by later child temperament researchers. Shirley was one of these researchers. Shirley (1933) closely studied the development of 25 infants over a 2 year period. Her comprehensive research encompassed the locomotor, intellectual, and personality development of the infants. Thomas and Chess are perhaps the two most prominent early researchers of temperament in children; studying infant temperament by interviewing

parents, subsequently deriving nine temperament dimensions (Thomas, Chess, Birch, Hertzig, & Korn, 1963). These researchers also formulated the concept of “goodness-of-fit” (Goldsmith et al., 1987). The idea behind this concept is that the child will develop more successfully in an environment that is consistent with that child’s temperament. On the other hand, if the expectations from the environment are a poorly matched with the child’s temperament, a more negative developmental outcome would be expected (Goldsmith et al., 1987). Thus, Thomas and Chess can be thought of as emphasizing the importance of studying temperament in context.

Rothbart and Derryberry (1981), also two prominent researchers in the field of temperament, define temperament as “constitutional differences in reactivity and self-regulation” (p. 37). Their view encompasses the behavioral as well as the biological elements of temperament (Rothbart & Derryberry, 1981). Reactivity is defined as the “characteristics of the individual’s reaction to changes in the environment, as reflected in somatic, endocrine, and autonomic nervous systems” (p. 37). Self-regulation is defined as the “processes functioning to modulate this reactivity, e.g., attentional and behavioral patterns of approach and avoidance” (p. 37). When Rothbart and Derryberry (1981) talk about the constitutional basis of temperament they refer to “the relatively enduring biological makeup of the organism influenced over time by heredity, maturation, and experience” (p. 37). Thus, in Derryberry’s and Rothbart’s view temperament is not completely stable, although they do expect some continuity (Rothbart & Derryberry, 1981). According to Rothbart and Derryberry (1981) as the infants grow older their self-regulative abilities are increasingly supported by the maturation of the forebrain. Self-regulation that is related to one’s attentional capacity has been referred to as Effortful Control (Rothbart, Derryberry, & Posner, 1994). This is the aspect of Rothbart’s temperament framework that is studied by Kochanska (e.g., Kochanska, Murray, & Harlan, 2000; Kochanska,

Coy, & Murray, 2001). Kochanska et al. (2001) found that effortful control was related to the children's ability to follow their mothers' instructions in a self-regulative way, when they were asked to refrain from doing a certain task. One of the tasks used in the study to assess self-regulative abilities in the child involved the mother instructing her child to refrain from playing with some easily accessible toys. If the child looked at the toys but did not touch them, turned away from the toys or vocalized that he/she would not touch the toy Kochanska et al. (2001) coded this behavior as committed compliance. Hence, committed compliance is a form of self-regulative behavior because the child cannot engage in the activity that would be most natural to the child which is playing with the attractive toy. This committed compliance was related to effortful control. Effortful control in this study was assessed by tasks requiring the child to delay a response, slow down, suppress or initiate activity to signals, lower his/her voice, and to pay attention in tasks that required the child to focus on the subdominant feature of a stimulus rather than the dominant one. Thus, research conducted by Kochanska has largely supported Rothbart's and Derryberry's framework in demonstrating a relationship between effortful control and self-regulated behavior. Kochanska et al. (2001) noted that committed compliance increased from 14 to 33 months of age, which is consistent with Rothbart's and Derryberry's view that self-regulative abilities mature as the child grows older (Rothbart & Derryberry, 1981). Kochanska et al. (2000) also found evidence that effortful control emerges late in the first year of life and becomes more salient over time.

Kagan (1998) describes the reaction of children in response to new and unfamiliar stimuli with the terms of being inhibited or uninhibited. An inhibited child exhibits an avoidant style in a wide variety of contexts (Kagan, 1998). Even when the child can learn to overcome this avoidant pattern in certain situations, she/he will most likely retain this tendency in other

contexts (Kagan, 1998). Kagan (1998) has stated that the inhibited versus uninhibited behavior, which manifests itself around 12 months of age, is related to reactivity in infancy. High reactive infants show more distress, along with motor activity, in response to stimulation (Kagan, 1998). Low reactive infants, on the other hand, are less motorically active and less irritable (Kagan, 1998). Kagan (1998) has theorized that the amygdala in high reactive infants has a low threshold of excitability. Thus, it appears that behavioral inhibition is one mechanism capable of controlling child responses to environment stimuli, which first exerts its influence very early in life, and tends to be fairly pervasive throughout the different environments that a child subsequently encounters.

### **Development of Temperament**

Generally, we can say that temperament becomes more complex as the child matures, with the most dramatic changes occurring during infancy (Rothbart, 1989). In the newborn period the only components that can be assessed are Distress and Soothability, Orienting and Alertness, Activity, and finally Approach-Withdrawal (Rothbart, 1989). The Positive emotionality cluster of behaviors is absent during the newborn period, but it can be assessed by the time the infant is two to three months of age, intensifying throughout the first year of life (Rothbart, 1989). In early infancy Smiling and Laughter, Vocalizations, Stimulus Seeking and avoidance, as well as frustration develop (Rothbart, 1989). In the later part of infancy Inhibition of Approach, Effortful Control, and Fear arise (Rothbart, 1989). Effortful control continues to mature until after the preschool years (Rothbart, 1989).

Several aspects of temperament have a U-shaped developmental trajectory. One aspect of temperament that has been reported to develop accordingly is anger (Carranza, Perez-Lopez, Gonzalez, & Martinez-Fuentes, 2000). Reportedly, increasing abilities in attention shifting may

account for the reduction in anger responses occurring between the ages of 2 and 6 months (Johnson, Posner, & Rothbart, 1991). A second facet of temperament that has been reported to follow that trajectory during the first year of life is attentional orienting (Ruff & Rothbart, 1996). Decreased Duration of Orienting has been reported between the ages of 6 and 9 months, which was followed by an increase between 9 and 12 months (Carranza et al., 2000). It has been reported that the developing executive attention system may enhance the flexibility of orienting reactions toward the end of the first year (Posner & Rothbart, 1991).

