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Goodness of Fit

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MATERNAL AND INFANT TEMPERAMENT: GOODNESS OF FIT

By

Mona Ibrahim

A THESIS

**Submitted to
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ABSTRACT

MATERNAL AND INFANT TEMPERAMENT: GOODNESS OF FIT

By

Mona Ibrahim

This study examined the mechanisms of the "Goodness-of-Fit" model of temperament by investigating the relationship between maternal temperament and maternal expectations and the relationship between the infant's lack of fit with each and maternal functioning. The study also appraised the differential effects of the direction of the misfit on maternal functioning. Participants were 60 first-time mothers and their infants. Results indicated that, overall, after delivery, maternal expectations did not match maternal temperament (for example, $r = .11$ for Quality of Mood), and that a discrepancy between maternal temperament and infant temperament was more related to maternal functioning than a discrepancy between maternal expectations and infant temperament (for example, $r = .27$ vs. $r = .04$ for a discrepancy in Quality of Mood and Depression). Furthermore, taking the direction of the discrepancy into account when computing correlations between fit scores and maternal functioning did not improve the chances of finding significant relationships.

Dedicated with love to my children

Ashraf Kamel

and

Ayah Kamel

who fill my life with joy

and drive me to become a better person

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Chapter 1

Introduction

Problem Statement

Children possess characteristics of individuality which—in the context of person-context bidirectional relations—allows them to be agents in their own development (Lerner & Lerner, 1983). Results of many studies (Carey & Mcdevitt, 1989; Chess & Thomas, 1986; Kohnstamm et al., 1989; Strelau, 1983) point to the importance of temperament as a key characteristic of individuality that contributes essentially to the efficiency and adequacy of human behavior in everyday life. Interindividual differences in temperament have been found to act as important moderators of children's success at coping with the stressors and demands encountered in the key settings of life: the family, the school, and the peer group.

The functional significance of a child's temperamental attributes in the family setting is dependent upon the demands and expectations of the parents. The concept of the "goodness of fit" proposed by Stella Chess and Alexander Thomas examines the relationship between the individual child's temperament and the demands and expectations of the parents. If a temperament attribute is congruent with the demands of the parents (i.e. there is a 'good' fit), it should produce a positive adjustment. If the same attribute is incongruent with such demands (i.e. there is a 'poor' fit), a negative adjustment would be expected.

This study attempted to take a closer look at the mechanics of the goodness of fit model by assessing the relationship between the behavioral style of the mother and the expectations and demands she has with regards to her child's behavior. In addition to investigating whether the mother's expectational demands fit/misfit her own behavioral style, the study also investigated how children actually fit/misfit maternal demands and expectations. Gaining a better understanding of the dynamics of the influence of

temperamental characteristics on the child's life course would facilitate identification of high-risk patterns of parent-child interaction.

Temperament

Definition of Temperament

The scientific study of temperamental attributes began with Gesell's (1937) analysis of film records of children to assess characteristics such as Activity Level and adaptability. He concluded that "certain fundamental traits of individuality, whatever their origin, exist early, persist late and assert themselves under varying environmental conditions." Nevertheless, one of the most controversial problems regarding temperament studies today remains the notion of "temperament" itself. Some researchers regard temperament as a synonym for personality (Eysenck, 1969), while others confine temperament to the emotional characteristics of behavior (Goldsmith, 1987).

The most widely accepted definition of temperament is that of Thomas and Chess, who provided an important stimulus to research on temperament through the New York Longitudinal Study which began in 1956 and continues into the present day. They propose that temperament refers to how an individual does things or how he or she responds to people and to situations, rather than to what the individual does (i.e. the content of behavior), or to why he or she does it (i.e. motivation), or to the behavioral capacities or abilities that he or she manifests (Thomas & Chess, 1977). For example, since all children eat and sleep, focus on these contents of the behavioral repertoire would not readily differentiate among them. However, children may differ in the Rhythmicity of their eating or sleeping behaviors and in the Activity Level and Quality of Mood associated with these behaviors.

The question "how" refers mainly to formal characteristics of behavior, such as reactivity, activity, or self-regulation. According to Thomas and Chess (1977), Rothbart

(1981), and Strelau (1987), these temperament characteristics are present since early childhood and are relatively stable throughout life.

Importance of Temperament

Many studies have tested the utility of temperament by examining its power as a key characteristic of individuality that contributes essentially to the efficiency and adequacy of human behavior in everyday life. The relevant evidence falls under two main categories. First, it has been shown that individual differences in temperament are linked to infant and child psychological health (Chess and Thomas, 1982), resilience to stress (Werner and Smith, 1982), classroom behavior (Pullis and Cadwell, 1982), and academic achievement (J. Lerner, 1983).

Second, several naturalistic and experimental studies have shown that the behavioral characteristics of children have an important effect in determining how other people respond to them. Children with different temperamental features elicit different behaviors from those with whom they interact. For example, easily adaptable children tend to be protected from parental criticism even in a stressful home environment. Similarly, it has been found that highly active babies are less likely to show developmental retardation in a depriving institutional environment, probably because they elicit more caretaking (Rutter, 1977). Dunn and Kendrick (1980) found, in addition, that children's Quality of Mood in infancy was linked to maternal responsiveness to them. The higher the negativity of the Mood, the less helpful and attentive the mother.

The temperamental qualities brought by the child to the interactions and situations that he or she encounters therefore play an important part in determining how that encounter proceeds and in determining the overall quality of parent-child relations (Crockenberg, 1981). Table 1 below summarizes the above mentioned research.

TABLE 1. Research on Importance of Temperament

Reference	Predictor Variable	Outcome Variable	Study Type	Sociodemographics	Sample Size	Effect Size
Pullis & Cadwell (1982)	-Student temperament characteristics	Teacher ratings of student in various school situations	Cross-sectional	Elementary school children from Illinois. 96% White. Lower middle to middle class.	-177 males and -144 females (74-Kindergarten 145-first grade 102-third grade)	Regression weights range from -.24 to -1.87
Lerner (1983)	-Temperament -Actual & perceived school academ. & social demands	Teacher-, peer-, & self-rated adaptation scores.	One group tested at one point in time	Eighth-graders from N.Y. 75% White, 64% Catholic. Mean age=13.5	-48 males -51 females	R ² associated with set of predictors range from .1 to .3. F (1, 64) for the difference between congruent & incongruent groups range from 7-10 with p<.003-<.01
Dunn & Kendrick (1980)	-Mood rating	Time mother spends helping/interacting with child	Longitudinal	Working-class mothers and their firstborns ages 18-43 mo	-21 males -19 females	Median # of 10-sec units in which mother is responsive/100 10-sec units=.9 vs. 2, p(Mann-Whitney U test)=.06
Werner & Smith (1982)	-Child temperament characteristics	Child resilience to stress	Longitudinal	Children of semi-skilled laborers from various ethnic backgrounds living in Hawaii and followed from conception to adolescence	-318 males -325 females	Correlation of emotional support provided by family at age 10 with Activity Level=.24, and with arrhythmicity of eating and sleeping=.36. Correlation between Mood and mother's attention at age 1=.30

Structure of Temperament

Chess and Thomas (1977) identified nine components of temperament:

- 1. Activity Level — refers to descriptions of the quality of the child's motor behavior.**
- 2. Rhythmicity — refers to the regularity of biologic functions, such as sleep-wake cycles.**
- 3. Approach-Withdrawal — refers to a positive/negative response to a new situation, person, or environmental demand.**
- 4. Adaptability — refers to the ease or difficulty of adaptability to the requirement for change in an established behavior pattern.**
- 5. Threshold of Responsiveness — refers to the amount of stimulation it takes to evoke a behavior.**
- 6. Quality of Mood — rated as the preponderance of positive versus negative mood expression.**
- 7. Intensity of Reaction — refers to the intensity of mood expression, irrespective of whether it is positive or negative.**
- 8. Distractibility — refers to the ease or difficulty of distractibility of an ongoing activity by an extraneous stimulus.**
- 9. Attention Span/Persistence — refers to the length of attention span and the degree of persistence with a difficult task.**

Based originally on the NYLS, Lerner and Windle (1986) also describe temperament by means of nine orthogonal dimensions:

1. **Activity Level-General** — refers to the level of motor behavior displayed in daily functioning.
2. **Activity Level-Sleep** — refers to the level of motor behavior displayed while asleep.
3. **Approach-Withdrawal** — refers to the tendency to move toward or away from stimuli.
4. **Flexibility-Rigidity** — refers to the ease of adjustment to situations.
5. **Quality of Mood** — refers to the positive or negative valence of affect.
6. **Rhythmicity-Sleep** — refers to the cyclical or regularity of sleep patterns.
7. **Rhythmicity-Eating** — refers to the regularity or predictability of eating.
8. **Rhythmicity-Daily Habits** — refers to the regularity or predictability of daily routines.
9. **Task Orientation** — refers to the level of persistence on, attention to, and lack of distractibility from tasks.

Among these nine dimensions, only four—Activity Level-General, Approach-Withdrawal, Quality of Mood, and Task Orientation—are to some extent identical to Thomas and Chess's (1977). The temperament traits, as proposed by Windle and Lerner, tend to describe behavior characteristics in a very specific way. This is expressed in the distinction of three kinds of Rhythmicity: Rhythmicity-Sleep, Rhythmicity-Eating, and Rhythmicity-Daily Habits.

Categories of Temperament

Thomas and Chess (1977) have identified, both clinically and by factor analysis, three temperamental constellations:

1. **Easy temperament:** Comprises a combination of regularity, positive approach responses to new stimuli, quick adaptability to change, and a moderately intense positive mood. Children in this group are easy to manage; hence the term easy temperament.
2. **Difficult temperament:** Comprises irregularity in biological functions, negative responses to new situations or people, slow adaptability to change, and intense mood that is predominantly negative. Parents and teachers often find such children difficult to manage; hence the term difficult temperament.
3. **Slow-to-Warm-Up temperament:** Comprises negative responses of mild intensity to novel situations, with slow adaptability after repeated contact.

It should be noted that not all individuals fit neatly into one of these three temperamental patterns, because of the varying and different combinations of temperamental traits that are possible.

Contextual Demands Regarding Temperament

Given the existence of easy and difficult temperament attributes, the question becomes: What gives a given temperament attribute its particular meaning? Super and Harkness (1981) point out that the child's context is structured by three kinds of influences: The physical and social setting; the dominant customs in the culture; and the "psychology" of the caregivers. This psychology is termed an "ethnotheory". The term refers to caregivers' preferences and expectations regarding the meaning or significance of particular behaviors. Super and Harkness point out that not all people have the same preferences regarding

temperament because every cultural or subcultural group holds different attitudes, values, and beliefs.

These psychological differences in the meaning of temperament produce differences in what is regarded as a wanted or an unwanted attribute. In other words, because specific cultural, subpopulation, or ecological groups may differ in how much they want particular attributes, they may also differ in their ethnotheories (i.e. their attitudes and expectations) regarding the difficulty the possession of a particular temperamental attribute presents for interaction.

Theoretical Orientation

This study draws heavily on the Goodness of Fit Model developed by Thomas and Chess (1977), and on the Developmental Contextual Perspective articulated by Lerner and Lerner (1983). Following is a brief discussion of each of these frames of reference.

Developmental Contextual Perspective

A major theoretical question in the temperament literature is: What variables explain the process by which temperament is linked to other inter- and intra-individual variables? From the contextual perspective, temperament has meaning for the person only as a consequence of the impact it has on the context. In order to predict when and how certain temperamental attributes relate to specific aspects of psychological functioning, we need to look at the relationship between person and context (Lerner & Lerner, 1983).

This perspective involves the idea that development occurs through reciprocal relations, or “dynamic interactions” between organisms and their contexts (Lerner, 1978). A notion of integrated or “fused” levels of organization is used to account for these dynamic interactions. Variables from levels of analysis ranging from the inner-biological, through the psychological, to the sociocultural, all change interdependently across time so that

variables from one level are both products and producers of variables from the other integrated levels (Lerner, 1982). In other words, children are embedded in their families. There are bidirectional relations between individual development and contextual change. Child characteristics promote differential reactions from parents, which may feed back to children and provide a basis for their further development. Schneirla (1957) termed these relations “circular functions”. Thus, in the context of these person-environment bidirectional relations, children’s characteristics of individuality allow them to be agents in, or producers of, their own development (J. Lerner & R. Lerner, 1983).

Just as the child brings temperamental characteristics to the parent-child relationship, the parents bring their own temperamental characteristics and their own expectations to the parent-child relationship. It is these parental expectations and demands that provide the functional significance for a given temperamental attribute possessed by a child (Thomas & Chess, 1977).

The Goodness-of-Fit Model

The “goodness of fit” model proposed by Stella Chess and Alexander Thomas (1977) is a conceptual model of the functional significance of temperament for an individual’s psychological development. It examines the relationship between the individual child’s temperament and the demands and expectations of the parents. According to this model, there is a “good” fit when an individual’s behavioral style enables him/her to cope successfully with the demands and expectations of the environment. On the other hand, a “mismatch” between an individual’s temperament and the demands of the environment results in a “poor” fit, which leads to unfavorable developmental outcomes. Thus, a child’s temperamental trait can only have adverse effects on the child’s development if it is combined with a poorness of fit.

The goodness of fit does not necessarily depend upon a similarity of temperament between mother and infant. Thomas and Chess analyzed the interactions between parents and their children in their New York Longitudinal Study and found different kinds of combinations. In some cases, similarity of temperament promoted a goodness of fit; in others it led to a poorness of fit. And the same variation of fit was true of parents and children of opposite temperaments.

A clear example of goodness versus poorness of fit has been provided by the findings in the New York Longitudinal Study sample (NYLS), which is a primarily upper middle-class, as contrasted to the findings in a Puerto Rican working-class sample (PRWC) living in the congested and underprivileged East Harlem section of New York City. Half of the PRWC children with behavior disorders under 9 years of age were high-activity children, whereas only one NYLS child displayed these symptoms.

The PRWC families usually had a relatively large number of children and lived in small apartments with little space for constructive motor activity that highly active children required. In addition, safe playgrounds and recreational areas were not available in the area in which these families lived. By contrast, the NYLS families lived in spacious homes with backyards, with safe streets and playgrounds available. The high-activity children in these families therefore were able to exercise their need for motor activity.

The differences in the incidence of behavior disorders in the temperamentally high-active children in these two contrasting populations was clearly due to the nature of the environmental restrictions and opportunities, which made for a goodness of fit for the NYLS children and a poorness of fit for the PRWC children.

The Goodness-of-Fit Model in Temperament Research

Scientists (Jahoda, 1961; Hunt, 1961; Kendall, 1978; Endler, 1975; French et al., 1974; Harrison, 1978; Smelser, 1961; Amidon and Flanders, 1961; Beach, 1960; Brophy, 1959;

Pervin, 1967; Kulka, 1979) in different domains of research have been using, and lending considerable support for, the goodness-of-fit model of adjustment. The consensus is that the degree of congruence between various aspects of the person's characteristics and the person's environment is more related to the person's overall performance and adjustment than either person or environment characteristics alone. However, I will review only those studies pertinent to children and adolescents' temperament, in order to provide support for the idea that the influence of children's temperamental characteristics on the behavior of others (particularly parents and teachers) can best be understood within the framework of the goodness-of-fit model. Table 2, "The Goodness of Fit Model in Temperament Research," on page 19 presents a summary of the studies reviewed below.

Much of the literature supporting the use of the goodness-of-fit model in studying temperament effects is derived from the Thomas and Chess New York Longitudinal Study (NYLS) or from independent research that has adopted their conceptualization of temperament. The contribution of the NYLS is considered first.

The Research of Thomas and Chess

Thomas and Chess's NYLS-core-sample is composed of 133 white, middle-class children of professional parents. Another smaller sample is composed of 98 New York City Puerto Rican children of working-class parents. Each sample subject was studied from at least the first month of life onward. Although the distribution of temperamental attributes in the two samples was not different, the import of the attributes for psychosocial adjustment was quite different.

For example, the Puerto Rican parents were very permissive in regard to Rhythmicity of Sleep. They allowed the child to go to sleep any time the child desired, and permitted the child to awaken any time as well. Because parents placed no demands in regard to Rhythmicity of Sleep, there were no problems of fit associated with an arrhythmic infant

or child. In this sample, arrhythmicity remained continuous and independent of adaptive implications for the child throughout the first five years of life (Thomas et al, 1974).

On the other hand, strong demands for rhythmic sleep patterns were placed by white, middle-class families on their children. Thus, an arrhythmic child did not fit with parental demands, and consistent with the goodness-of-fit model, arrhythmicity was a major predictor of problem behaviors during infancy and through the first five years of age (Thomas et al., 1974). Parents in this middle-class sample took steps to change their arrhythmic children's sleep patterns, so that low Rhythmicity tended to be discontinuous for most children.

Interestingly, arrhythmicity did begin to predict adjustment problems for the Puerto Rican children when they entered the school system. Their lack of a regular sleep pattern impaired their concentration in class, and caused them to be late for school (Thomas et al., 1974). Thus, it is important to consider fit with the demands of the particular context of development.

With regard to differences in the demands of the physical contexts of the families, high Activity Level was highly associated with problem behavior in the Puerto Rican children and not in the middle-class children because of differences between the physical features of the respective groups' homes. In the Puerto Rican sample, the families usually had several children and lived in small apartments. In addition, parents were reluctant to let their children out of the apartments because of the dangers involved in playing on the streets of East Harlem. As a consequence, even average motor activity tended to cause problems for interaction in the Puerto Rican group.

In the core sample, however, the parents had the financial resources to provide large apartments or houses for their families. There were typically suitable play areas for the children around the neighborhood. Consequently, high Activity Level did not constitute a behavioral problem in the core sample children.

In sum, the NYLS data set provides results compatible with the goodness-of-fit model. Data independent of the NYLS also lend some support, and will be reviewed next.

The Research of Super and Harkness

Support for the goodness-of-fit model is provided in a cross-cultural study by Super and Harkness (1981). They studied infants in a rural farming community in Kokwet, Kenya named Kipsigis and infants of suburban families living in the metropolitan Boston area. In all of their Boston families, there was only one person at home with the baby during most of the day. The infant's activities are therefore often temporally scheduled in order to meet the needs of both the mother and the infant. In contrast, the Kipsigis mother is rarely alone with the infant. During the day, an average of five additional people are in the house. Within this situation, the infant is free to sleep and nurse at will because whenever the mother needs a break, the infant is attended to by another nearby caregiver.

Super and Harkness (1981) found that an infant who does not show Rhythmicity of sleeping and eating does not have a problem fitting the cultural demands imposed by the Kokwet setting and is not likely to evoke negative reactions in the mother. The Kipsigis mothers did not view characteristics like negative Mood, low Rhythmicity, and low Adaptability as indicative of long-term problems. However, an infant in the Boston setting with the same low level of Rhythmicity did not fit well with maternal demands. The Boston mothers view low Rhythmicity, low Adaptability, and negative Mood as undesirable characteristics that present immediate and potentially long-term problems. Thus, as in the NYLS data set, the same temperamental characteristic has a different impact on others as a consequence of its embeddedness in a different cultural context with a different set of demands.

There is evidence for the use of the goodness-of-fit model in contexts other than the home and in regard to relationships other than that of parent-child. A key context of

childhood and adolescence is the school, and focal relationships in such a setting are those between children and teachers and between children and peers. A series of studies investigating these relationships were carried out by Lerner and Lerner (1987).

Research in the Lerner and Lerner Laboratory

J. Lerner (1980) examined the role of congruence between temperamental attributes and school demands for psychosocial adjustment in young adolescents. Junior high school students, enrolled in four eighth-grade classes of a junior high school located in a large suburb of New York City, were assessed with regard to their temperamental attributes. Participants were 75% white, 21% black, and 4% belonged to another racial background. All classes were taught by the same teacher. The demands of the school-social and the school-academic contexts in regard to the temperamental attributes were also assessed. In addition, for each of the two contexts, both actual and perceived demands were assessed. Finally, as indices of personal and social adjustment, measures of grade point average, perceived academic and social competence, positive and negative peer relations, general self-esteem, academic self-esteem, social self-esteem, and overall peer relations were obtained for all adolescents.

Results indicated that those adolescents whose temperamental attributes were least discrepant from the demands of the two contexts had scores on the measures used to index adjustment that were indicative of better adjustment than was the case for those adolescents whose temperamental attributes were most discrepant from the demands.

Palermo (1982) completed a study in the Lerner's laboratory assessing fifth graders' ratings of their own temperaments, the fifth graders' mothers' ratings of their children's temperaments, and the demands for behavioral style held by the teachers and mothers of the fifth graders. Outcome measures included each teacher's ratings of classroom ability and adjustment, classroom peers' sociometric appraisals of each child's positive and

negative peer relations, and mother's reports of problem behaviors shown at home. Again, children whose temperaments provided a better fit to teachers' demands, especially with regards to the dimension of Attention Span/Distractibility, had more favorable scores on teacher-, peer-, and mother-derived outcome measures than did children for whom the fit was not as close.

In another study, J. Lerner (1983) measured eighth graders' temperaments and the demands for behavioral style in the classroom maintained by each child's classroom teacher and peer group. Those children whose temperaments best matched each set of demands had more favorable teacher ratings of adjustment, better grades, more positive peer relationships, fewer negative peer relations, and more positive self-esteem than did children whose temperaments were less well matched with either teacher and/or peer demands. Specifically, the eighth graders who displayed high Rhythmicity, low Intensity of Reactions, positive Quality of Mood, high Approach behaviors, and high Adaptability were the best adjusted on these outcome measures.

Kacerguis (1983) examined the goodness-of-fit model in the home setting, focusing on the pre- versus post-pubescent daughter-mother dyads. Studying a group of 53 pre-pubescent daughter-mother dyads and a group of 42 post-pubescent daughter-mother dyads, Kacerguis obtained ratings by the mothers of the level of conflict in the parent-child relationship. In addition, all adolescents rated their own temperament.

Kacerguis (1983) speculated that the source of parent-child conflict differed between pre- versus post-pubescent daughter-mother dyads; parents of prepubescents expect different behaviors of their children than do parents of post-pubescents. As a consequence of these different behavioral expectations, temperament should be differentially linked to parent-child conflict in the two puberty groups. In other words, certain temperamental characteristics that "fit" with mothers' expectations of their prepubescents and therefore

created no mother-daughter conflict, should not “fit” with the different set of expectations that mothers of post-pubescents hold, and thus should result in mother-daughter conflict.

Kacerguis found that among the prepubescent daughter-mother dyads higher scores on three temperamental attributes (activity, Rhythmicity, and reactivity) were significantly related to higher levels of mother-reported-conflict, and higher scores on two other attributes (attention and adaptability) were significantly related to lower levels of conflict. The relations between temperament and parent-child conflict were markedly different among the postpubescent daughter-mother dyads. First, two significant reversals in direction of relationship occurred: higher Activity Level and Rhythmicity scores were associated in this group with lower conflict scores. Second, no significant relations between either attention, adaptability, or reactivity and parent-child conflict were found, and all three of these relations differed significantly from the corresponding ones among the prepubescent daughter-mother dyads.

In another study completed in the Lerner's laboratory, Hooker, Windle, and Lerner (1984) studied sixth-grade children's temperament and its fit with teacher demands. Specifically, they assessed whether the relations between temperament and dimensions of perceived competence, as measured by Harter's (1982) Perceived Competence Scale, could be accounted for by the goodness of fit model. Use of this scale was predicated on the view that children who have positive interactions with the significant others in their context should come to perceive themselves as competent individuals.

Hooker et al. (1984) expected that temperament scores that diverged most from the teachers' ethnotheory of temperamental difficulty should be associated with positive scores on the four components of perceived competence measured by the Harter's scale: cognitive, social, physical, and general self-worth. For 20 of the 36 relations for which predictions were made, significant correlations were found in the expected direction.

Moreover, the multiple correlations between temperament and each of the competence domains were significant.

These results were cross-validated in a study of late adolescent college students conducted by Windle et al. (1986). The ethnotheories of both parents (mostly mothers) and of peers were studied. For 17 of the 28 relations for which predictions were made, significant correlations were found. All of these were in the expected direction. High general and sleep Activity Level and low Rhythmicity, Flexibility, Approach, and attention span, and negative Mood constitute temperament levels that are rated to make for difficulty in interaction and varied negatively with competence scores and positively with CES-D scores. The CES-D was used by Windle et al. (1986) because of the findings that failure to meet the demands of one's context may be associated with feelings of depression (Seligman, 1975).

Further support for the goodness-of-fit model is provided by a study by J. Lerner, R. Lerner, and Zabski (1985) which looked at the fit between fourth-grade students' self-rated temperament and teachers' demands. Although fit scores related to Adaptability/Approach-Withdrawal were not related to any outcome measure, fit scores related to Attention Span/Distractibility were related to teacher ratings of adjustment (with students meeting or exceeding teachers' demands having better teacher-ratings). Students who met or exceeded the teachers' demands had adjustment ratings which were higher (mean= 4.0) than those for students who showed less attention than demanded (mean= 3.3).

Moreover, fit scores related to Reactivity were related to both teacher-rated and actual abilities (with students who met teachers' demands for Reactivity or who showed even less reactivity having better outcomes). Specifically, in comparison to children who exceeded the level of Reactivity expected by their teachers, children who met or fell below these demands were rated as more able and more adjusted, and in addition achieved better scores on the Stanford Achievement Test for Reading (SAT-Reading) and the Comprehensive

Test of Basic Skills (CTBS). The means for the ability rating, the adjustment rating, the CTBS score and the SAT-Reading score for the group that met or fell below the demands were 4.4, 4.4, 108.8, and 6.2 respectively; the corresponding means for the poorly fitted group were 3.8, 3.3, 103.5, and 5.2 respectively.

R. Lerner et al. (1986) summarized two studies that looked at temperament and its fit with contextual demands among early and late adolescents. In these studies, positive correlations were expected between cognitive, social, and general perceived competence, on the one hand, and Rhythmicity, Flexibility, Quality of Mood, Attention Span, and Approach, on the other hand. Conversely, negative correlations between these competence domains and the two activity attributes were expected. For 14 of the 21 relationships for which predictions were made significant correlations were found in the expected directions among the early adolescents group. These results were essentially cross-validated within the late-adolescent sample.

In another study, Talwar, Nitz, and Lerner (1988) found that poor fit with parental demands was associated with low teacher ratings of scholastic competence and higher parent ratings of conduct problems. Corresponding relations were found in regard to fit with peer demands. Moreover, goodness-of-fit scores between temperament and demands were more often associated with adjustment than were temperament scores alone. This was true for the parent context at the end of the sixth grade (27% significant correlations between adjustment measures and fit scores vs. 13% significant correlations between adjustment measures and temperament alone), and for the peer context at the beginning of seventh grade (28% significant correlations between adjustment measures and fit scores vs. 11% significant correlations between adjustment measures and temperament alone).

In sum, the studies summarized above point to the importance of considering the demands of the significant others in the child's context in order to understand the functional significance of temperamental individuality for adjustment.

TABLE 2. The Goodness of Fit Model in Temperament Research

Reference	Predictor Variable	Outcome Variable	Study Type	Sociodemographics	Sample Size	Effect Size
Thomas et al. (1974)	-Rhythmicity -Activity level	-Behavior problems	Logitudinal	Behavior-disorder children of white, Jewish mid-class professional parents from NY city and of Puerto Rican working class parents from E. Harlem.	-42 Whites- 16 females, 26 males -15 Puerto Ricans (PR)- 2 females, 13 males	-Excessive motor activity: 53% whites, 12% PR ($p<.001$) -Sleep problems in PR kids: 53% ages 5-9, 67% ages <5
Super and Harkness (1981)	-Rhythmicity -Adaptability -Mood	-Maternal negative reactions	Cross-cultural	Infants from a rural farming community in Kenya and infants of suburban families from Boston.	NA	NA
Lerner (1980)	-Temperament -School demands	-GPA -Perceived competence -Peer relations -Self esteem	One group tested at one point in time	White, Catholic, lower mid-class Junior high school students from a large suburb of NY city. Mean age=14.	-52 females -48 males	-Average $R^2=.2$, $F(1, 94)=11$ ($p<.01$) for total discrepancy scores as a predictor -Average r between discrepancy scores & dependant measures= .2 30% of r 's significant

Table 2 (cont'd)

Reference	Predictor Variable	Outcome Variable	Study Type	Sociodemographics	Sample Size	Effect Size
Palermo (1982)	-Child temperament -Teachers' demands for behavioral style	-Teacher ratings of ability & adjustment -Mothers' reports of problem behaviors -Peers' sociometric appraisals	One group tested at one point in time	White, Catholic, middle to upper-middle class 5 th graders enrolled in 2 private schools in Los Angeles Mean age= 10.9	-44 females -47 males	$r(\text{distract. fit, teacher adjust. ratings}) = .25$ $r(\text{distract. fit, positive peer relations}) = .20$ $r(\text{distract. fit, parent-reported problems}) = -.26$
Lerner (1983)	Fit scores with actual & perceived school academic and social demands	Teacher-, peer, and self-rated adaptation scores	One group tested at one point in time	White, catholic 8 th graders from NY city Mean age= 13.5	-51 females -48 males	R^2 associated with set of predictors range from .1 to .3. $F(1,64)$ for the difference between congruent and incongruent groups range from 7-10 with $p < .003$ - $p < .01$
Kacerguis (1983)	-Puberty status -Adolescent temperament -Parental demands	Parent-adolescent conflict	Cross-sectional	White 6 th graders (38%), 7 th graders (33%), and 8 th graders (29%) from public schools (42%) and Catholic schools (58%). Mean age= 13, mean family income= 28,000	-53 pre-pubescent females -42 post-pubescent females	-For prepubescents: r 's ranged from .54-.81 (mean= .67) $p < .001$ -For postpubescents: $r(\text{activ. lev. fit, confl.}) = -.35$ $p < .05$ $r(\text{rhythm. fit, confl.}) = -.43$ $p < .01$

Table 2 (cont'd)

Reference	Predictor Variable	Outcome Variable	Study Type	Sociodemographics	Sample Size	Effect Size
Hooker et al. (1984)	-Child temperament -Teacher demands	Perceived competence	NA	Children in the 6 th grade	NA	NA
Windle et al. (1986)	Adolescent temperament	-CES-D -Perceived competence	Cross-sectional	White Protestant early adolescents (mean age= 12) and late adolescents (mean age= 20) from Pennsylvania	-141 6 th graders (47% female) -240 Undergrads (73% female)	Average $r = .3$, with 44% significant at $p < .001$, 25% significant at $p < .01$, and 31% significant at $p < .05$
Lerner et al. (1985)	-Self-rated temperament -Teacher demands	-Test scores -Teacher ratings of ability and adjustment	One group tested at one point in time	White, protestant 4 th grade students (mean age= 10) in a semi-rural community in central Pennsylvania	-99 females -95 males	-For attention span/distractibility: $F(4,188) = 4.99$, $p < .001$ $t(191) = 2.79$, $p < .01$ -For reactivity: $F(4,188) = 3.17$, $p < .02$ average $t(191) = 3.37$, $p < .03$

Table 2 (cont'd)

Reference	Predictor Variable	Outcome Variable	Study Type	Sociodemographics	Sample Size	Effect Size
Talwar et al. (1988)	-Adolescent temperament -Parent demands -Peer Demands	-School adjustment -Peer social adjustment -Teacher ratings of behavioral problems -Anxiety and personal adjustment	Longitudinal	White, Protestant, middle to lower-middle class early adolescents from Pennsylvania	-29 females -46 males	Mean teacher-rated competence: low-fit group= 2.8 High-fit group= 3.23 Mean parent-reported problems: Low-fit group= 1.66 High-fit group= 1.44

Note: NA= Information Not Available

Additional Research

Additional research, although not directly testing the goodness-of-fit model, lends support to the idea that the temperament of the child influences maternal behaviors. Much of this research is limited by methodological problems because of nonindependence of measures; nonetheless, the associations reported are worthy of note.