Buss and Plomin (1975) have found that activity level rises throughout infancy. Fear, however, has been reported to grow during the second half of the first year of life (Carranza et al., 2000; Rothbart, 1986, 1988). This is the time when inhibition of approach toward novel and/or intense stimuli develops (Rothbart, 1988; 1994). Finally, Woroby (1989) reported that infants quickly become more proficient in their communication abilities during their first year. Hence, increased vocal reactivity may be a consequence of this development.

### **Assessment of Temperament in Infancy**

Several methods have been widely utilized in the assessment temperament in infancy. Parent reports, laboratory observations, as well as home observations have been used in the past. However, each of these approaches is associated with certain limitations. Kagan (1998), for example, has brought up several criticisms regarding the use of parent-report. Specifically, Kagan (1998) noted that parents tend to form a consistent disposition toward their child, although parents' prior experiences with the child may not have been that consistent. This disposition toward the child can bias parent reports. Kagan (1998) also mentioned that the English language is limiting when reporting certain experiences. There are times when expressions have to be chosen although they are inadequate, simply because we lack a better

expression for that experience. Another limiting factor of parent-report according to Kagan (1998) is that parents unwittingly make comparisons when rating their child. Thus, prior experiences of the parents often influence how they will rate their child. Parents may rate their child differently depending on how much knowledge they have about infant behavior, and how familiar they are with the behavior of other infants. Another criticism by Kagan (1998) that is related to language is that different people interpret the same word in differently. All these criticisms raised by Kagan (1998) clarify that parents cannot be completely objective when reporting their infants' behaviors. However, these concerns can be at least partially addressed by careful construction and presentation of items, asking about only recently occurring events, and inquiring about concrete infant behaviors rather than asking the parents to make abstract or comparative judgments (Rothbart & Goldsmith, 1985). Rothbart (1981) also cautions us that parental report measures of temperament are related to the home environment of the child. Although methodological concerns related to potential sources of error are often raised in relation to caregiver report questionnaires (e.g., Kagan, 1994; 1998), these also extend to the laboratory observation measures (Goldsmith & Rothbart, 1991; Rothbart & Bates, 1998). Sources of observational error include those related to characteristics of the rater, effects of the measure on child behaviors, and interactions between rater characteristics and child behavior (Rothbart & Goldsmith, 1985).

Laboratory observations can also be problematic because only a limited set of behaviors can be evoked in this artificial setting, primarily due to the necessarily short time frame of the assessment. Additionally, carryover effects represent a significant threat when repeated testing is required (Rothbart & Bates, 1998). Carryover effects are a threat when the child's behavior becomes a function of the repeated assessments, rather than a reflection of the child's natural

reaction to the stimuli. Carryover effects can be differentiated from order effects that occur when the different testing tasks are given in the same order to all participants. Order effects can impact participants' performance on consecutive tasks, however, this potential confound can also be remedied by counter-balancing the different conditions (i.e., not presenting the different tasks in the same order to all the participants). Utilizing counter-balancing assures researchers that the observed effects are due to the specific tasks, and not the order in which the tasks were presented, since the participants differ in the order in which they complete the activities. Carryover effects cannot be prevented in such a way because they are caused by repeated testing in a particular area of functioning, causing participants to become familiar with the repeated tasks, and possibly learning about more adaptive responding. To reduce carryover effects alternative methods of assessing the same construct should be developed. The multi-method approach reduces the likelihood that it would systematically impact the results even when a participant becomes familiar with one of the tasks.

The novelty of the new environment may also affect the infant's behavior because the novelty may make the child wary/fearful, making the behavior exhibited in the lab not representative of the behavior shown in the home environment (Rothbart & Goldsmith, 1985). Thus, the child may be less likely to display positive affect. In addition, there is no one laboratory observation protocol that has been established as the "gold standard" (Rothbart & Bates, 1998) on the bases of research addressing reliability and validity of this methodological approach, rather, multiple structured observation procedures have been developed, and their use has varied widely across different laboratories. The Laboratory Temperament Assessment Battery (LAB-TAB) has been one of the more popular laboratory observation protocols, and its locomotor version for 12 to 18 months olds includes fearfulness episodes, anger proneness

episodes, pleasure episodes, interest/persistence episodes, and finally activity episodes. The fearfulness episodes include a big, novel remote control toy entering the room, an automatic toy dog racing toward the child, a stranger coming in and picking up the child, and the display of facial masks (Goldsmith & Rothbart, 1991). For the anger proneness episodes a gentle arm restraint is used, an attractive toy is placed behind a transparent barrier, the child is briefly separated from the mother, and the child is restraint in a car seat (Goldsmith & Rothbart, 1991). The interest/persistence episodes consist of looking at the task orientation while the child is playing with blocks, looking at interest and engagement when the child plays with toys that display lights and sounds, seeing whether the child is interested in a person that is not engaged with the child, and finally by studying the attention that the child pays to the repeated presentation of photographic slides (Goldsmith & Rothbart, 1991). Finally, activity episodes include the child's activity in a corral filled with large rubber balls, the child's manipulation of simple pegboard and shapeboard, fidgeting while the child watches video clips, and lastly the child's motor activity during free play (Goldsmith & Rothbart, 1991).

The prelocomotor version of the LAB-TAB assesses the same temperamental aspects as the locomotor version; however, this version was developed for 6-months-old infants (Goldsmith & Rothbart, 1996). Thus, the tasks have been adapted for a younger infant. Episodes used to assess fear include the rapid opening of a parasol in front of the infant, an unpredictable remote control toy approaching the infant, and a presentation of strange masks (Goldsmith & Rothbart, 1996). The anger/frustration episodes include gentle arm restraint by the parent, an attractive toy that is placed behind a barrier, a toy retraction by the mother, and the car seat restraint (Goldsmith & Rothbart, 1996). The joy/pleasure episodes are comprised of reactions to light and sound, a puppet game, a cognitive assimilation game with a pop-up bunny, and a modified peek-



a-boo game (Goldsmith & Rothbart, 1996). The interest/persistence episodes include playing with blocks, a person interest episode in which a strange person enters the room, and a presentation of slides (Goldsmith & Rothbart, 1996). Finally, the activity level episodes are comprised of playing with unfamiliar low intensity toys while lying on a blanket, being placed on a blanket without toys, and playing with toys in a basket while the child is sitting up (Goldsmith & Rothbart, 1996).

It becomes apparent that neither parental report, nor laboratory observations alone represent infallible assessment tools for the evaluation infant temperament. However, when using both methodological approaches together, demonstrating their convergence, a more representative and valid picture of the infant's behavior can be obtained. This construct-building approach enables researchers to study convergence between different sources of information, presumably reflecting temperament "true scores". Use of both the laboratory observations and the parental report measures also allows researchers to evaluate temperament from a multitrait-multimethod matrix perspective. This multitrait-multimethod matrix approach provides indicators of the discriminant, as well as the convergent validity, of temperament scores (Campbell & Fiske, 1959). This framework allows researchers to ensure that consistent indicators of each trait are provided by the different methodological approaches, and/or discern that a given temperament score is sufficiently different from the other attribute scores (Campbell & Fiske, 1959). For example, in order to demonstrate convergent validity for the trait of Smiling and Laughter we would need to show that similar information is being provided through the parent-report ratings and the behavioral observation indicators. Thus, if convergent validity exists, Smiling and Laughter assessed with the parental report measure should be significantly correlated with the Smiling and Laughter score derived on the bases of the laboratory

observation. On the other hand, to assess discriminant validity we need to examine whether Smiling and Laughter is meaningfully different from the other traits being assessed, Fear for instance. Discriminant validity can be established if Smiling and Laughter, as assessed by both measures (i.e., parent-report and laboratory observation), does not significantly correlate with the two sets of Fear scores.

### **IBQ-R (Infant Behavior Questionnaire-Revised)**

The IBQ was originally developed by Rothbart (1981). This questionnaire assessed Activity Level, Smiling and Laughter, Fear, Distress to Limitations, Soothability, and Duration of Orienting (Rothbart, 1981). Later, Rothbart (1986) also added a scale to assess Vocal Reactivity. Rothbart (1981) developed the measure to “study both developmental continuity and change in children’s patterns of reactivity and self-regulation as observed over time in the home” (p. 571). To avoid potential problems often associated with parental questionnaire measures Rothbart (1981) only asked parents about specific behaviors occurring during the previous week, and she did not ask parents to compare their infant to others. Internal Consistency for the IBQ ranged from .73 for Activity Level to .84 for Distress to Limitations and Soothability at 3 months and from .72 for Duration of Orienting to .84 for Activity Level at 9 months of age (Rothbart, 1981).

The IBQ was revised by Rothbart and Gartstein (2003), building on prior work with the IBQ, the Children’s Behavior Questionnaire (CBQ), and other relevant temperament research. A number of the scales from the CBQ were adapted for the IBQ-R, that is, restructured to provide developmentally appropriate information for infants between 3 and 12 months of age. These new scales included Approach, Falling Reactivity, High and Low Intensity Pleasure, Perceptual Sensitivity, and Sadness (Gartstein & Rothbart, 2003).

*Approach* was defined as positive excitement and rapid approach toward pleasurable activities. *Falling Reactivity* was defined as rate of recovery from peak distress, excitement, or general arousal, and reflects the infant's ability to regulate his or her own state. *High and Low Intensity Pleasure* both refer to enjoyment related to stimulus characteristics (i.e., high or low intensity, rate, complexity, novelty, and incongruity). [...]. *Perceptual Sensitivity* refers to the detection of slight, low intensity environmental stimuli, [...]. *Sadness* is defined as general low mood, or lowered mood and activity related to personal suffering, physical state, object loss, or inability to perform a desired action. (Gartstein & Rothbart, 2003, pp. 4-5)

Although Cuddliness/Affiliation was not included in the CBQ, this scale was nonetheless added to the IBQ-R, because of research indicating its importance in explaining child behavior problems later in childhood (Stevenson, Thompson, & Sonuga-Barke, 1996). The 14 IBQ-R scales loaded onto three factors, namely Negative Affectivity, Positive Emotionality/Surgency, and Orienting/Regulation (Gartstein & Rothbart, 2003). Sadness, Fear, Distress to Limitations, and Falling Reactivity all loaded onto the factor of Negative Affectivity (Gartstein & Rothbart, 2003). Positive Emotionality/Surgency consisted of High Intensity Pleasure, Perceptual Sensitivity, Vocal Reactivity, Activity Level, Approach, and Smiling and Laughter (Gartstein & Rothbart, 2003). Orienting/Regulation was defined by Low Intensity Pleasure, Cuddliness/Affiliation, Soothability, and Duration of Orienting (Gartstein & Rothbart, 2003). Reliability and validity of this parent-report instrument have been documented, with Cronbach's alphas ranging from .77 to .96 (Gartstein & Rothbart, 2003; Gartstein, Slobodskaya & Kinsht, 2003).

## **Temperament Laboratory Observation**

The Temperament Laboratory Observation (TLO) is based on the LAB-TAB, which was discussed earlier, and consists of 10 different episodes (Gonzalez, Gartstein, Carranza, & Rothbart, 2003). The observation parallels the IBQ-R in assessing such temperament dimensions as Negative Affectivity, Positive Emotionality/Surgency, and Orienting/Regulation (Gonzalez, Gartstein, Carranza, & Rothbart, 2003). First the session starts out with the warm-up, then play with toys, toy retraction, embrace with examiner, parent-child interaction, visual perceptual sensitivity, separation, peek-a-boo, auditory perceptual sensitivity, and it ends with the presentation of masks (Gonzalez, Gartstein, Carranza, & Rothbart, 2003). Both the warm-up, when a stranger approaches the child as well as the presentation of novel masks are supposed to elicit a fearful reaction from the child. The toy retraction episode is supposed to evoke anger and/or frustration in the infant. The peek-a-boo episode will help us to elicit positive emotions, while duration of orienting can be assessed in the play with toys episode. The embrace with examiner episode will help us to assess cuddliness. Scores derived from the TLO provide indices of threshold, latency, intensity, time to peak intensity, and recovery time for reactions that involve arousability of affect, motor activity, and related responses.