First, temperamental difficulty (i.e., high intensity of response, irregularity in biological functions, negative Mood, low adaptability, and withdrawal) has been associated with less responsive caregiving or less stimulating contact from mothers (Crockenberg & Acredolo, 1983; Dunn & Kendrick, 1980; Kelly, 1976; Klein, 1984; Linn & Horowitz, 1983; Milliones, 1978; Peters-Martin & Wachs, 1984).

Some studies that do employ relatively independent measures of maternal behavior and infant temperament found that mothers are less engaged with their babies if they are difficult or irritable (Crockenberg & Acredolo, 1983; Linn & Horowitz, 1983). These studies are countered by findings of studies reporting that mothers of difficult or irritable babies are more engaged with their babies than are mothers of easy, less irritable babies (Bates, Oson, Pettit, & Bayles, 1982; Crockenberg & Smith, 1982; Fish & Crockenberg, 1981; Klein, 1984; Peters-Martin & Wachs, 1984; Pettit & Bates, 1984).

Crockenberg (1986) noted that several factors may be responsible for the inconsistent findings, for example, curvilinear effects—mothers increasing their involvement in relation to their infants' needs and withdrawing only if the infants are extremely difficult; the influence of some third variable such as maternal attitudes or the gender of the infant; or an interaction between temperament and some other characteristic of the caregiver or caregiving environment.

Generally, even with these inconsistencies, the results of the studies summarized allow the inference that at a given point in development neither children's attributes, nor the

demands of their settings per se, are the key predictors of their adaptive functioning. Instead, the relationship between the child and the context seems most important in home, peer, and school settings. Investigating this relationship involves looking at two components: an attribute of child individuality, and a feature of the context that is relevant to the domain of child individuality. In addition, a model that specifies the nature and implications of the relationship between child and context is necessary. The findings reviewed here suggest that the goodness-of-fit model is a useful one to employ in studying these relationship.

Focus of the present Study

The goal of this study was to add to our knowledge of the dynamics of the goodness of fit model by further documenting the extent to which maternal expectational demands are similar to/different from maternal behavioral demands (i.e. maternal behavioral style).

It is necessary at this point to clarify why the “Goodness of Fit” literature uses the term “maternal behavioral demands” to stand for maternal temperament. The work of Lerner and Lerner (1987) has delineated three possible sets of demands that children may encounter as they interact with their contexts: a) expectational demands, b) behavioral demands, and c) demands of the physical setting. These sets of demands are “possible” because they are part of the child’s environment. For any given child one or more of these sets of demands may not be relevant. So far, only attitudinal demands have been investigated in the temperament literature (e.g. Lerner, 1980; Palermo, 1982; Kacerguis, 1983; Hooker et al., 1984). These expectational demands were found to be relevant in the child’s environment. Thus, our use of the term “maternal behavioral demands” is not built on the assumption that maternal temperament does constitute an actual or relevant demand. Rather, this study takes the position that maternal temperament characteristics are only a

set of “potential” demands. One of the goals of the present study is to answer the question of whether maternal temperament is in fact an actual set of demands.

This study also examined the relationship between “fit” and maternal functioning. In particular the following research inquiries were addressed:

1. The initial purpose of this study was to assess the relationship between maternal expectational demands and maternal behavioral demands. Do mothers want what they themselves are? It made sense to predict that mothers’ demands would not closely match their behaviors. Behavioral styles that are acceptable for adults are not necessarily acceptable for infants. What parents demand of their children at each age level depends on what behaviors are deemed valuable and adaptive for the child at that age level, and could be quite different from the parent’s own behaviors. For example, A parent may have an irregular sleep pattern but desire for their young child to have a rhythmic sleeping pattern.
2. A second purpose of this study was to examine the relationship between two types of “fit” and maternal functioning. The first type of fit (or lack of fit) is between infant behaviors and maternal expectational demands. The second type of fit is between infant behaviors and maternal behavioral demands.

Literature indicates that a poor infant-mother fit is correlated with less responsiveness, attention, holding, and help offered by the mother to her infant (Kelly, 1976; Milliones, 1978; Dunn & Kendrick, 1980; Linn & Horowitz, 1983). In addition, children’s temperament influence their parents’ mental health functioning. For example, sleep arrhythmicity in children was found to result in stress, anxiety, and anger in the parents (Thomas & Chess 1976; Thomas et al., 1974).

Such an effect of child temperament on the parent's own level of adaptation has been reported in other data sets wherein, for instance, infants who had high thresholds for responsiveness to social stimulation and thus were not soothed easily by their mothers evoked intense distress reactions in their mothers (Brazelton, Koslowski, & Main, 1974).

In another study, Wolkind and De Salis (1982), interviewed mothers at four and fourteen months after the birth of their child. They found that at the four-month interview, mothers with negative mood/irregular children were significantly more likely to report physical tiredness than other mothers. And, at the 14-month interview, women with negative mood/irregular babies were more likely than the remainder to have developed a mental-health disorder (specifically depression) during the intervening ten month.

Therefore, it was expected that, in this sample, a mismatch between infant behaviors and either set of maternal demands would lead to higher levels of maternal depression and anxiety.

But which of the two types of fit/misfit described above is more closely associated with maternal functioning? Since no available studies have looked at the match between the mother's behavioral demands and the infant's temperament, this present study attempted to explore this issue.

3. A third question addressed by this study was whether the direction of misfit had an influence on maternal functioning. The concept of the Goodness of Fit is built around the notion that no temperament attribute is good or bad in itself. Rather, it is whether this attribute meets the contextual demands that matters. Therefore, in general, lack of fit in either direction was expected to be highly associated with depression and anxiety for the new mother. In

other words, high absolute values of discrepancy scores between maternal expectational demands and infant temperament were expected to be associated with high scores on the depression and anxiety scales.

Some literature, however, seems to indicate differential outcomes based on the direction of the misfit. For example, Lerner et al. (1985) found that students who met or exceeded the teacher's demands for attention had adjustment ratings which were higher than those for students who showed less attention than demanded. Therefore, this study explored whether the direction of the misfit matters for some, or all, of the temperament dimensions investigated.

4. In addition, the degree to which maternal temperament, depression, and anxiety were stable over time was be assessed. It was expected that these constructs would be relatively stable before the birth of the child (i.e. they would be stable from Time 1 to Time 2, which are both pre-birth measurement points), but would show instability in the pre-birth to post-birth (Time 2 vs. Time 3) transition.
5. Finally, this study looked at the change in scores from one measurement point to the other. These changes were analyzed closely for birth-by-subject interactions and effects of initial level of a variable on the amount of change in that variable.

It was predicted that the mother's Activity Level, Approach, and Flexibility would increase after the birth of the baby while her Task Orientation would decrease. No directional hypothesis was proposed with regards to the mother's Mood, Depression, Anxiety and demands with respect to her infant's temperament. In addition, it was predicted that there would be a significant birth-by-subject interaction for all the maternal variables.

Finally, it was predicted that differences in initial level of all variables would explain a significant portion of the variation in the response of the mothers to the birth. Compared to mothers who start out low on any given dimension, mothers who start out high on that dimension were expected to have smaller increases in the level of that dimension after the birth of their child. On the other hand, compared to mothers who start out high on any given dimension, mothers who start out low on that dimension were expected to have smaller decreases in the level of that dimension after the birth of their child.

This study used data from 60 families to assess the above mentioned relationships. Three waves of questionnaires were employed to collect all information. A more detailed description of the procedure used to collect the data for this investigation, the sample examined, the measures utilized, and the design of the study is presented in the following section.

Chapter 2

Method

Sample

This study uses data from the MSU “Becoming A Parent Study”, a short-term longitudinal study of psychosocial changes during the transition to parenthood. The Becoming A Parent Study involved 180 families. Of those, 60 families had completed all pre-pregnancy and post-pregnancy sets of questionnaires. The present study uses data from these 60 families.

Subjects

The participants were 60 pregnant women, ranging in age from 19–42 years (mean= 27.9, SD= 4.5), each expecting their first child. The sample is 83% Caucasian, 3% African-American, 2% Asian, 2% Hispanic, and 10% other races. The subjects are primarily married (85%) with only 13% single and 2% divorced. The mean education level for the sample is a college degree. 63% of the sample is employed full time, while 20% work part-time and the remaining 17% are unemployed. This sample includes a variety of occupations, ranging from unskilled and clerical workers to managers and executives. The mean level of occupational prestige is 47 on a scale of 15 to 90. The average total family income is \$40,000 per year. In order to control for the possible influence of having several children, only first-time mothers were sampled. 55% of the women reported that their pregnancy was planned, 23% reported it was unexpected, and 17% reported it was expected, though not planned. The majority of the sample (75%) experienced two or fewer birth complications during the delivery of their babies.

Recruitment

All first time expectant mothers were volunteers, recruited through Sparrow Hospital's Family Care Clinic, Butterworth OB Gyn Clinic, the Obstetric and Gynecology Clinic at

The Michigan State University Clinical Center, The Physician's group, and through Lansing and Grand Rapids area prenatal classes. Butterworth's clinic serves approximately 900 low income mothers per year, while the clinic on the campus of Michigan State University primarily serves middle-income mothers. Women were recruited into the study at the time for their first prenatal visit. Each participant met the following criteria: 1. Length of pregnancy < 24 weeks at first prenatal visit, 2. Nulliparous, 3. No chronic diseases, e.g. Diabetes mellitus, hypertension, cancer, etc., and 4. Singleton pregnancy.

Procedure

All women were approached by a nurse in the hospital/clinic waiting room. The nurse briefly described the research project and gave the expectant mother a letter explaining what the project involves. Attached to the letter were consent forms, to be filled out if they choose to participate. Upon receiving the signed consent forms, we contacted subjects by phone and arranged for them to receive the questionnaires. Adjustments were made for the researcher to go to the subject's home or workplace when difficulties arose.

Questionnaires were mailed to the participants' homes. Women were able to complete the questionnaires at their convenience within a specified period of time and return the completed packets by mail using prepaid return envelopes. Upon receipt of the completed questionnaire packet, the women were reimbursed \$5.00 for the time they spent completing the questionnaires.

Design

Data were gathered by two different methods. The original project design involved data collection at three points in time: upon entrance into the study at the first prenatal care visit, at the middle of the third trimester, and eight weeks postpartum. The group that was administered three sets of questionnaires throughout the pregnancy were named "3-wave"

subjects. These subjects constitute 52% (31 out of 60) of the current sample under investigation. On average, 3-wave women in this sample entered the study during their 20th week of pregnancy.

Initial recruiting attempts proved difficult and slow, due to the number of women under the age of 18 who were ineligible for participation. Additional subjects were recruited from expectant parent organizations. Since most participants do not begin classes until the last trimester of pregnancy, an adjustment to the original design was made. The second method of data collection then required administration of packets at two points: during the last trimester of the pregnancy and eight weeks postpartum. This group of subjects were labeled “2-wave” subjects. The sample includes 29 (48%) “2-wave” subjects. On average, they entered the study during the 34th week of their pregnancy.

In order to conduct the current analyses, data from all waves was utilized. Data for the subjects who received three waves of questionnaires was used in analyzing the stability of the DOTS-R, Depression, and Anxiety scales over the three points in time. In addition, this data was used in analyzing change scores from Time 1 (pre-delivery) to Time 2 (also pre-delivery), from Time 1 to Time 3 (post-delivery), and from Time 2 to Time 3.

For the subjects who received two waves of questionnaires, data necessary to conduct change analysis from Time 2 to Time 3 was extracted from the first set of questionnaires and from the second set of questionnaires, administered in the last trimester of pregnancy and eight weeks postpartum, consecutively.

For all subjects, data from the third trimester of pregnancy (Time 2), as well as data collected eight weeks after the birth of the babies (Time 3) was used to conduct the remaining analyses. Data extracted from the set of questionnaires that was administered in the last trimester of pregnancy consisted of: a) a scale assessing the mother's temperament, b) a scale assessing her demands and expectations with regards to her infant's temperament, c) a scale assessing her depression level, and d) a scale assessing her anxiety

level. Data extracted from the set of questionnaires that was administered eight weeks postpartum consisted of the same four questionnaires specified above in addition to a scale assessing the infant's behavioral style or temperament. Table 3 below shows the questionnaires used and the point(s) in time when they were obtained.

TABLE 3. Questionnaires Used and Point(s) in Time They were Given

Questionnaire	Time 1	Time 2		Time3	
	3W-1 (n=31)	3W-2 (n= 31)	2W-1 (n= 29)	3W-3 (n= 31)	2W-2 (n= 29)
Demographics	Yes	No	Yes	No	No
DOTS-R	Yes	Yes	Yes	Yes	Yes
DOTS-R:Ethnotheory	No	Yes	Yes	Yes	Yes
IBQ	No	No	No	Yes	Yes
CES-D	Yes	Yes	Yes	Yes	Yes
STAI	Yes	Yes	Yes	Yes	Yes

Measures

The goodness-of-fit model emphasizes the importance of studying contextual and individual characteristics. In keeping with the conceptual framework of that model and following the general procedure established in the Lerner's studies, infant and mother temperament were assessed, as well as the expectational demands held by the mother. Discrepancy scores between each infant attribute and each maternal expectational demand were calculated. Also, discrepancy scores between each infant attribute and each maternal behavioral demand, as well as discrepancy scores between each maternal behavioral and each maternal expectational demand were calculated. Finally, fit scores were related to two maternal-health-functioning outcome measures: Depression and anxiety.

Mother's Behavioral Demands (Temperament)

Each female participant rated her temperament, or behavioral style, using the Dimensions of Temperament Survey-Revised or "DOTS-R" (Windle & Lerner, 1986). This 54-item questionnaire assesses temperament along nine orthogonal dimensions: Activity Level-General, Activity Level-Sleep, Approach-Withdrawal, Flexibility-Rigidity, Quality of Mood, Rhythmicity-Sleep, Rhythmicity-Eating, Rhythmicity-Daily Habits, and Task Orientation. The response format for each item is "1" = really false for me; "2" = sort of false for me; "3" = sort of true for me; "4" = really true for me. An example of a DOTS-R item (indexing Task Orientation) is "I can always be distracted by something else, no matter what I may be doing."