## **Maternal Depression**

It has been suggested that higher levels of depressive symptoms may lead to over-reporting of child behavior problems and subsequent increase in disagreement with other sources of information (Gartstein, Bridgett, Dishion, & Kaufman, 2003). Additionally, it has been reported that maternal perception of their child as temperamentally difficult was related to maternal depression (Whiffen, 1990). Whiffen (1990) also found in this study that parental disagreement concerning their child's temperament was increased when the mother had reported

depression. Other researchers have found that both depressed mothers as well as their partners reported their child as having a more “difficult” temperament (Edhborg, Seimyr, Lundh, & Widström, 2000). Neither one of these studies used any other measures of assessing child temperament than parental report. This is significant because we are unable to tell from these studies whether the children of depressed mothers truly have more behavior problems, or whether there is a maternal bias leading to over-reporting of problems experienced by the child. The author of a meta-analysis of 17 studies examining the relationship between infant temperament and postpartum depression reported a moderate relationship between these two factors (Beck, 1996). However, this researcher warned the readers that the results be interpreted with caution given that most studies used maternal reports of infant temperament, which is a problematic because these reports may have been distorted due to the mothers’ depressive symptoms (Beck, 1996). Gartstein et al. (2003) approached this problem by not only collecting reports from the mother but also from the father, a teacher, and from the child as well. They found that mothers with an increased depressive symptomatology over-reported behavior problems in their children. Interestingly, they would over-report externalizing problems for their sons and internalizing problems for their daughters. Hence, it is of interest to find out whether depression in the mother may be associated with divergent ratings between the IBQ-R and the laboratory observation caused by the over-reporting of problematic behavior in the child by the mother.

### **Maternal Feeling of Efficacy**

Previous research has found that maternal self-efficacy, assessed through a self-report measure, was negatively related to infant difficulty, also evaluated through maternal report (Teti & Gelfand, 1991). This study again did not use an observational measure of infant temperament.

This is problematic because it is unclear whether the mother simply perceived the child as being difficult. It is important to determine if independent observers would also rate the child as difficult. If this would not be the case the lack in maternal self-efficacy may be related to an over-reporting of difficult infant characteristics by the mothers.

### **Maternal Temperament**

Since it has been suggested that parental depression is related to over-reporting of child behavior problems (Gartstein et al., 2003), it is of interest to study whether maternal temperament in general may be related to over- or under-reporting of behavior problems. It has been found that maternal negative emotionality was related to problem behaviors in their children, as measured by observation and maternal report (Kochanska, Clark, & Goldman, 1997). Kochanska et al. (1997) observed the children and their mothers twice, once when the children were toddlers, in the home and at the laboratory, and once at preschool age, just in the laboratory. Additionally, the mothers completed self-report measures and provided reports about their children. The mothers were asked to fill out multiple personality measures and “Negative Emotionality was represented by an aggregate of depression (BDI), anxiety (STAI), Neuroticism (ZKPQ), guilt (SDI), and the PRQ composite of scales denoting physiological reactivity to stress” (Kochanska et al., 1997, p. 399). This maternal negative emotionality was positively correlated with observed child outcomes such as defiance and angry affect. It was also negatively related with mother-reported child outcomes, such as attachment security and internalization of family rules, and positively correlated with mother-reported behavioral problems (Kochanska et al., 1997).

## **Purpose of Study**

The purpose of this study was to develop a multitrait-multimethod construct for the different domain of infant temperament, and to explore potential explanations for the discrepant findings from maternal self-report versus laboratory observations of infant temperament. Infant temperament in this study was assessed via the IBQ-R and the TLO. If sufficient convergence between these two measures can be demonstrated, it would be beneficial to use them in tandem, consistent with the multitrait-multimethod matrix approach, enhancing reliability/validity of the measurement. However, in utilizing these measures it would also be important to understand factors leading to discrepancies between these two sources of information. Previous research has demonstrated low to moderate agreement between parent-report and other sources of information addressing infant temperament (e.g. Carter, Little, Briggs-Gowan, & Kogan, 1999; Field & Greenberg, 1982), making it important to address factors contributing to discrepancies, along with formulating composite scores based on consistencies across different sources of information. First, it was hypothesized that infant temperament data collected in the context of structured laboratory observations and information based on parent report questionnaires would converge to a significant extent. That is, significant correlations are expected among parent-report derived measures of infant temperament and laboratory observation indicators. Second, it was anticipated that maternal depression would be related to discrepant results obtained from the parent-report questionnaires and laboratory observations, due to increased reporting of infant negative emotionality (e.g., Fear) by mothers experiencing higher levels of depressive symptoms.

Exploratory analyses were also undertaken. Specifically, a question related to whether maternal depression would be associated with decreased reporting of positive affectivity (e.g.,

Smiling/Laughter), thus causing another discrepancy between the results of the two measurement approaches, would also be explored. It was also examined whether perceived maternal efficacy is related to discrepant results, in so far as lower levels of parenting efficacy may be related to over-reporting of Fear and under-reporting of Smiling/Laughter. Finally, the relationship between maternal temperament and discrepancies observed between the two sources of information regarding infant temperament were also explored. Specifically, the contribution of maternal positive and negative affectivity to increased or decreased reporting of Fear and/or Smiling/Laughter in the infant would be examined. These analyses are considered exploratory because the lack of prior research in this area, or related domains, precludes us from developing definitive hypotheses.



## CHAPTER TWO

### METHODS

#### Participants

The sample consisted of 68 families with infants (19 infants were 6 months, 25 were 9 months, and 24 were 12 months of age), who completed the laboratory assessment, as well as the questionnaires. This group of families was recruited to ensure an approximately equivalent age and gender distribution (36 of the infants were male and 32 were female). 8 additional families completed only the laboratory assessment. Birth announcements from hospitals published in the local newspapers were used to recruit families from the San Francisco Bay Area, who were called about two weeks before their infants were eligible to participate in the study. The majority of participating parents (66%) were married, 1.5% were single, 1.5% were remarried, and 1.5% of the participants were cohabitating. This sample was primarily Caucasian/European American (82.1%), with 9% of Asian/American participants, 4.4% of Hispanic/Latino, 3% of Filipino, and 1.5% of African American families.