Scoring the DOTS-R involves forming attribute scores by summing the scores on individual items. On the basis of the number of items per attribute the range of possible scores for each attribute is; 7-28 for Activity Level-General; 4-16 for Activity Level-Sleep; 7-28 for Approach-Withdrawal; 5-20 for Flexibility-Rigidity; 7-28 for Quality of Mood; 6-24 for Rhythmicity-Sleep; 5-20 for Rhythmicity-Eating; 5-20 for Rhythmicity-Daily Habits; and 8-32 for Task Orientation. Higher DOTS-R scores indicate higher levels of General and Sleep Activity, a tendency to Approach, higher Flexibility, a positive Mood, higher levels of Rhythmicity in sleep, in eating, and in daily habits, and a higher Task Orientation level.

Internal consistency coefficients (Cronbach alphas) for the above nine DOTS-R attributes are .75, .81, .77, .62, .80, .69, .75, .54, and .70 respectively for a sample of 224 sixth graders (Windle & Lerner, 1986). Construct validity for the Dots-R has been reported by Windle et al. (1986) in a study of temperament, perceived self-competence, and depression among early and late adolescents. Construct validity was also assessed by Windle (1985) in an inter-inventory study among late adolescent college students. Both convergent and discriminant validities were found between the DOTS-R attributes and the

traits measured by the EASI-II (Buss & Plomin, 1975) and the Eysenck Personality Inventory (Eysenck & Eysenck, 1969).

Mother's Expectational Demands

To reiterate a point made previously, this study stems from the view that, unless there is knowledge of the relationship between temperament and the contextual demands of a particular setting, temperament has little meaning. Thus, useful predictions about the relationship between infant temperament and maternal adaptive functioning cannot be made. Therefore, having an infant with particular temperament attribute is not necessarily in and of itself useful in predicting maternal functioning. Rather, it is more useful to know if a particular infant attribute matches or mismatches the mothers behavioral or expectational demands. Therefore, it is the measurement of temperament and the measurement of contextual demands, and whether there is a goodness of fit between the attribute and the demand, that should be of prime interest in predicting maternal functioning.

The Parent's Ethnotheory Scale for Temperament, or "DOTS-R: Ethnotheory" (Lerner and Lerner, 1986) was used to assess the mother's expectations and ideas about how she wants her infant to behave. This scale relies on the concepts of "developmental niche" and of "ethnotheory", as formulated by Super and Harkness (1981). DOTS-R items are used to assess the ethnotheories regarding temperamental difficulty which are maintained by the parents of young infants. The DOTS-R is used in order to produce, for the DOTS-R: Ethnotheory, scores for five temperamental attributes that constitute a subset of the nine characteristics measured by the DOTS-R.

For example, an item such as 'My child gets sleepy at different times every night' is presented to parents who are told to consider the item in terms of how they want their child to behave. If the item describes the way the parent wants the child to behave, then the

behavior would not make it difficult for the parent to interact with the child, even if the child always showed that behavior. The less the parent wants the behavior, the more difficult the interactions between the parent and the child will be, if the child always shows this behavior. Thus, based on the degree to which the parent wants the behavior described in the item, he or she rates the item in regard to the level of difficulty for interaction which would be associated with the behavior. This performance-based rating reflects an ethnotheory of the demands imposed on infants in their developmental niches.

The DOTS-R:Ethnotheory scale consists of 13 items describing the following five dimensions of temperament: Activity Level, Approach-Withdrawal, Quality of Mood, Task Orientation, and Flexibility-Rigidity. As with the DOTS-R, each DOTS-R:Ethnotheory question uses a four-choice format with high scores indicating greater difficulty of interaction. The response alternatives are “4” = really wanted (and therefore not difficult); “3” = sort of wanted (and therefore only a little difficult); “2” = sort of not wanted (and therefore somewhat difficult); and “1” = really not wanted at all (and therefore very difficult). If the item was considered not to be important or relevant to the parent then the corresponding response would be “not difficult.”

The scoring procedures for the DOTS-R:Ethnotheory questionnaire are identical to those described above for the scoring of the DOTS-R scale. And, in correspondence with the DOTS-R, five scores are derived, one for each temperament attribute measured by this scale. These scores, then, represent a parent's ethnotheory about what he/she would find difficult about a child's temperamental style based on the behaviors the parent wants from the child.

Psychometric properties of the DOTS-R:Ethnotheory scale have been reported in Windle and Lerner (1986). The internal consistency coefficients (Cronbach alphas) for the subscales range from .65 to .92 with an average reliability of .81.

Infant Temperament

The Infant Behavior Questionnaire (Rothbart, 1981) was used to assess mother's ratings of infant temperament. This questionnaire assesses temperamental dimensions of Activity Level, Smiling and Laughter, Fear, Distress and Latency to Approach Sudden or Novel Stimuli, Distress to Limitations, Duration of Orienting, and Soothability through caregiver report. It consists of 94 items, but for the purpose of this study only 79 items were used in order to cut down on the length of time required to fill out the questionnaire.

Each item has seven response choices ranging from never to always. An illustrative item is the following: "during the past week, when being undressed, how often did your baby smile or laugh?" Household reliability was assessed using a sample of 22 mothers who filled out the questionnaire along with a second adult in the household who spent time caring for the infant.

Product-moment correlations for agreement of the 22 matched pairs of questionnaires were: Smiling and Laughter, $r = .45$, Duration of Orienting, $r = .46$, Soothability, $r = .54$, Fear, $r = .66$, Distress to limitations, $r = .60$, Activity Level, $r = .69$. All correlations were significant at $p < .05$.

Evidence for the convergence validity of the IBQ was provided by Goldsmith and Rieser-Danner (1990). They used a sample of 32 mothers and 57 day-care teachers who reported on infants aged 2.5-8.2 months. They reported convergence among the IBQ, the Revised Infant Temperament Questionnaire, and the Infant Characteristics Questionnaire.

In addition, Rothbart (1981) reported extensive convergence between IBQ scores and measures derived from home observations using a longitudinal sample of 46 infants seen at 3, 6, and 9 months of age. Internal reliability has been reported with correlations averaging above .50 for all dimensions at three, six, nine, and twelve months. Reported alpha coefficients exceed .70.

Discrepancy Scores

The temperament scores and the demands scores (expectational or behavioral) together determine the degree of fit between an infant attribute and the context (mother). Following the work of Lerner and Lerner (1987a), discrepancy scores between each infant attribute and each maternal expectational demand were calculated. In addition, discrepancy scores between each infant attribute and each maternal behavioral demand, as well as discrepancy scores between each maternal behavioral and each maternal expectational demand were calculated.

The IBQ dimensions were matched up with the DOTS-R and the DOTS-R:Ethnotheory dimensions based on face validity. Five of the DOTS-R and DOTS-R:Ethnotheory dimensions were retained because they seemed to correspond closely to five of the IBQ dimensions. All remaining DOTS-R, DOTS-R:Ethnotheory, and IBQ dimensions were discarded. The retained DOTS-R and DOTS-R:Ethnotheory dimensions and their corresponding IBQ dimensions are listed below in Table 4.

TABLE 4. Retained DOTS-R, DOTS-R:Ethnotheory, and IBQ Dimensions

DOTS-R / DOTS-R:Ethnotheory Dimension	Corresponding IBQ Dimension
Activity Level - General	Activity Level
Approach - Withdrawal	Distress and Latency to Approach Sudden or Novel Stimuli
Flexibility - Rigidity	Distress to limitations
Quality of Mood	Smiling and Laughter
Task Orientation	Duration of Orienting

Thus, each of the 60 subjects received three sets of discrepancy scores. Each set of discrepancy scores consists of five difference scores, one for each of the retained temperamental attributes. A discrepancy score equal to zero or near zero indicates a match

between an infant attribute and the demands (expectational or behavioral) of the mother or, alternatively, a match between the expectational and the behavioral demands of the mother with respect to that attribute.

To give an example of how discrepancy scores are calculated, let's consider the question of whether there is a "fit" between maternal temperamental attributes (DOTS-R dimensions) and maternal expectational demands (DOTS-R:Ethnotheory dimensions). In this case, discrepancy scores are obtained by z-scoring all DOTS-R and DOTS-R:Ethnotheory scores and then subtracting from each mother's DOTS-R z-score (for each of the five retained attributes) the corresponding DOTS-R:Ethnotheory z-score (i.e., $\text{DOTS-R z-score} - \text{DOTS-R: Ethnotheory z-score} = \text{discrepancy, or fit, score}$). These scores indicate the total amount of discrepancy between maternal attributes (i.e. maternal behavioral demands) and maternal expectational demands. High scores (positive or negative) would indicate a maximum amount of mismatch between attributes and demands, and low scores would indicate a maximum amount of match between attributes and demands. A discrepancy score of zero would indicate the best fit (i.e., the least mismatch between temperament and preferences).

Maternal Mental Health Functioning: Depression

To assess each woman's level of stress before and after having their child, the Center for Epidemiological Studies-Depression Scale (CES-D) was used. This scale is a self-report measure of depressive symptomology that was developed for research applications. It assesses three components of depressive symptoms: 1. behavioral, 2. cognitive, and 3. happiness-sadness. Subjects are asked to respond to 20 statements describing particular ways they might have felt during the past week, with answers ranging from "0" = rarely or none of the time to "3" = most or all of the time. The possible range of total scores is 0-60, with higher scores reflecting greater stress. The CES-D appears to have adequate

psychometric properties (Radloff, 1977) with reported coefficient alphas of .84, .85, and .90.

Maternal Mental Health Functioning: Anxiety

To assess each woman's level of anxiety before and after the birth of her infant, the State-Trait Anxiety Inventory Form Y or STAI (Spielberger, 1983) was used. It yields information on the individual's level of both "state" anxiety and "trait" anxiety. The 20 state-anxiety items ask the subject to respond to statements describing how they feel "right now". The 20 trait-anxiety items ask the subject to respond to statements describing how they "usually feel". Items are rated on a 4-point scale ranging from 1 = "not at all" to 4 = "very much". Higher totals indicate greater anxiety levels. Concurrent validity and test-retest reliability (range .73 to .86) have been reported by Spielberger (1983). Alpha coefficients was reported at .93 for state anxiety, and .91 for trait anxiety.

Chapter 3

Results

Data Assessment

Data was coded and entered into a computer file by undergraduate students trained by two graduate assistants. Since all the measures consist of Likert-type scales, coding each question was done through a basic procedure of assigning to it the number of the answer choice. All data was coded twice by two separate staff members to ensure accuracy of coding. Next, data was systematically key-punched into the computer using identification numbers. The SPSS Windows statistical package was used for data entry.

All entered data was verified once to ensure accuracy of key-punching. Verification was done by obtaining a printout of the data in the computer database and checking it against the actual questionnaires filled out by the subjects. To preserve statistical power and maintain equal sample size for all variables, missing values were replaced with the series mean.

Upon completion of data entry, the following analyses were performed:

1. Descriptive statistics and variable intercorrelations for all of the measures used.
2. Scale reliability analyses to determine the internal consistency reliability (alpha) of the measures employed in the study.
3. Stability analysis of DOTS-R, CESD, and STAI scales.

4. Change analysis of DOTS-R, CESD, STAI, and DOTS-R:Ethnotheory scales followed by some regression analyses to determine the factors influencing the amount of change in the level of a variable after the birth of the infant.
5. Correlation analysis to assess the predictive relationship between maternal temperament and maternal demands.
6. Correlation analysis to assess the predictive relationship between discrepancy scores and measures of maternal functioning.

Descriptive Statistics

As described earlier in the sample section, the group of women in the study are highly educated with a mean age of 28, have fairly prestigious occupations, and are primarily caucasian career women.

Table 5 presents the mean and standard deviation for each of the scales used in the present study. Examination of the table reveals that, for each subscale, the mean at Time 1 differed only slightly from the mean at Time 2 and the mean at Time 3. In addition, the mean scores of the mother's expectational demands (DOTS-R:Ethnotheory) are not much different from the mean scores of her behavioral demands (DOTS-R). Finally, mean scores on the Depression and State Anxiety scales seem to decrease slightly from Time 1 to Time 2 as well as from Time 2 to Time 3.

TABLE 5. Descriptives for Scales

Scale	Time 1		Time 2		Time 3	
	Mean	SD	Mean	SD	Mean	SD
DOTS-R Activity Level: General	2.65	.64	2.60	.57	2.64	.58
DOTS-R Approach-Withdrawal	2.67	.58	2.71	.49	2.73	.57
DOTS-R Flexibility-Rigidity	2.84	.57	2.84	.62	2.87	.61
DOTS-R Quality of Mood	3.42	.56	3.41	.57	3.51	.49
DOTS-R Task Orientation	2.61	.60	2.59	.40	2.49	.36
DOTS-R:Ethnotheory Activity Level	NA	NA	3.14	.54	3.11	.56
DOTS-R:Ethnotheory Approach-Withdrawal	NA	NA	2.92	.57	2.84	.59
DOTS-R:Ethnotheory Flexibility-Rigidity	NA	NA	2.97	.48	2.88	.52
DOTS-R:Ethnotheory Quality of Mood	NA	NA	2.81	.52	2.73	.57
DOTS-R:Ethnotheory Task Orientation	NA	NA	2.47	.47	2.44	.55
IBQ Activity Level	NA	NA	NA	NA	3.66	.74
IBQ Latency to Approach Sudden or Novel Stimuli	NA	NA	NA	NA	2.32	.66
IBQ Distress to Limitations	NA	NA	NA	NA	3.68	.74
IBQ Smiling and Laughter	NA	NA	NA	NA	4.63	1.1
IBQ Duration of Orienting	NA	NA	NA	NA	3.83	1.0
CESD	15.68	9.7	15.03	9.5	12.82	8.3
STAI State Anxiety	36.14	11	34.5	11	31.49	9.2
STAI Trait Anxiety	51.74	4.5	52.68	5.8	53.37	4.2

Note: NA= Not Applicable

Variable Intercorrelations

Calculation of Pearson product-moment correlation coefficients for all variables used in the study, including demographic variables, provided information concerning the interrelationships among these variables for the sample. These intercorrelations are presented in Table 6 below.

Examination of the intercorrelations revealed that, in the sample, age, degree to which the pregnancy was planned, and income were all positively correlated with each other. In other words, the older the mother the more income she has and the more likely she is to have expected and planned for her pregnancy to occur.

Not surprisingly, depression and state anxiety at all times of testing were negatively correlated with age, degree of planning, and income. Trait anxiety, on the other hand, seems to be positively correlated with the three demographic variables. That is, older women, who were also more likely to have planned their pregnancy and to have higher income and more prestigious jobs, had higher (but not clinically problematic) levels, of trait anxiety compared to younger women.

Note also that at each time point, each dimension of the mother's temperament (DOTS-R subscale) was positively correlated with itself at the other two time points. For example, mothers who were high on Activity Level at Time 1 were also highly active at Time 2 and at Time 3 (after the birth of their babies).

The same was also true of the mother's demands with respect to her infant's temperament. To give an example, on average, a mother who demanded a high level of Task Orientation in the infant at Time 2, still demanded a high level of Task Orientation in her infant after he/she was born.

Finally, the last set of correlations that are of interest to note are those between the mother's behavioral demands (DOTS-R) and her expectational demands (DOTS-

TABLE 6. Intercorrelations Among All Variables Used in the Study

VARIABLE	1	2	3	4	5	6	7	8
SCALE: DEMOGRAPHICS								
1. AGE	1.0000	.2556*	.4207**	.3932**	-.0892	-.1240	.1456	.1538
2. OCCUPATION PRESTIGE	.2556*	1.0000	.1939	.3255*	-.1697	-.3071	.0768	.2676
3. PLANNED PREGNANCY?	.4207**	.1939	1.0000	.5610**	-.0600	-.2966	-.0972	-.0340
4. INCOME	.3932**	.3255*	.5610**	1.0000	-.0314	.0088	-.1460	-.0316
5. BIRTH COMPLICATIS	-.0892	-.1697	-.0600	-.0314	1.0000	-.0728	.2514	.1314
SCALE: DOTS-R AT TIME 1								
6. ACTIVITY LEVEL	-.1240	-.3071	-.2966	.0088	-.0728	1.0000	.0563	-.1064
7. APPROACH-WITHDRAWAL	.1456	.0768	-.0972	-.1460	.2514	.0563	1.0000	.6570**
8. FLEXIBILITY-RIGIDITY	.1538	.2676	-.0340	-.0316	.1314	-.1064	.6570**	1.0000
9. Quality of Mood	.1159	.0842	.1147	.1589	.3908*	-.1309	.2501	.1751
10. TASK ORIENTATION	.2931	-.0037	.2660	.2867	-.0936	.0357	-.1588	.0559
11. DEPRESSION AT TIME 1	-.5151**	-.3236	-.4458*	-.3748*	-.1256	.2891	-.2126	-.2456
SCALE: STAI AT TIME 1								
12. STATE ANXIETY	-.3272	-.1739	-.2034	-.1951	-.0937	.2140	-.1345	-.1007
13. TRAIT ANXIETY	.4682**	.2070	.3416	.3950*	.3712*	-.2425	.0943	.1667
SCALE: DOTS-R AT TIME 2								
14. ACTIVITY LEVEL	.1014	-.1828	-.1460	.0864	.0819	.8012**	-.0860	-.1682
15. APPROACH-WITHDRAWAL	.2426	.1492	.1026	-.0265	.0982	-.2774	.6868**	.4437*
16. FLEXIBILITY-RIGIDITY	-.0825	.0053	.0411	-.0676	.1496	-.3598*	.2582	.4768**
17. Quality of Mood	.1481	.1082	.3337**	.1600	.1922	-.2720	.1553	.0847
18. TASK ORIENTATION	.0402	-.0168	-.1053	.0031	-.0496	-.0718	-.0238	.0593
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2								
19. ACTIVITY LEVEL	.1476	-.1533	-.0410	.1310	.2066	.3315	.3540	.1586
20. APPROACH-WITHDRAWAL	.0282	.0747	.0541	.1133	-.0625	.2848	.4328*	.2144
21. FLEXIBILITY-RIGIDITY	.1719	-.0682	.1477	.1367	.1105	.0534	.4774**	.1713
22. Quality of Mood	.3692**	.1483	.0041	.3575**	-.1000	.2689	-.0413	-.0684
23. TASK ORIENTATION	.2620*	.0987	.3660**	.2746*	-.1113	-.1486	-.1399	-.2783
24. DEPRESSION AT TIME 2	-.3836**	-.0557	-.3181*	-.2437	-.2257	.4548*	-.2684	-.3279
SCALE: STAI AT TIME 2								
25. STATE ANXIETY	-.4525**	.0124	-.4116**	-.2881*	-.1075	.4780**	-.0072	-.2146
26. TRAIT ANXIETY	.3771**	-.0051	.3929**	.3150*	.1168	-.3742*	-.1925	-.0338
SCALE: DOTS-R TIME 3								
27. ACTIVITY LEVEL	.0926	-.1631	-.1657	.0945	-.1025	.7568**	.1978	.1011
28. APPROACH-WITHDRAWAL	.0882	.0339	-.1628	-.2034	-.0435	.1002	.8134**	.4837**
29. FLEXIBILITY-RIGIDITY	.0546	.0554	-.0145	-.0862	.0188	.0495	.7229**	.7579**
30. Quality of Mood	.0649	.1741	.1352	.1040	.0436	-.2212	.2819	.0453
31. TASK ORIENTATION	.0009	-.0295	.0509	.0021	-.0310	-.2066	-.1698	-.1702
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3								
32. ACTIVITY LEVEL	-.0405	-.1171	.0127	.1453	.1589	.3618*	.3282	.1247
33. APPROACH-WITHDRAWAL	-.0756	-.0139	.0319	.0534	.0746	.1346	.4383*	.2403
34. FLEXIBILITY-RIGIDITY	-.0480	-.0918	.1266	-.0425	.0277	-.0008	.2764	.1433
35. Quality of Mood	.1775	.0071	.1302	.2377	-.1781	.2097	.0425	-.1249
36. TASK ORIENTATION	.0148	.2652*	.1929	.2026	-.1260	-.2092	-.1998	-.1600
SCALE: IBQ AT TIME 3								
37. ACTIVITY LEVEL	-.4019**	-.1595	-.2167	-.2675*	.0790	.0179	.2035	.1724
38. APPROACH-WITHDRAWAL	-.1174	-.1598	-.0880	-.1846	.0634	.0951	-.0661	-.1797
39. FLEXIBILITY-RIGIDITY	.1791	.0609	-.0825	-.0454	-.1684	.1656	-.1753	-.1471
40. Quality of Mood	-.4592**	-.3159*	-.1931	-.2866*	-.0549	.0837	.0231	-.0964
41. TASK ORIENTATION	-.3209*	-.1775	-.1994	-.1496	.0411	.0270	-.2035	-.3441
42. DEPRESSION AT TIME 3	-.4470**	-.2020	-.4356**	-.4441**	.1530	.2190	-.1691	-.1064
SCALE: STAI AT TIME 3								
43. STATE ANXIETY	-.2154	-.0381	-.3817**	-.2389	.0718	.3309	-.2491	-.2512
44. TRAIT ANXIETY	.2877*	.1008	.4559**	.2948*	-.0783	-.3570*	.0744	.1892

Table 6 (cont'd)

VARIABLE	9	10	11	12	13	14	15	16
SCALE: DEMOGRAPHICS								
1. AGE	.1159	.2931	-.5151**	-.3272	.4682**	.1014	.2426	-.0825
2. OCCUPATION PRESTIGE	.0842	-.0037	-.3236	-.1739	.2070	-.1828	.1492	.0053
3. PLANNED PREGNANCY?	.1147	.2660	-.4458*	-.2034	.3416	-.1460	.1026	.0411
4. INCOME	.1589	.2867	-.3748*	-.1951	.3950*	.0864	-.0265	-.0676
5. BIRTH COMPLICATIONS	.3908*	-.0936	-.1256	-.0937	.3712*	.0819	.0982	.1496
SCALE: DOTS-R AT TIME 1								
6. ACTIVITY LEVEL	-.1309	.0357	.2891	.2140	-.2425	.8012**	-.2774	-.3598*
7. APPROACH-WITHDRAWAL	.2501	-.1588	-.2126	-.1345	.0943	-.0860	.6868**	.2582
8. FLEXIBILITY-RIGIDITY	.1751	.0559	-.2456	-.1007	.1667	-.1682	.4437*	.4768**
9. Quality of Mood	1.0000	-.4242*	-.5292**	-.5797**	.6915**	-.1082	.2871	.1598
10. TASK ORIENTATION	-.4242*	1.0000	-.1998	.0215	.0428	.0868	-.1631	.1119
11. DEPRESSION AT TIME 1	-.5292**	-.1998	1.0000	.7159**	-.7154**	.2048	-.2896	-.2143
SCALE: STAI AT TIME 1								
12. STATE ANXIETY	-.5797**	.0215	.7159**	1.0000	-.6551**	.1656	-.1042	-.1300
13. TRAIT ANXIETY	.6915**	.0428	-.7154**	-.6551**	1.0000	-.0727	.2147	.2240
SCALE: DOTS-R AT TIME 2								
14. ACTIVITY LEVEL	-.1082	.0868	.2048	.1656	-.0727	1.0000	-.0307	-.0952
15. APPROACH-WITHDRAWAL	.2871	-.1631	-.2896	-.1042	.2147	-.0307	1.0000	.4182**
16. FLEXIBILITY-RIGIDITY	.1598	.1119	-.2143	-.1300	.2240	-.0952	.4182**	1.0000
17. Quality of Mood	.6708**	-.0857	-.7007**	-.5422**	.7385**	-.0422	.4839**	.4761**
18. TASK ORIENTATION	-.1316	.6444**	-.3415	-.0773	.1707	-.1585	.0472	.0351
SCALE: DOTS-R: ETHNOTHEORY AT TIME 2								
19. ACTIVITY LEVEL	.0627	-.0822	-.1592	-.0853	.1313	.2489	.2446	.0392
20. APPROACH-WITHDRAWAL	.4205*	-.1785	-.1083	-.0336	.1740	.1960	.3016*	.3018*
21. FLEXIBILITY-RIGIDITY	.1531	-.0391	-.0024	-.0426	.0795	.0371	.4296**	.2971*
22. Quality of Mood	.3374	.0574	-.2081	-.2071	.4240*	.2501	-.0313	-.0710
23. TASK ORIENTATION	.0580	.2156	-.3410	-.2116	.2075	-.1188	-.0467	-.1937
24. DEPRESSION AT TIME 2	-.5179**	-.1198	.8354**	.4128*	-.6052**	.1258	-.1730	-.2415
SCALE: STAI AT TIME 2								
25. STATE ANXIETY	.0491	-.4442*	.3435	.2449	-.3155	.0724	-.1729	-.2260
26. TRAIT ANXIETY	.1841	.2719	-.2428	-.1837	.5079**	-.0803	.1212	.1791
SCALE: DOTS-R AT TIME 3								
27. ACTIVITY LEVEL	.0235	-.0289	.2262	.1782	.0509	.7247**	.1180	.0289
28. APPROACH-WITHDRAWAL	.2802	-.2322	-.1623	-.1287	.0768	.0401	.6999**	.2914*
29. FLEXIBILITY-RIGIDITY	.4518*	-.3048	-.2851	-.1784	.1811	-.0570	.5125**	.5537**
30. Quality of Mood	.7043**	-.4010*	-.5450**	-.4847**	.6070**	.0077	.4957**	.3299*
31. TASK ORIENTATION	-.2224	.5936**	-.2174	-.1272	.0580	-.0700	.0497	-.0794
SCALE: DOTS-R: ETHNOTHEORY AT TIME 3								
32. ACTIVITY LEVEL	-.0367	.0559	.0506	.0879	-.0428	.3332**	.2907*	.2325
33. APPROACH-WITHDRAWAL	.3935*	-.1391	-.1321	-.0783	.1590	.0127	.1954	.3427**
34. FLEXIBILITY-RIGIDITY	-.0560	-.0075	.0844	.2509	-.2223	-.1383	.1809	.3187*
35. Quality of Mood	.1743	-.1187	.0168	.1363	-.0508	.1191	-.0544	-.1632
36. TASK ORIENTATION	.2860	.1812	-.3385	-.4547*	.3847*	-.0361	-.1172	-.1049
SCALE: IBQ AT TIME 3								
37. ACTIVITY LEVEL	.2571	-.4365*	.0651	-.1844	-.1580	.0281	.0436	.2697*
38. APPROACH-WITHDRAWAL	-.0688	-.1853	.5249**	.3056	-.3427	-.0109	-.1158	-.1566
39. FLEXIBILITY-RIGIDITY	.0659	-.0281	.1667	.1578	.1118	.1837	-.1182	-.0888
40. Quality of Mood	.1294	-.3154	.1638	-.1592	-.1352	-.0247	.1723	.2179
41. TASK ORIENTATION	-.2190	-.0476	.1534	-.0226	-.2726	.0153	-.0146	-.0009
42. DEPRESSION AT TIME 3	-.3170	-.2428	.5841**	.2147	-.5298**	.1134	-.0981	.0803
SCALE: STAI AT TIME 3								
43. STATE ANXIETY	-.4354*	-.2185	.6276**	.5789**	-.7431**	.1613	-.1936	.0005
44. TRAIT ANXIETY	.5402**	.0764	-.6526**	-.4419*	.7441**	-.2547*	.0346	-.0949

Table 6 (cont'd)

VARIABLE	17	18	19	20	21	22	23	24
SCALE: DEMOGRAPHICS								
1. AGE	.1481	.0402	.1476	.0282	.1719	.3692**	.2620*	-.3836**
2. OCCUPATION PRESTIGE	.1082	-.0168	-.1533	.0747	-.0682	.1483	.0987	-.0557
3. PLANNED PREGNANCY?	.3337**	-.1053	-.0410	.0541	.1477	.0041	.3660**	-.3181*
4. INCOME	.1600	.0031	.1310	.1133	.1367	.3575**	.2746*	-.2437
5. BIRTH COMPLICATIONS	.1922	-.0496	.2066	-.0625	.1105	-.1000	-.1113	-.2257
SCALE: DOTS-R AT TIME 1								
6. ACTIVITY LEVEL	-.2720	-.0718	.3315	.2848	.0534	.2689	-.1486	.4548*
7. APPROACH-WITHDRAWAL	.1553	-.0238	.3540	.4328*	.4774**	-.0413	-.1399	-.2684
8. FLEXIBILITY-RIGIDITY	.0847	.0593	.1586	.2144	.1713	-.0684	-.2783	-.3279
9. Quality of Mood	.6708**	-.1316	.0627	.4205*	.1531	.3374	.0580	-.5179**
10. TASK ORIENTATION	-.0857	.6444**	-.0822	-.1785	-.0391	.0574	.2156	-.1198
11. DEPRESSION AT TIME 1	-.7007**	-.3415	-.1592	-.1083	-.0024	-.2081	-.3410	.8354**
SCALE: STAI AT TIME 1								
12. STATE ANXIETY	-.5422**	-.0773	-.0853	-.0336	-.0426	-.2071	-.2116	.4128*
13. TRAIT ANXIETY	.7385**	.1707	.1313	.1740	.0795	.4240*	.2075	-.6052**
SCALE: DOTS-R AT TIME 2								
14. ACTIVITY LEVEL	-.0422	-.1585	.2489	.1960	.0371	.2501	-.1188	.1258
15. APPROACH-WITHDRAWAL	.4839**	.0472	.2446	.3016*	.4296**	-.0313	-.0467	-.1730
16. FLEXIBILITY-RIGIDITY	.4761**	.0351	.0392	.3018*	.2971*	-.0710	-.1937	-.2415
17. Quality of Mood	1.0000	-.0287	.2103	.2374	.3059*	.0994	.0746	-.4313**
18. TASK ORIENTATION	-.0287	1.0000	-.0703	-.1123	-.3002*	-.0238	.1946	-.1373
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2								
19. ACTIVITY LEVEL	.2103	-.0703	1.0000	.2634*	.2400	.1813	-.0028	-.1561
20. APPROACH-WITHDRAWAL	.2374	-.1123	.2634*	1.0000	.3349**	.1435	-.1488	-.1435
21. FLEXIBILITY-RIGIDITY	.3059*	-.3002*	.2400	.3349**	1.0000	.0484	-.1329	-.0498
22. Quality of Mood	.0994	-.0238	.1813	.1435	.0484	1.0000	.0149	-.0993
23. TASK ORIENTATION	.0746	.1946	-.0028	-.1488	-.1329	.0149	1.0000	-.1126
24. DEPRESSION AT TIME 2	-.4313**	-.1373	-.1561	-.1435	-.0498	-.0993	-.1126	1.0000
SCALE: STAI AT TIME 2								
25. STATE ANXIETY	-.3186*	-.0119	-.0972	-.0266	-.1882	-.0593	-.1921	.6022**
26. TRAIT ANXIETY	.4804**	.1734	.0693	-.0770	.0872	.2176	.1865	-.4888**
SCALE: DOTS-R AT TIME 3								
27. ACTIVITY LEVEL	.0391	-.0280	.3109*	.1949	.1503	.2974*	-.0348	.1858
28. APPROACH-WITHDRAWAL	.3047*	.0029	.2362	.2882*	.4694**	.0775	-.1631	.0149
29. FLEXIBILITY-RIGIDITY	.4216**	-.1199	.2356	.3766**	.4860**	.0728	-.1655	-.2460
30. Quality of Mood	.7869**	-.1570	.2443	.2205	.3039*	.1512	.1296	-.2346
31. TASK ORIENTATION	-.0048	.6183**	.0268	-.0093	-.3416**	-.1612	.2946*	-.0838
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3								
32. ACTIVITY LEVEL	.3600**	-.1078	.4209**	.1453	.2326	.0470	-.0530	-.0902
33. APPROACH-WITHDRAWAL	.2003	-.1458	.3173*	.5876**	.3848**	-.0148	-.0420	-.0431
34. FLEXIBILITY-RIGIDITY	.1399	-.0475	.0806	.1214	.3262*	-.0428	-.1645	-.1476
35. Quality of Mood	-.0185	-.2188	.1044	.0785	-.0709	.4476**	.1345	-.0052
36. TASK ORIENTATION	.1794	.2200	-.3374**	-.2182	-.1977	.0775	.5231**	-.0527
SCALE: IDQ AT TIME 3								
37. ACTIVITY LEVEL	.1153	-.0936	.0631	-.0427	.0342	.0140	-.0992	.1353
38. APPROACH-WITHDRAWAL	-.1457	-.0639	-.3230*	-.3047*	-.1011	.0145	.0389	.1100
39. FLEXIBILITY-RIGIDITY	-.0851	.1210	-.2253	-.0992	-.3043*	.3245*	.1861	.1311
40. Quality of Mood	.0653	-.0133	-.0951	-.0391	.0027	-.1228	-.1906	.2621*
41. TASK ORIENTATION	.0497	.0417	-.2293	-.2790*	-.0704	-.1615	-.1247	.1511
42. DEPRESSION AT TIME 3	-.2687*	-.0891	-.1019	-.1316	-.0942	-.2951*	-.3518**	.4382**
SCALE: STAI AT TIME 3								
43. STATE ANXIETY	-.2853*	-.0494	-.0250	.0569	-.1605	-.2241	-.3143*	.1934
44. TRAIT ANXIETY	.3482**	.0766	.0532	.0285	-.0597	.1013	.3976**	-.4196**