#### Procedures

The parents of the infants were asked to complete an infant temperament measure, the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003). Additionally, parents also completed a demographic questionnaire, the Parenting Stress Index (PSI; Abidin, 1983), and the Adult Temperament Questionnaire (ATQ; Evans & Rothbart, 2003). The families were also asked to come into the laboratory for the Temperament Laboratory Observation (TLO; Gonzales et al., 2002).

## Measures

### *The Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003)*

The IBQ-R represents a rationally derived, fine-grained assessment tool, based on the definition of temperament proposed by Rothbart & Derryberry (1981), work with the Child Behavior Questionnaire (Rothbart, Ahadi, & Hershey, 1994), comparative studies, as well as other developmental research that had identified significant dimensions and associated behavioral tendencies. The development of this measure involved (1) formulating precise operational definitions of each dimension of temperament, and items assessing each of these dimensions; (2) performing item analysis items across the different age groups of infants (i.e., eliminating items with a large number of missing responses, and items that failed to contribute to the internal consistency of their respective scales). This multi-step process led to the development of 14 IBQ-R scales: Activity Level, Smiling and Laughter, Fear (social and non-social), Distress to Limitations, Duration of Orienting, Soothability, Vocal Reactivity, High and Low Intensity Pleasure, Falling Reactivity, Affiliation/ Cuddliness, Perceptual Sensitivity, Sadness, and Approach. A three factor structure has been demonstrated for these IBQ-R scales, including Surgency, Negative Affectivity, and Orienting/Regulatory Capacity. The scales that will be used for this study include Fear and Smiling and Laughter.

### *The Temperament Laboratory Observation (TLO; Gonzalez, Gartstein, Carranza, & Rothbart, 2003)*

The TLO, already described in the introductions section, was designed for children between 6 and 12 months of age, and consists of 10 episodes: warm-up, play with toys, toy retraction, embrace with examiner, parent-child interaction, visual perceptual sensitivity, separation, peek-a-boo, auditory perceptual sensitivity, and presentation of masks. These

laboratory tasks, based on, and similar to the LAB-TAB episodes (Goldsmith, & Rothbart, 1996), were developed to elicit reactive and regulatory aspects of temperament. Scores derived from the TLO provide indices of threshold, latency, intensity, time to peak intensity, and recovery time for reactions that involve arousability of affect, motor activity, and related responses. The LAB-TAB (Goldsmith, & Rothbart, 1996) that served as a model for the TLO has been widely used and consistently described as reliable and valid, with inter-rater agreement ranging from 88% to 99%. Preliminary analyses with the TLO have provided satisfactory inter-rater reliability estimates ( $r$ 's from .64 to 1.00). The episodes that will be included in this study are the presentation of masks, peek-a-boo, parent-child interaction and the warm-up, that provide indicators of fear and smiling/laughter (e.g., intensity of facial expressions and bodily reactions).

*The Parenting Stress Index (PSI; Abidin, 1983)*

The PSI assesses child and parent characteristics, family context, and life stress events (Abidin, 1995). Within the child domain the PSI measures distractibility/hyperactivity, adaptability, reinforcement of parent, demandingness, mood, and acceptability (Abidin, 1995). Within the parent domain it assesses competence, isolation, attachment, health, role restriction, depression, and the relationship to the spouse (Abidin, 1995). Additionally, the PSI also contains a measure of life stress (Abidin, 1995). For this study two of the parental domain subscales were utilized: depression and competence. To attain a measure of maternal depressive symptoms the depression subscale was used. This scale has been utilized as an indicator of depressive symptomatology in previous investigations addressing difficult child behaviors, parental and family adjustment (Gartstein & Sheeber, in press; Sheeber & Johnson, 1992a, 1994). Higher scores on this scale are indicative of significant parental depression (Webster-Stratton & Hammond, 1988). The subscales measuring competence was utilized to assess perceived

maternal self-efficacy. The Competence subscale assesses multiple factors related to parental competence, for example, high scores are related to a lack of acceptance and criticism by the partner of the parent completing the questionnaire (Abidin, 1995). Cronbach's alpha coefficients as high as .84 have been reported for the PSI subscales within the domains, and test-retest reliability estimates have ranged from .88 to .96 for the Total Stress score (Abidin, 1995).

*The Adult Temperament Questionnaire (ATQ, Evans & Rothbart, 2003)*

The ATQ addresses three broadband temperament dimensions of affect, arousal, and attention, which were differentiated into the domains of negative affect, extraversion/surgency, effortful control, orienting reactivity, and affiliativeness, for which scales/items were developed. These general constructs were then factor analyzed, and specific loadings were found, from which 13 subscales were constructed: Fear, Sadness, Discomfort, Frustration, Sociability, High Intensity Pleasure, Positive Affect, Attentional Control, Inhibitory Control, Activation Control, Neutral Perceptual Sensitivity, Affective Perceptual Sensitivity, and Associative Perceptual Sensitivity. Version 1.3, which consists of 77 items, was the most current version available for use at the time of data collection. The ATQ-2, which is the most recent version, achieved subscale reliability coefficients (i.e., Cronbach's Alphas) mostly greater than .80 on 13 of the 18 scales used, with only one (inhibitory control = .66) below .70 (Evans & Rothbart, 2003). The ATQ-1 had achieved reliability alphas ranging from .61 to .84 on the subscales (Evans & Rothbart, 2003). For this study the constructs of Extraversion/Surgency and Negative Affect as assessed by the ATQ will be used. The subscales that assess Negative Affect are Fear, Sadness, Discomfort, and Frustration. The scales used to assess Extraversion/Surgency are Sociability, High Intensity Pleasure, and Positive Affect.

## **Analytic Strategy**

Convergence between measures of temperament were assessed by computing Pearson product moment correlation coefficients. Subsequently, discrepancies between parent-report and laboratory indicators of temperament were computed, by first standardizing the two sets of indicators, and then computing difference scores. Regression equations were performed next, attempting to explain the variance of these discrepancy scores with maternal depression, along with other maternal characteristics (e.g., maternal competence and temperament scores).