Table 6 (cont'd)

VARIABLE	25	26	27	28	29	30	31	32
SCALE: DEMOGRAPHICS								
1. AGE	-.4525**	.3771**	.0926	.0882	.0546	.0649	.0009	-.0405
2. OCCUPATION PRESTIGE	.0124	-.0051	-.1631	.0339	.0554	.1741	-.0295	-.1171
3. PLANNED PREGNANCY	-.4116**	.3929**	-.1657	-.1628	-.0145	.1352	.0509	.0127
4. INCOME	-.2881*	.3150*	.0945	-.2034	-.0862	.1040	.0021	.1453
5. BIRTH COMPLICATIONS	-.1075	.1168	-.1025	-.0435	.0188	.0436	-.0310	.1589
SCALE: DOTS-R AT TIME 1								
6. ACTIVITY LEVEL	.4780**	-.3742*	.7568**	.1002	.0495	-.2212	-.2066	.3618*
7. APPROACH-WITHDRAWAL	-.0072	-.1925	.1978	.8134**	.7229**	.2819	-.1698	.3282
8. FLEXIBILITY-RIGIDITY	-.2146	-.0338	.1011	.4837**	.7579**	.0453	-.1702	.1247
9. Quality of Mood	.0491	.1841	.0235	.2802	.4518*	.7043**	-.2224	-.0367
10. TASK ORIENTATION	-.4442*	.2719	-.0289	-.2322	-.3048	-.4010*	.5936**	.0559
11. DEPRESSION AT TIME 1	.3435	-.2428	.2262	-.1623	-.2851	-.5450**	-.2174	.0506
SCALE: STAI AT TIME 1								
12. STATE ANXIETY	.2449	-.1837	.1782	-.1287	-.1784	-.4847**	-.1272	.0879
13. TRAIT ANXIETY	-.3155	.5079**	.0509	.0768	.1811	.6070**	.0580	-.0428
SCALE: DOTS-R AT TIME 2								
14. ACTIVITY LEVEL	.0724	-.0803	.7247**	.0401	-.0570	.0077	-.0700	.3332**
15. APPROACH-WITHDRAWAL	-.1729	.1212	.1180	.6999**	.5125**	.4957**	.0497	.2907*
16. FLEXIBILITY-RIGIDITY	-.2260	.1791	.0289	.2914*	.5537**	.3299*	-.0794	.2325
17. Quality of Mood	-.3186*	.4804**	.0391	.3047*	.4216**	.7869**	-.0048	.3600**
18. TASK ORIENTATION	-.0119	.1734	-.0280	.0029	-.1199	-.1570	.6183**	-.1078
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2								
19. ACTIVITY LEVEL	-.0972	.0693	.3109*	.2362	.2356	.2443	.0268	.4209**
20. APPROACH-WITHDRAWAL	-.0266	-.0770	.1949	.2882*	.3766**	.2205	-.0093	.1453
21. FLEXIBILITY-RIGIDITY	-.1882	.0872	.1503	.4694**	.4860**	.3039*	-.3416**	.2326
22. Quality of Mood	-.0593	.2176	.2974*	.0775	.0728	.1512	-.1612	.0470
23. TASK ORIENTATION	-.1921	.1865	-.0348	-.1631	-.1655	.1296	.2946*	-.0530
24. DEPRESSION AT TIME 2	.6022**	-.4888**	.1858	.0149	-.2460	-.2346	-.0838	-.0902
SCALE: STAI AT TIME 2								
25. STATE ANXIETY	1.0000	-.7143**	.1705	.0194	-.1366	-.1534	-.1479	-.2431
26. TRAIT ANXIETY	-.7143**	1.0000	-.0390	-.0857	-.0297	.2760*	.1611	.2274
SCALE: DOTS-R AT TIME 3								
27. ACTIVITY LEVEL	.1705	-.0390	1.0000	.3104*	.1855	.2110	-.1088	.3841**
28. APPROACH-WITHDRAWAL	.0194	-.0857	.3104*	1.0000	.6165**	.4753**	-.1370	.4193**
29. FLEXIBILITY-RIGIDITY	-.1366	-.0297	.1855	.6165**	1.0000	.4406**	-.3010*	.2744*
30. Quality of Mood	-.1534	.2760*	.2110	.4753**	.4406**	1.0000	-.1830	.3781**
31. TASK ORIENTATION	-.1479	.1611	-.1088	-.1370	-.3010*	-.1830	1.0000	-.0785
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3								
32. ACTIVITY LEVEL	-.2431	.2274	.3841**	.4193**	.2744*	.3781**	-.0785	1.0000
33. APPROACH-WITHDRAWAL	.0130	-.0911	.0732	.2222	.4485**	.1040	-.0455	.2004
34. FLEXIBILITY-RIGIDITY	-.1146	.1794	-.0547	.1292	.2266	-.0472	-.0235	.0783
35. Quality of Mood	.0731	.0147	.1571	.0382	.0536	.1070	-.1709	.1275
36. TASK ORIENTATION	-.0427	.1659	-.0258	-.1425	-.1708	.1714	.2513	-.0357
SCALE: IBQ AT TIME 3								
37. ACTIVITY LEVEL	.2207	-.1751	.1293	.1845	.3658**	.0959	-.1598	.2140
38. APPROACH-WITHDRAWAL	.0630	-.0700	-.0473	-.0185	-.0613	-.2707*	-.0970	.1120
39. FLEXIBILITY-RIGIDITY	.0377	.1752	.2767*	-.0367	-.1364	-.0149	-.0053	-.1223
40. Quality of Mood	.2534	-.2012	-.0163	.2182	.2124	.1287	-.0646	.0382
41. TASK ORIENTATION	.0840	-.1152	-.0964	.0862	-.0366	.0644	-.0233	.1664
42. DEPRESSION AT TIME 3	.3048*	-.3740**	.0298	.0375	.0819	-.2038	-.2233	.1260
SCALE: STAI AT TIME 3								
43. STATE ANXIETY	.4180**	-.3760**	.0324	-.1276	-.1000	-.2875*	-.1302	-.0364
44. TRAIT ANXIETY	-.3801**	.4520**	-.0469	-.0102	.0369	.3149*	.1768	-.0200

Table 6 (cont'd)

VARIABLE	33	34	35	36	37	38	39	40
SCALE: DEMOGRAPHICS								
1. AGE	-.0756	-.0480	.1775	.0148	-.4019**	-.1174	.1791	-.4592**
2. OCCUPATION PRESTIGE	-.0139	-.0918	.0071	.2652*	-.1593	-.1598	.0609	-.3159*
3. PLANNED PREGNANCY?	.0319	.1266	.1302	.1929	-.2167	-.0880	-.0825	-.1931
4. INCOME	.0534	-.0425	.2377	.2026	-.2675*	-.1846	-.0454	-.2866*
5. BIRTH COMPLICATIONS	.0746	.0277	-.1781	-.1260	.0790	.0634	-.1684	-.0549
SCALE: DOTS-R AT TIME 1								
6. ACTIVITY LEVEL	.1346	-.0008	.2097	-.2092	.0179	.0951	.1656	.0837
7. APPROACH-WITHDRAWAL	.4383*	.2764	-.0425	-.1998	.2035	-.0661	-.1753	.0231
8. FLEXIBILITY-RIGIDITY	.2403	.1433	-.1249	-.1600	.1724	-.1797	-.1471	-.0964
9. Quality of Mood	.3935*	-.0560	.1743	.2860	.2571	-.0688	.0659	.1294
10. TASK ORIENTATION	-.1391	-.0075	-.1187	.1812	-.4365*	-.1853	-.0281	-.3154
11. DEPRESSION AT TIME 1	-.1321	.0844	.0168	-.3385	.0651	.5249**	.1667	.1638
SCALE: STAI AT TIME 1								
12. STATE ANXIETY	-.0783	.2509	.1363	-.4547*	-.1844	.3056	.1578	-.1592
13. TRAIT ANXIETY	.1590	-.2223	-.0508	.3847*	-.1580	-.3427	.1118	-.1352
SCALE: DOTS-R AT TIME 2								
14. ACTIVITY LEVEL	.0127	-.1383	.1191	-.0361	.0281	-.0109	.1837	-.0247
15. APPROACH-WITHDRAWAL	.1954	.1809	-.0544	-.1172	.0436	-.1158	-.1182	.1723
16. FLEXIBILITY-RIGIDITY	.3427**	.3187*	-.1632	-.1049	.2697*	-.1566	-.0888	.2179
17. Quality of Mood	.2003	.1399	-.0185	.1794	.1153	-.1457	-.0851	.0653
18. TASK ORIENTATION	-.1458	-.0475	-.2188	.2200	-.0936	-.0639	.1210	-.0133
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2								
19. ACTIVITY LEVEL	.3173*	.0806	.1044	-.3374**	.0631	-.3230*	-.2253	-.0951
20. APPROACH-WITHDRAWAL	.5876**	.1214	.0785	-.2182	-.0427	-.3067*	-.0992	-.0391
21. FLEXIBILITY-RIGIDITY	.3848**	.3262*	-.0709	-.1977	.0342	-.1011	-.3043*	.0027
22. Quality of Mood	-.0148	-.0428	.4476**	.0775	.0140	.0145	.3245*	-.1228
23. TASK ORIENTATION	-.0420	-.1645	.1345	.5231**	-.0992	.0389	.1861	-.1906
24. DEPRESSION AT TIME 2	-.0431	-.1476	-.0052	-.0527	.1353	.1100	.1311	.2621*
SCALE: STAI AT TIME 2								
25. STATE ANXIETY	.0130	-.1146	.0731	-.0427	.2207	.0630	.0377	.2534
26. TRAIT ANXIETY	-.0911	.1794	.0147	.1659	-.1751	-.0700	.1752	-.2012
SCALE: DOTS-R AT TIME 3								
27. ACTIVITY LEVEL	.0732	-.0547	.1571	-.0258	.1293	-.0473	.2767*	-.0163
28. APPROACH-WITHDRAWAL	.2222	.1292	.0382	-.1425	.1845	-.0185	-.0367	.2182
29. FLEXIBILITY-RIGIDITY	.4485**	.2266	.0536	-.1708	.3658**	-.0613	-.1364	.2124
30. Quality of Mood	.1040	-.0472	.1070	.1714	.0959	-.2707*	-.0149	.1287
31. TASK ORIENTATION	-.0455	-.0235	-.1709	.2513	-.1598	-.0970	-.0053	-.0646
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3								
32. ACTIVITY LEVEL	.2004	.0783	.1275	-.0357	.2140	.1120	-.1223	.0382
33. APPROACH-WITHDRAWAL	1.0000	.4858**	.1140	-.2764*	.1876	-.0889	-.1165	.0594
34. FLEXIBILITY-RIGIDITY	.4858**	1.0000	.0715	-.3857**	.0959	.0320	-.0069	-.0146
35. Quality of Mood	.1140	.0715	1.0000	-.0908	.0623	.1279	.1786	-.1250
36. TASK ORIENTATION	-.2764*	-.3857**	-.0908	1.0000	.0952	.2589*	.2960*	.0244
SCALE: IBQ AT TIME 3								
37. ACTIVITY LEVEL	.1876	.0959	.0623	.0952	1.0000	.2805*	.1259	.4138**
38. APPROACH-WITHDRAWAL	-.0889	.0320	.1279	.2589*	.2805*	1.0000	.1992	.1655
39. FLEXIBILITY-RIGIDITY	-.1165	-.0069	.1786	.2960*	.1259	.1992	1.0000	-.1728
40. Quality of Mood	.0594	-.0146	-.1250	.0244	.4138**	.1655	-.1728	1.0000
41. TASK ORIENTATION	-.1325	-.0074	-.2151	.1112	.2189	.3657**	-.0509	.5645**
42. DEPRESSION AT TIME 3	.0648	-.1485	-.1366	-.2549*	.3758**	.2341	-.1750	.4569**
SCALE: STAI AT TIME 3								
43. STATE ANXIETY	.0454	.0961	.0899	-.3371**	.0904	.1221	-.0484	.0677
44. TRAIT ANXIETY	-.0755	-.1394	.0703	.3737**	-.2344	-.1333	.0992	-.2417

Table 6 (cont'd)

VARIABLE	41	42	43	44
SCALE: DEMOGRAPHICS				
1. AGE	-.3209*	-.4470**	-.2154	.2877*
2. OCCUPATION PRESTIGE	-.1775	-.2020	-.0381	.1008
3. PLANNED PREGNANCY?	-.1994	-.4356**	-.3817**	.4559**
4. INCOME	-.1496	-.4441**	-.2389	.2948*
5. BIRTH COMPLICATIONS	.0411	.1530	.0718	-.0783
SCALE: DOTS-R AT TIME 1				
6. ACTIVITY LEVEL	.0270	.2190	.3309	-.3570*
7. APPROACH-WITHDRAWAL	-.2035	-.1691	-.2491	.0744
8. FLEXIBILITY-RIGIDITY	-.3441	-.1064	-.2512	.1892
9. Quality of Mood	-.2190	-.3170	-.4354*	.5402**
10. TASK ORIENTATION	-.0476	-.2428	-.2185	.0764
11. DEPRESSION AT TIME 1	.1534	.5841**	.6276**	-.6526**
SCALE: STAI AT TIME 1				
12. STATE ANXIETY	-.0226	.2147	.5789**	-.4419*
13. TRAIT ANXIETY	-.2726	-.5298**	-.7431**	.7441**
SCALE: DOTS-R AT TIME 2				
14. ACTIVITY LEVEL	.0153	.1134	.1613	-.2547*
15. APPROACH-WITHDRAWAL	-.0146	-.0981	-.1936	.0346
16. FLEXIBILITY-RIGIDITY	-.0009	.0803	.0005	-.0949
17. Quality of Mood	.0497	-.2687*	-.2853*	.3482**
18. TASK ORIENTATION	.0417	-.0891	-.0494	.0766
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2				
19. ACTIVITY LEVEL	-.2293	-.1019	-.0250	.0532
20. APPROACH-WITHDRAWAL	-.2790*	-.1316	.0569	.0285
21. FLEXIBILITY-RIGIDITY	-.0704	-.0942	-.1605	-.0597
22. Quality of Mood	-.1615	-.2951*	-.2241	.1013
23. TASK ORIENTATION	-.1247	-.3518**	-.3143*	.3976**
24. DEPRESSION AT TIME 2	.1511	.4382**	.1934	-.4196**
SCALE: STAI AT TIME 2				
25. STATE ANXIETY	.0840	.3048*	.4180**	-.3801**
26. TRAIT ANXIETY	-.1152	-.3740**	-.3760**	.4520**
SCALE: DOTS-R AT TIME 3				
27. ACTIVITY LEVEL	-.0964	.0298	.0324	-.0469
28. APPROACH-WITHDRAWAL	.0862	.0375	-.1276	-.0102
29. FLEXIBILITY-RIGIDITY	-.0366	.0819	-.1000	.0369
30. Quality of Mood	.0644	-.2038	-.2875*	.3149*
31. TASK ORIENTATION	-.0233	-.2233	-.1302	.1768
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3				
32. ACTIVITY LEVEL	.1664	.1260	-.0364	-.0200
33. APPROACH-WITHDRAWAL	-.1325	.0648	.0454	-.0755
34. FLEXIBILITY-RIGIDITY	-.0074	-.1485	.0961	-.1394
35. Quality of Mood	-.2151	-.1366	.0899	.0703
36. TASK ORIENTATION	.1112	-.2549*	-.3371**	.3737**
SCALE: IBQ AT TIME 3				
37. ACTIVITY LEVEL	.2189	.3758**	.0904	-.2344
38. APPROACH-WITHDRAWAL	.3657**	.2341	.1221	-.1333
39. FLEXIBILITY-RIGIDITY	-.0509	-.1750	-.0484	.0992
40. Quality of Mood	.5645**	.4569**	.0677	-.2417
41. TASK ORIENTATION	1.0000	.4431**	.2003	-.3203*
42. DEPRESSION AT TIME 3	.4431**	1.0000	.5463**	-.6088**
SCALE: STAI AT TIME 3				
43. STATE ANXIETY	.2003	.5463**	1.0000	-.6699**
44. TRAIT ANXIETY	-.3203*	-.6088**	-.6699**	1.0000

Notes:

* = Significant at $p \leq .05$ ** = Significant at $p \leq .01$

Table 6 (cont'd)

VARIABLE	41	42	43	44
SCALE: DEMOGRAPHICS				
1. AGE	-.3209*	-.4470**	-.2154	.2877*
2. OCCUPATION PRESTIGE	-.1775	-.2020	-.0381	.1008
3. PLANNED PREGNANCY?	-.1994	-.4356**	-.3817**	.4559**
4. INCOME	-.1496	-.4441**	-.2389	.2948*
5. BIRTH COMPLICATIONS	.0411	.1530	.0718	-.0783
SCALE: DOTS-R AT TIME 1				
6. ACTIVITY LEVEL	.0270	.2190	.3309	-.3570*
7. APPROACH-WITHDRAWAL	-.2035	-.1691	-.2491	.0744
8. FLEXIBILITY-RIGIDITY	-.3441	-.1064	-.2512	.1892
9. Quality of Mood	-.2190	-.3170	-.4354*	.5402**
10. TASK ORIENTATION	-.0476	-.2428	-.2185	.0764
11. DEPRESSION AT TIME 1	.1534	.5841**	.6276**	-.6526**
SCALE: STAI AT TIME 1				
12. STATE ANXIETY	-.0226	.2147	.5789**	-.4419*
13. TRAIT ANXIETY	-.2726	-.5298**	-.7431**	.7441**
SCALE: DOTS-R AT TIME 2				
14. ACTIVITY LEVEL	.0153	.1134	.1613	-.2547*
15. APPROACH-WITHDRAWAL	-.0146	-.0981	-.1936	.0346
16. FLEXIBILITY-RIGIDITY	-.0009	.0803	.0005	-.0949
17. Quality of Mood	.0497	-.2687*	-.2853*	.3482**
18. TASK ORIENTATION	.0417	-.0891	-.0494	.0766
SCALE: DOTS-R:ETHNOTHEORY AT TIME 2				
19. ACTIVITY LEVEL	-.2293	-.1019	-.0250	.0532
20. APPROACH-WITHDRAWAL	-.2790*	-.1316	.0569	.0285
21. FLEXIBILITY-RIGIDITY	-.0704	-.0942	-.1605	-.0597
22. Quality of Mood	-.1615	-.2951*	-.2241	.1013
23. TASK ORIENTATION	-.1247	-.3518**	-.3143*	.3976**
24. DEPRESSION AT TIME 2	.1511	.4382**	.1934	-.4196**
SCALE: STAI AT TIME 2				
25. STATE ANXIETY	.0840	.3048*	.4180**	-.3801**
26. TRAIT ANXIETY	-.1152	-.3740**	-.3760**	.4520**
SCALE: DOTS-R AT TIME 3				
27. ACTIVITY LEVEL	-.0964	.0298	.0324	-.0469
28. APPROACH-WITHDRAWAL	.0862	.0375	-.1276	-.0102
29. FLEXIBILITY-RIGIDITY	-.0366	.0819	-.1000	.0369
30. Quality of Mood	.0644	-.2038	-.2875*	.3149*
31. TASK ORIENTATION	-.0233	-.2233	-.1302	.1768
SCALE: DOTS-R:ETHNOTHEORY AT TIME 3				
32. ACTIVITY LEVEL	.1664	.1260	-.0364	-.0200
33. APPROACH-WITHDRAWAL	-.1325	.0648	.0454	-.0755
34. FLEXIBILITY-RIGIDITY	-.0074	-.1485	.0961	-.1394
35. Quality of Mood	-.2151	-.1366	.0899	.0703
36. TASK ORIENTATION	.1112	-.2549*	-.3371**	.3737**
SCALE: IBQ AT TIME 3				
37. ACTIVITY LEVEL	.2189	.3758**	.0904	-.2344
38. APPROACH-WITHDRAWAL	.3657**	.2341	.1221	-.1333
39. FLEXIBILITY-RIGIDITY	-.0509	-.1750	-.0484	.0992
40. Quality of Mood	.5645**	.4569**	.0677	-.2417
41. TASK ORIENTATION	1.0000	.4431**	.2003	-.3203*
42. DEPRESSION AT TIME 3	.4431**	1.0000	.5463**	-.6088**
SCALE: STAI AT TIME 3				
43. STATE ANXIETY	.2003	.5463**	1.0000	-.6699**
44. TRAIT ANXIETY	-.3203*	-.6088**	-.6699**	1.0000

Notes:

* = Significant at $p \leq .05$ ** = Significant at $p \leq .01$

R:Ethnotheory). Examination of Table 6 reveals that, with the exception of Activity Level, the dimensions of the mother's temperament (DOTS-R) do not seem to be correlated with the dimensions of temperament she demands in her infant (DOTS-R:Ethnotheory).

Internal Consistency Reliability of Measures

Scale reliabilities, at each of the three points of testing, were examined using coefficient alpha internal consistency estimates. Reliability is important to assess because it influences the degree to which two variables are correlated. Thus, the unreliability with which a variable is measured might mask its relationship with other variables and thereby affect the interpretation of the relationship.

Estimates of internal consistency reliability ranged from .60 to .95 across scales. These alphas are presented in Table 7 below, along with the number of items that make up each scale. All alphas at Time 1 are based on 31 cases (the number of 3-wave women in the sample). All alphas at Time 2 and Time 3 are based on 60 cases (the number of 3-wave women plus the number of 2-wave women in this study). Notice that the DOTS-R:Ethnotheory was measured at Time 2 and Time 3 only, while the IBQ was measured only after the delivery occurred (i.e. at Time 3). Also, notice that it was not possible to compute the reliability of the Quality of Mood subscale of the DOTS-R:Ethnotheory since this subscale is made up of only one item. Following is a brief discussion of the reliability coefficients for each measure used in this study.

Reliability of DOTS-R

As can be seen in Table 7, the reliability coefficients for the five temperament attributes measured by the DOTS-R range from .36 to .91 at Time 1, from .76 to .90 at Time 2, and from .68 to .88 at the Time 3 administration. The majority of the reliability coefficients are above .8 and therefore the reliability of the DOTS-R dimensions can be considered high.

TABLE 7. Reliability Estimates for Scales

Scale	Number of Items	Alpha (α)		
		Time 1 (N= 31)	Time 2 (N= 60)	Time 3 (N= 60)
DOTS-R Activity Level: General	7	.86	.83	.87
DOTS-R Approach-Withdrawal	7	.83	.76	.88
DOTS-R Flexibility-Rigidity	5	.76	.84	.81
DOTS-R Quality of Mood	7	.91	.90	.87
DOTS-R Task Orientation	8	.36	.76	.68
DOTS-R:Ethnotheory Activity Level	2	NA	.68	.61
DOTS-R:Ethnotheory Approach-Withdrawal	2	NA	.72	.71
DOTS-R:Ethnotheory Flexibility-Rigidity	2	NA	.40	.53
DOTS-R:Ethnotheory Quality of Mood	1	NA	NA	NA
DOTS-R:Ethnotheory Task Orientation	2	NA	-.01	.51
IBQ Activity Level	15	NA	NA	.73
IBQ Latency to Approach Sudden or Novel Stimuli	12	NA	NA	.74
IBQ Distress to Limitations	16	NA	NA	.73
IBQ Smiling and Laughter	11	NA	NA	.84
IBQ Duration of Orienting	11	NA	NA	.82
CESD	20	.90	.91	.88
STAI State Anxiety	20	.94	.93	.92
STAI Trait Anxiety	19	.48	.62	.42

Note: NA= Not Applicable

Reliability of the DOTS-R:Ethnotheory

Overall, the alphas for the DOTS-R:Ethnotheory scores are substantially lower than the alphas for the DOTS-R scores. These results are influenced by the small number of items that compose each of the DOTS-R:Ethnotheory subscales.

Reliability of the IBQ

As Table 7 indicates, the subscales of the Infant Behavior Questionnaire have reliabilities that range from .73 to .84. These alphas indicate that the IBQ, like the DOTS-R, is internally consistent.

Reliability of the Two Outcome Measures

With reliabilities around .9, the Center for Epidemiological Studies-Depression scale can be considered highly reliable. Similarly, the State Anxiety scale, with an average internal consistency reliability of .93, is highly reliable. The sample's responses to the Trait Anxiety scale, however, does not seem to be adequately consistent. This is a surprising finding given that the Trait Anxiety scale has an adequate number of items and that it measures a fairly consistent construct.

Overall, it seems that the reliabilities of the scales used in this study were in the moderate to high range.

Reliability of Discrepancy Between Expectations and Behavior

Table 8 shows the reliability of the three types of discrepancy scores used in this study. Discrepancy scores were all based on z-scores because the IBQ was scored on a different scale than that used to score the DOTS-R and the DOTS-R:Ethnotheory.

Discrepancy scores between the mother's behavioral demands (i.e. temperament) and her expectational demands are calculated by subtracting from the DOTS-R z-score for each temperament dimension the corresponding DOTS-R:Ethnotheory z-score.

Discrepancy scores between the mother's expectational demands and her infant's temperament are calculated by subtracting from the DOTS-R:Ethnotheory z-score for each temperament dimension the corresponding IBQ z-score.

Finally, discrepancy scores between the mother's behavioral demands (i.e. the mother's temperament) and her infant's temperament are calculated by subtracting from the DOTS-R z-score for each temperament dimension the corresponding IBQ z-score.

The reliability of all discrepancy scores was calculated according to the following formula:

$$\text{Reliability of } D_{(x-y)} = (\alpha^- - r_{xy}) / (1 - r_{xy})$$

Where $D_{(x-y)}$ is the discrepancy score between the z-score obtained on scale x and the z-score obtained on scale y, α^- is the average reliability of scales x and y, and r_{xy} is the correlation between scale x and scale y.

Notice that the reliability of most discrepancy scores is lower than the reliabilities of its component scores. That is, the reliability of a difference score tends to be less than that of the component scores, unless the components are negatively correlated. Therefore, using these scores to predict outcomes will sometimes put us in the undesirable position of using a measure that is more unreliable than the scores comprising it.

Stability Analysis

Several years ago, David R. Heise (1975) proposed a set of equations that can be used to calculate stability. His method is built on the assumption that the reliability of a scale

TABLE 8. Post-Delivery Reliability Estimates for Discrepancy Scores

Discrepancy	Alpha (α) at Time 3 (N= 60)
Discrepancy between DOTS-R:Ethnotheory and DOTS-R Activity Level	.58
Discrepancy between DOTS-R:Ethnotheory and DOTS-R Approach-Withdrawal	.74
Discrepancy between DOTS-R:Ethnotheory and DOTS-R Flexibility-Rigidity	.57
Discrepancy between DOTS-R:Ethnotheory and DOTS-R Quality of Mood	NA
Discrepancy between DOTS-R:Ethnotheory and DOTS-R Task Orientation	.46
Discrepancy between DOTS-R:Ethnotheory and IBQ Activity Level	.58
Discrepancy between DOTS-R:Ethnotheory and IBQ Approach-Withdrawal	.75
Discrepancy between DOTS-R:Ethnotheory and IBQ Flexibility-Rigidity	.63
Discrepancy between DOTS-R:Ethnotheory and IBQ Quality of Mood	NA
Discrepancy between DOTS-R:Ethnotheory and IBQ Task Orientation	.62
Discrepancy between DOTS-R and IBQ Activity Level	.77
Discrepancy between DOTS-R and IBQ Approach-Withdrawal	.81
Discrepancy between DOTS-R and IBQ Flexibility-Rigidity	.80
Discrepancy between DOTS-R and IBQ Quality of Mood	.83
Discrepancy between DOTS-R and IBQ Task Orientation	.75

Note: NA= Not Applicable

remains stable from one time point to the next. In actual research this assumption is not necessarily true in all cases. The reliability of some scales may very well vary from one point of time to the next. Thus, for some of the scales Heise's equations are relevant, but for some other scales Heise's equations would not be applicable. For this reason, a least squares path analysis program (Hunter, 1992) that allows us to calculate stabilities even when the reliabilities are not constant over time was used to produce the stability coefficients.

The PATH program corrects the test-retest correlations for attenuation due to the imperfect reliabilities of the scales. Correcting for attenuation is an important feature of the data analyses. A fundamental psychometric problem in any study is measurement reliability. That is, whether or not a relationship found between two variables is in part dependent upon the reliability of the measurements of both variables. If one or more of the measurements used are unreliable, the unreliability with which a variable is measured might mask its real relationships with other variables.