## **CHAPTER THREE**

### **RESULTS**

#### **Development of construct**

To create the laboratory fear composite a correlation matrix for the coded fear-related behaviors was computed, and it was determined which behaviors correlated significantly with each other. A  $p$  value of less than .05 was required for significance. This resulted in a laboratory fear composite consisting of the codes for intensity of facial fear, intensity of distress vocalization, and intensity of bodily fear from the Masks episode and the code for intensity of bodily fear from the Warm-Up episode. The correlations are shown in Table 1. The positive affectivity/smiling and laughter laboratory composite was developed by computing a correlation matrix for the coded positive affectivity-related behaviors. The codes for presence and intensity of smiling, laughter, and positive vocalizations for the Interaction episode, and the codes for presence and intensity of smiling, positive vocalizations, and positive motor activity from the Peek-a-Boo episode demonstrated significant correlations. Thus, they were included in the positive affectivity/smiling and laughter laboratory composite, and their correlations are shown in Table 2.

#### **Convergence between Temperament Measures**

Correlation coefficients were computed among the laboratory composite measuring positive affectivity/smiling and laughter and the Smiling and Laughter subscale of the IBQ-R. The results of the correlational analyses presented in Table 3 show that no significant correlations were found between the laboratory composite for positive affectivity and the Smiling and Laughter subscale from the IBQ-R. Thus, these findings are not in accordance with the first hypothesis stating that the measures would converge to a significant degree.

Furthermore, correlation coefficients were computed among the laboratory composite assessing fear and the Fear subscale of the IBQ-R. The result of this correlational analysis presented in Table 4 indicates that the laboratory fear composite and fear as assessed by the IBQ-R are significantly correlated, with the correlation being equal to .275. Hence, this finding lends partial support to the hypothesis that the two measures would converge to a significant degree.

### **Analyses of Discrepancies**

To analyze which variables contribute to the discrepancies between the fear scores as assessed in the laboratory as opposed to those assessed through parental report, the standardized IBQ-R Fear subscale score was subtracted from the standardized laboratory fear composite score. Then, the absolute value of the result was entered into the regression equation as the dependent variable. During the first step of the regression SES, parental age, infant's age, and infant's gender were entered. The maternal depression score was the only variable entered in the second step. Next, the maternal competence score was entered. Then the parental negative affectivity score was entered and finally, the parental positive affectivity score. The overall model was significant,  $F = 3.165$ ,  $p < .01$ . As shown in Table 5, the first block of predictors, SES, parental age, infant's age, and infant's gender, accounted for a significant amount of the discrepancy variability,  $R^2 = .289$ ,  $F(4, 60) = 6.095$ ,  $p < .01$ . The significant predictors in the overall model shown in Table 6 were SES,  $Beta = -.380$ ,  $p < .01$ , and infant's age,  $Beta = .309$ ,  $p < .01$ , indicating that increased SES was associated with a decreased discrepancy between observation and parental report, and increased infant's age was associated with an increased discrepancy.

To analyze which variables contribute to the discrepancies between the positive affectivity scores as assessed in the laboratory as opposed to those assessed through parental

report, the standardized IBQ-R Smiling and Laughter subscale was subtracted from the standardized laboratory positive affectivity/smiling and laughter score. Again, the absolute value of the result was entered into the second regression equation as the dependent variable. The predictors in the second regression were the same as in the first regression and were entered in the same order. The overall model was not significant. As shown in Table 7, the second step of the model was the only significant step,  $R^2$  change = .136,  $p < .01$ , indicating that depression contributed significantly to the model after controlling for SES, infant's age, parental age, and infant's gender. There were no significant predictors in the overall model, as shown in Table 8; however, depression approached significance, Beta = -.305,  $p = .055$ , indicating there was a trend of increased depression levels to be associated with decreased difference scores.

Next, further regression analyses using the actual difference scores instead of the absolute values as the dependent variables were conducted. The predictors were the same as in the former two regression equations and were entered in the same order. The overall model was not significant when the Fear difference score was entered as the dependent variable. As shown in Table 9, the fourth step in the model, in which parental negative affectivity was added, approached significance,  $R^2$  change = .063,  $p = .052$ , meaning that there was a trend for negative affectivity to contribute significantly to the model after controlling for the effects of SES, parental age, infant's age, infant's gender, depression, and parental competency. As shown in Table 10, the only significant predictor in the model was parental Negative Affectivity, Beta = -.293;  $p < .05$ , thus indicating that parents higher in negative affect reported a higher fear level than was found in the observation. When the Smiling and Laughter difference score was entered as the dependent variable, there were no significant results, as can be seen in Table 11.



## CHAPTER FOUR

### DISCUSSION

#### Summary of Findings

The goal of this study was to establish that a laboratory measure of temperament and a parental report measure of temperament converge to a significant degree. Furthermore, it was of interest to determine which factors may influence any discrepancies arising from these two measures of infant temperament. As anticipated, fear as assessed in the lab was significantly correlated with fear as assessed by the IBQ-R. However, contrary to our hypothesis, smiling and laughter as assessed in the lab was not significantly correlated with smiling and laughter as assessed by the IBQ-R. This lack of a significant relationship may be due to the novel laboratory environment not being conducive to expressing positive emotionality. Rothbart and Goldsmith's (1985) warned that infants become wary in the laboratory environment due to factors such as novelty of the environment and the lack of familiarity with the adult experimenters. Thus, infant behavior related to positive emotionality in the laboratory may not be representative of the behavior (e.g., smiling, laughing) in the home environment. The findings are consistent with the warnings expressed by Rothbart and Goldsmith (1985), and indicate that it is more problematic to assess positive affectivity accurately in the laboratory setting in a reliable manner.

The hypothesis that parental depression would predict greater discrepancies between laboratory observation and parental report of negative emotionality could not be supported, this could be due to the sample having low rates of depression and little variance, mean = 1.95; SD = .587; range = 1 – 3.33 out of 5 possible, the same holds true for the null finding regarding perceived parenting efficacy, mean = 2.00; SD = .417; range = 1 – 3. This is also in contrast to findings by Leerkes and Crockenberg (2003), reporting that highly depressed mothers were less

concordant with laboratory-based temperament assessments. This finding may be due to these researchers having participants who endorsed higher levels of depression than the participants in the present study, averaged range = 1- 2.65 out of 3 possible. However, according to the findings, it appears that parental negative affectivity is predictive of increased parental reporting of fear, in contrast to the level observed during the laboratory observation. This finding should be viewed with caution as it is the outcome of an exploratory analysis and needs to be replicated. However, this finding is not surprising in so far as maternal depression has been associated with increased reporting of negative temperamental factors (e.g., Whiffen, 19990), and negative affectivity is linked to depression. The Negative Affect factor of the ATQ consists of four subscales: Fear, Sadness, Discomfort, and Frustration. The Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision (DSM-IV-TR; American Psychiatric Association, 2000) states that some frequently occurring associated features of depression include feeling tearful, irritable, and anxious. Thus, there is some overlap among the signs and symptoms associated with depression and the experience of negative emotionality conceptualized as a broadband dimension of temperament, since a person who is frequently sad and tearful, irritable and frustrated, and/or anxious/fearful would be high in negative affect and also show signs of depression.

Higher levels of SES were predictive of less discrepancy between fear scores of the two measures and older infant age was associated with a higher discrepancy between the fear scores. These outcomes were not predicted and should also be regarded with caution. Higher levels of SES may have been related to a decreased discrepancy, as parents with a higher SES status are likely to have a higher level of education, which in turn, could enhance their ability to complete the questionnaires accurately. More frequent experience with test and greater success in

completing tests and questionnaires could presumably lead parents with higher educational attainment to respond to the IBQ-R in a more reliable manner. Regarding the finding that older infant age was associated with a greater discrepancy, it is possible that the discrepancy between the fear scores increases as the infant grows older because fear develops rapidly over the second part of the first year of life (Carranza et al., 2000; Rothbart, 1986, 1988). Thus, parents may have a harder time judging their infants level of fear since it changes over a relatively short period of time. A second factor that may influence the discrepancy, are the “behavioral problems” incurred in the laboratory when the infants get older and more mobile. As the infants grow older, they try to move around more frequently and become frustrated when they are required to stay in the high chair or on the couch. Thus, the restrictions posed on the older infant in the laboratory may result in a display of behavior that is not typical of the behavior in the home environment, which would increase the discrepancies between the two measures.

Higher levels of parental depression showed a trend toward being associated with a decreased discrepancy between the two measures when assessing smiling and laughter. This finding has not been predicted and should thus be regarded with caution. However, this finding is interesting since the two measures (i.e., parent-report and laboratory observation based scores) did not converge to a significant degree when assessing smiling and laughter. Thus, it is possible that parents with increased levels of depression judge their infants to be lower on smiling and laughter than parents with decreased depression scores. Parents with increased levels of depression may perceive their infants more accurately. It has been found that nondepressed individuals perceive themselves as better than others which was not true for individuals with depression (Tabachnik, Crocker, & Alloy, 1983). Thus, parents with depression may also be less likely to perceive their infants as being better than others than nondepressed parents may be.

This could result in increased reporting of positive affectivity by nondepressed parents since positive affectivity is a desirable characteristic for many parents.

### **Implications for Future Research and Limitations of the Current Study**

The use of difference scores in this study can be criticized, as their use has been controversial. The use of difference scores has been criticized as having a reduced reliability, being ambiguous to interpretation, and leading to confounded effects (Edwards, 2002). The difference score will be lower in reliability than its component measures. However, Tisak and Smith (1994) remark that the reliability of difference scores may be acceptable if the component measures are reliable and not highly positively correlated. Furthermore, it has been reported that reduced reliability is not a weakness unique to analyses using difference scores (Sheeber, Sorensen, & Howe, 1996). To be able to compare the two measures the scores were standardized, and the interpretation should not be ambiguous since the questionnaire and the laboratory assessment are supposed to measure the same behaviors and the laboratory measure was designed to parallel the questionnaire. For this study it appears the use of difference scores was necessary since it was not deemed appropriate to assign just one of the measures to be the dependent variable, thereby implying it is a gold standard against which all other measures should be compared.

It is of utmost importance to continue the study of the different measures of temperament that are available. We need to understand what the potential downfalls of some our measures may be, as well as their strength. To assess temperament as accurately as possible it is important to use several measures in convergence, but to use them effectively we need to determine what may lead to discrepant results and which measure may be more reliable for certain aspects of temperament if any. This study represents a first step in that direction. Additional research is

needed to replicate the findings from the exploratory analyses. Furthermore, it is important that future research examine the convergence and discrepancies between all the other subscales and factors of the IBQ-R and the TLO in order to determine what other factors may influence discrepancies between the two measures. This study was limited in its scope in that only the fear aspect of negative emotionality and the smiling and laughter aspect of positive affectivity could be studied. It would be of benefit to examine all the aspects of these factors. Future studies would also benefit from larger sample sizes, as well as a longitudinal design. The longitudinal design would allow researchers to determine more accurately how discrepancies may differ depending on the age of the infant. Furthermore, this study only assessed the convergence of two possible means assessing infant temperament. However, home observations have also been used to assess infant temperament, and it would be beneficial to study the convergence between home observations and the laboratory assessment, as well as the parent-report measures. This would allow us to gain an accurate picture of the three types of temperament assessment that are most commonly used. This study examined the influence of depression may have on the discrepancies between the two measures; however, future studies should also study the influence other psychological disorder may have on these discrepancies. Furthermore, other parental characteristics like current life stress should be examined, as well as family factors like the birth order of the children.

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## **APPENDIX**

Table 1. Correlation Matrix for Codes Included in the Laboratory Fear Composite

Codes	Facial Fear (Masks)	Distress Vocalization (Masks)	Bodily Fear (Masks)	Bodily Fear (Warm-Up)
Facial Fear (Masks)	—	.696**	.665**	.263*
Distress Vocalization (Masks)	.696**	—	.626**	.080
Bodily Fear (Masks)	.665**	.626**	—	.267*
Bodily Fear (Warm-Up)	.263*	.080	.267*	—

\*\* Correlation is significant at the .01 level

\* Correlation is significant at the .05 level

Table 2a. Correlation Matrix for Codes Included in the Positive Affectivity/Smiling and Laughter Laboratory Composite

Codes	Presence of Smile (Interaction)	Intensity of Smile (Interaction)	Laughter (Interaction)	Positive Vocalization (Interaction)
Presence of Smile (Interaction)	—	.960**	.280*	.411**
Intensity of Smile (Interaction)	.960**	—	.290*	.413**
Laughter (Interaction)	.280*	.290*	—	.329**
Positive Vocalization (Interaction)	.411**	.413**	.329**	—
Presence of Smile (Peek-a-Boo)	.355**	.328**	.047	.296*
Intensity of Smile (Peek-a-Boo)	.467**	.480**	.319**	.455**
Positive Vocalization (Peek-a-Boo)	.204	.246*	.073	.308*
Positive Motor Activity (Peek-a-Boo)	.145	.142	.033	.131

\*\* Correlation is significant at the .01 level

\* Correlation is significant at the .05 level

Table 2b. Correlation Matrix for Codes Included in the Positive Affectivity/Smiling and  
Laughter Laboratory Composite

Codes	Presence of Smile (Peek-a-Boo)	Intensity of Smile (Peek-a-Boo)	Positive Vocalization (Peek-a-Boo)	Positive Motor Activity (Peek-a-Boo)
Presence of Smile (Interaction)	.355**	.467**	.204	.145
Intensity of Smile (Interaction)	.328**	.480**	.246*	.142
Laughter (Interaction)	.047	.319**	.073	.033
Positive Vocalization (Interaction)	.296*	.455**	.308*	.131
Presence of Smile (Peek-a-Boo)	—	.733**	.377**	.247*
Intensity of Smile (Peek-a-Boo)	.733**	—	.354**	.388**
Positive Vocalization (Peek-a-Boo)	.377**	.354**	—	.247*
Positive Motor Activity (Peek-a-Boo)	.247*	.388**	.247*	—

\*\* Correlation is significant at the .01 level

\* Correlation is significant at the .05 level



Table 3. Correlation Between the Laboratory Composite for Positive Affectivity and Smiling and Laughter Subscale from the IBQ-R

Variable	IBQ-R Smiling and Laughter	Positive Emotionality Laboratory Composite
Positive Emotionality Laboratory Composite	.179	1.00
IBQ-R Smiling and Laughter	1.00	.179

\*\* Correlation is significant at the .01 level

\* Correlation is significant at the .05 level

Table 4. Correlation between the Laboratory Fear Composite and Fear as Assessed by the IBQ-R

Variable	Fear Laboratory Composite	IBQ-R Fear
Fear Laboratory Composite	1.00	.275*
IBQ-R Fear	.275*	1.00

\*\* Correlation is significant at the .01 level

\* Correlation is significant at the .05 level

Table 5. Change Statistics: Absolute Fear Difference Score

Model	R Square Change	F Change	Sig. F Change
1. (SES, parental age, infant's gender, infant's age)	.289	6.095	.000
2. (SES, parental age, infant's gender, infant's age, depression)	.019	1.614	.209
3. (SES, parental age, infant's gender, infant's age, depression, competence)	.001	.058	.811
4. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity)	.000	.012	.913
5. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity, positive affectivity)	.003	.219	.642

Table 6. Dependent Variable: Absolute Fear Difference Score

<u>Predictor</u>	<u>Beta</u>	<u>Sig.</u>
SES	-.380	.002
parental age	-.161	.158
infant's gender	.216	.069
infant's age	.309	.009
parental depression	.140	.325
efficacy	-.018	.899
negative affectivity (parent)	.000	.998
positive affectivity (parent)	.056	.642

Table 7. Change Statistics: Absolute Smiling and Laughter Difference Score

Model	R Square Change	F Change	Sig. F Change
1. (SES, parental age, infant's gender, infant's age)	.014	.199	.938
2. (SES, parental age, infant's gender, infant's age, depression)	.136	9.133	.004
3. (SES, parental age, infant's gender, infant's age, depression, competence)	.006	.366	.548
4. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity)	.014	.918	.342
5. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity, positive affectivity)	.021	1.373	.246

Table 8. Dependent Variable: Absolute Smiling and Laughter Difference Score

<u>Predictors</u>	<u>Beta</u>	<u>Sig.</u>
parental age	.045	.719
infant's gender	.032	.804
infant's age	.126	.319
SES	-.033	.798
parental depression	-.305	.055
efficacy	-.121	.431
negative affectivity (parent)	-.160	.236
positive affectivity (parent)	-.156	.246

Table 9. Change Statistics: Fear Difference Score

Model	R Square Change	F Change	Sig. F Change
1. (SES, parental age, infant's gender, infant's age)	.009	.139	.967
2. (SES, parental age, infant's gender, infant's age, depression)	.011	.692	.409
3. (SES, parental age, infant's gender, infant's age, depression, competence)	.005	.321	.573
4. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity)	.063	3.934	.052
5. (SES, parental age, infant's gender, infant's age, depression, competence, negative affectivity, positive affectivity)	.010	.636	.427

Table 10. Dependent Variable: Fear Difference Score

<u>Predictor</u>	<u>Beta</u>	<u>Sig.</u>
SES	-.121	.365
parental age	-.048	.712
infant's gender	.050	.711
infant's age	-.009	.945
parental depression	-.180	.270
efficacy	.084	.601
negative affectivity (parent)	-.293	.040
positive affectivity (parent)	-.110	.427



Table 11. Dependent Variable: Positive Emotionality Difference Score

<u>Predictors</u>	<u>Beta</u>	<u>Sig.</u>
parental age	-.070	.599
infant's gender	-.201	.142
infant's age	.126	.346
SES	.115	.398
parental depression	.028	.863
efficacy	.061	.708
negative affectivity (parent)	-.088	.537
positive affectivity (parent)	.004	.977