Thus, one way to correct for the limiting effects of unreliability is to correct for attenuation. The correction for attenuation corrects for the degree to which the correlation is reduced by the unreliability of measurement contained in one or both of the variables. In other words, the disattenuated correlation indicates what the correlation would be between two variables if both of their reliabilities are perfect. The process of correcting a correlation coefficient for attenuation involves the following formula:

$$\text{Corrected } r_{xy} = r_{xy} / (\sqrt{\alpha_x} * \sqrt{\alpha_y})$$

Where r_{xy} is the attenuated correlation between scale x and scale y, α_x is the reliability of scale x, and α_y is the reliability of scale y. Notice that the higher the reliability of the two scales the less the correlation between them would be attenuated and therefore the smaller the difference between their corrected and their attenuated correlations would be. As the reliabilities approach zero, however, the correlation between the scales would be greatly

attenuated. Correcting for attenuation in this case would significantly increase the correlation coefficient and contribute to the accuracy of the reported results.

After correcting for attenuation, program PATH then proceeds to estimate stability coefficients, in light of the scales' reliabilities at each point in time, using multiple regression, i.e. "ordinary least squares". The generic model underlying the stability analysis of all scales is presented below in Figure 1 where L_t represents the true (latent)

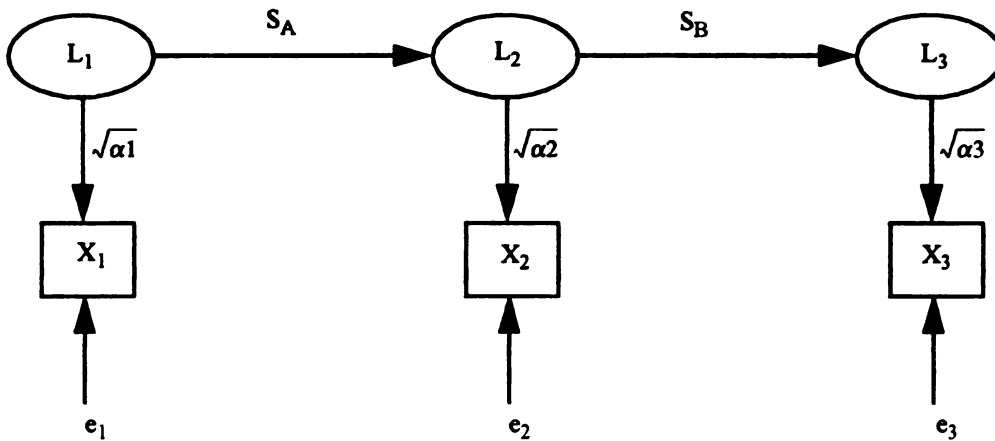


Figure 1: Generic Model Underlying All Stability Analyses

score at Time t , X_t represents the fallible score (determined by responses on a particular questionnaire measure) at Time t , α_t represents the reliability of the measure at Time t , the square root of α_t represents the correlation between the true score and the fallible score, and e_t represents the error of measurement at Time t . The stability coefficients are the correlations between latent scores over time. More specifically, S_A represents stability from Time 1 to Time 2, and S_B represents stability from Time 2 to Time 3. The stability from Time 1 to Time 3 (S_C) is the product of S_A and S_B .

Arrows from true scores to the fallible scores mean that a person's true trait determines their responses on the questionnaire measure. However, questionnaire responses depend on a variety of other factors—moods, distractions, and misunderstandings. All such sources of measurement error are accounted for by the error term e_t . Further, the measurement errors are assumed to be uncorrelated with one another over time (Heise, 1975).

The PATH program assesses the “fit” of the above shown model to the data with a Chi square (χ^2) statistic. Results of the stability analyses are summarized below in Table 9 which presents the reliability and stability coefficients, as well as the value of the χ^2 and its tail probability (which are indicators of how well the data fits the model presented above), for each of the DOTS-R, Depression, and Anxiety scales which are all the scales used in this study that were measured at three different points in time.

TABLE 9. Summary of Stability Analyses

Variable	S_A	S_B	S_C	α_1	α_2	α_3	χ^2	Tail Probability
Scale: DOTS-R								
Activity Level	.95	.85	.80	.86	.83	.87	.48	.49
Approach-Withdrawal	.87	.86	.74	.83	.76	.88	2.53	.11
Flexibility-Rigidity	.60	.67	.40	.76	.84	.81	7.22	.00
Quality of Mood	.74	.89	.66	.91	.90	.87	.86	.35
Task Orientation	.99	.86	.99	.36	.76	.68	.26	.61
Scale: Depression (CES-D)	.93	.49	.46	.90	.91	.88	1.28	.26
Scale: Anxiety (STAI)								
State Anxiety	.26	.45	.12	.94	.93	.92	6.72	.00
Trait Anxiety	.93	.87	.81	.48	.63	.42	5.54	.02

Following is a brief discussion on the stability of each of the scales/subscales assessed using the PATH program.

Stability of Mother's Behavioral Demands (DOTS-R)

As expected, the mothers' scores on Activity Level, Approach-Withdrawal, and Task Orientation were more stable between Time 1 and Time 2 (the two control points) than they were between Time 2 (pre-delivery) and Time 3 (post delivery). However, contrary to our hypothesis regarding the stability of measures, on average mothers' Flexibility-Rigidity and Quality of Mood scores were more stable from Time 2 (pre-delivery) to Time 3 (post-delivery) than they were from Time 1 to Time 2.

For all the DOTS-R subscales, with the exception of Flexibility-Rigidity, the tail probability of the overall χ^2 indicated that the data fit the model adequately. One possible explanation for the failure of the Flexibility-Rigidity data to fit the stability model is that the errors are correlated rather than unrelated as the model suggests. Note that the imperfect reliability of the scale would not be a factor here since program PATH corrects for attenuation.

Stability of Depression Scores (CES-D)

Depression scores strongly fit our expectations. They were highly stable from Time 1 to Time 2 but were unstable (they decreased) from Time 2 to Time 3. This indicates that the birth event had a clear impact on the mothers' depression level. Furthermore, the tail probability of the overall χ^2 indicates that the depression data fit the model adequately.

Stability of Anxiety Scores (STAI)

State anxiety scores were more stable from Time 2 to Time 3 than they were from Time 1 to Time 2 and therefore our hypothesis regarding the stability of anxiety scores over Time 1 and Time 2 and their instability between Time 2 and Time 3 is rejected. In contrast, trait anxiety scores seemed to confirm our stability hypothesis—they were more stable over the two control time points (Time 1 and Time 2) than they were between Time 2 and Time 3.

However, the tail probability of the overall χ^2 for both the trait anxiety and the state anxiety subscales indicates that the anxiety data for the sample does not fit the stability model shown in Figure 1. Again, this misfit may be caused by the existence of correlated errors. This is possible if such errors of measurement as misunderstandings, distractions, and mood are all caused by one event that is exogenous to the model such as divorce, moving, marriage, giving birth, change in employment status, or any other stressful life event.

Change Analysis

Changes in scores from Time 1 to Time 2 ($\Delta_{(1-2)}$), from Time 2 to Time 3 ($\Delta_{(2-3)}$), and from Time 1 to Time 3 ($\Delta_{(1-3)}$) were analyzed using program WITHIN—a program to compute the analysis for a within-subjects design (Hunter, 1995). When comparing the mother's Activity Level at Time 2 to her Activity Level at Time 3, for example, the effect of birth registers in a difference score ($\Delta_{(2-3)}$) which represents the mean change in the Activity Level raw scores before and after the treatment (birth). This is measured as follows:

$$\Delta_{(2-3)} \text{ Activity Level} = \text{Activity Level}_3 - \text{Activity Level}_2$$

Because the scales are not perfectly reliable, the difference score could be caused by errors of measurement rather than real changes occurring after birth. The program used the appropriate formulas to correct for the effects of error of measurement caused by the imperfect reliability of the scales.

For each of the DOTS-R, DOTS-R:Ethnotheory, CES-D, and STAI subscales the mean change in scores (Δ) from each point of testing to the others as well as the relevant sample size (N) are reported in Table 10 through Table 12 below. A positive Δ for any given subscale indicates an increase, over the specified time periods, in the level of that scale while a negative Δ indicates a decrease in the subscale's level over the time periods

specified. The tables also present the mean, standard deviation (SD), and reliability (α) of each of the subscales along with the sample size (N) at each point of measurement.

TABLE 10. Observed Mean Changes in DOTS-R Scores

Sub-Scale	Statistic	Time 1	Time 2		Time 3		$\Delta_{(1-2)}$ N=31	$\Delta_{(2-3)}$ N=60	$\Delta_{(1-3)}$ N=31
		N=31	N=31	N=60	N=31	N=60			
Activity Level	Mean	2.65	2.72	2.6	2.65	2.64	.07	.04	0.0
	SD	.64	.61	.57	.64	.58			
	α	.86	.88	.83	.92	.87			
Approach-Withdrawal	Mean	2.67	2.73	2.71	2.72	2.73	.06	.02	.05
	SD	.58	.45	.49	.59	.57			
	α	.83	.74	.76	.91	.88			
Flexibility-Rigidity	Mean	2.84	2.67	2.84	2.75	2.87	-.17	.03	-.09
	SD	.57	.51	.62	.64	.61			
	α	.76	.74	.84	.86	.81			
Quality of Mood	Mean	3.42	3.28	3.41	3.52	3.51	-.14	.10	.10
	SD	.56	.58	.57	.46	.49			
	α	.91	.89	.90	.89	.87			
Task Orientation	Mean	2.61	2.58	2.59	2.50	2.49	-.03	-.10	-.11
	SD	.60	.38	.40	.36	.36			
	α	.36	.75	.76	.71	.68			

TABLE 11. Observed Mean Changes in DOTS-R:Ethnotheory Scores

Sub-Scale	Statistic	Time 2 N=60	Time 3 N=60	$\Delta_{(2-3)}$ N=60
Activity Level	Mean	3.14	3.11	-.03
	SD	.54	.56	
	α	.68	.61	
Approach-Withdrawal	Mean	2.92	2.84	-.08
	SD	.57	.59	
	α	.72	.71	
Flexibility-Rigidity	Mean	2.97	2.88	-.09
	SD	.48	.52	
	α	.40	.53	
Quality of Mood	Mean	2.81	2.73	NE
	SD	.52	.57	
	α	NE	NE	
Task Orientation	Mean	2.47	2.44	-.03
	SD	.47	.55	
	α	-.01	.51	

Note: NE= Can Not Be Estimated

TABLE 12. Observed Mean Changes in Maternal Functioning Scores

Scale/ Sub-scale	Statistic	Time 1	Time 2		Time 3		$\Delta_{(1-2)}$ N=31	$\Delta_{(2-3)}$ N=60	$\Delta_{(1-3)}$ N=31
		N=31	N=31	N=60	N=31	N=60			
CES-D (Depression)	Mean	15.68	16.11	15.03	13.46	12.82	.43	-2.21	-2.22
	SD	9.69	9.17	9.46	9.06	8.33			
	α	.90	.91	.91	.91	.88			
STAI: State Anxiety	Mean	36.14	35.48	34.50	32.15	31.49	-.66	-3.01	-3.99
	SD	10.77	10.24	11.12	9.17	9.22			
	α	.94	.93	.93	.93	.92			
STAI: Trait Anxiety	Mean	51.74	51.44	52.68	52.74	53.37	-.30	.69	1.0
	SD	4.48	6.31	5.80	4.23	4.17			
	α	.48	.71	.63	.42	.42			

Inspection of Table 10 through Table 12 reveals that, overall, there were no big changes between any two time points. Consistent with the findings of the stability analyses in the previous section, most of the scales/subscales are fairly stable over time. Moreover, contrary to our expectations, the biggest changes in any given scale/subscale did not necessarily occur between Time 2 (pre-delivery) and Time 3 (post-delivery).

In addition to mean changes in raw scores, birth-by-subject interactions were measured. The STG is a statistic which represents, in raw score units, the standard deviation of true (i.e. corrected for attenuation) gain scores. An STG greater than zero signifies a birth by subject interaction while an STG equal to or close to zero indicates a lack of such interaction.

Another question that was investigated is: To what extent can we explain the variation in effect size by a simple interaction? That is, to what extent does the initial (pre-birth) level of a variable influence the amount of change occurring in that variable after the birth? Do mothers who start out high on a any given variable (subscale) experience as much increase/decrease in the level of that variable after the birth of their infant as mothers who start out low on that variable?

In order to answer the above questions, the correlation between initial levels and change scores, the “self impact” correlation (*ir*), was computed. An *ir* of zero indicates that the interaction cannot be explained by considering the initial level of activity.

An $-1.0 < ir < 0.0$ indicates that part of the variation in change scores can be explained by differences in initial level—the higher the initial level the smaller the change score. However, since the self impact correlation is not perfect, some moderator variable(s) also contribute to the observed differences in the response to the birth. In other words, the interaction is complex rather than simple.

And, an *ir* value of -1.0 indicates a perfect self impact correlation. In this case, variations in change scores are totally explained by differences in the initial level.

All the above change analyses yield sample statistics which, due to random sampling errors, will differ from the population statistics by random amounts. The relationship between a sample statistic and a population statistic is a matter of probabilities. Rather than rely on the statistical significance test, which has a high error rate when the population statistic is not zero (Hunter & Levine, 1994), Program CONFINT was used in this study to produce confidence intervals for each statistic and to calculate those probabilities (Hunter, 1992).

For example, given the sample difference score (Δ) and the sample size (N), we can compute the following probabilities for the population difference score (Δ'):

$$\text{Inference Probability} = P(\Delta' > 0) = \text{PI}$$

$$\text{Reverse Probability} = P(\Delta' \leq 0) = \text{QI}$$

The two probabilities are complementary so that:

$$\text{QI} = 1 - \text{PI}$$

However, because of sampling error, it is not possible to draw perfectly correct inferences. Drawing an inference from data can be viewed as placing a bet on a probabilistic outcome. To accept the hypothesis of a positive difference score, for example, is to bet that $\Delta' > 0$. To accept the hypothesis that the effect is not positive is to bet that $\Delta' \leq 0$. Given the sample difference score (Δ) and the sample size (N), program CONFINT first computes the PI and the QI then it converts these probabilities into odds. The odds of the PI and the odds of the QI are computed as follows:

$$\text{Odds of positive difference} = \text{PI} / \text{QI}$$

$$\text{Odds of non-positive difference} = \text{QI} / \text{PI}$$

The Odds Ratio is thus a relative measure of PI and QI (Hunter and Levine, 1993).

The PI and odds ratio provide additional information when a directional hypothesis is used. To give an example: If $PI = .93$, then $QI = .07$ and the odds of $\Delta' > 0$ are nearly equal to 13:1. To bet on a positive mean difference in the population is a good bet, but there is an error rate of 7% for that bet.

Note that there is a perfect coordination between whether a one tailed test is significant at the 5% level and whether the PI is at least 95%. In other words, to ask if a statistic is significant by a one tailed test at the 5% level is exactly the same as asking if the PI (or the QI in the case of negative prediction) is 95% or more.

Notice also that as the sample statistic gets larger, the PI gets larger. This is because the larger the sample statistic, the more likely it is that the population statistic is greater than zero. The maximum value for the PI is .99 rather than 1.0 because 1.0 represents 100% certainty which is seldom true, and not very realistic, in scientific research.

A final note: If the sample statistic is zero, the sampling error for that sample statistic was either positive or negative with equal probability. It is equally likely that the population statistic was less than zero or more than zero. That is, the PI and the QI are both equal to 50%. Thus, the sample statistic of zero is the dividing line. If the sample statistic is positive, then $PI > 50\%$ and $QI < 50\%$. If the sample statistic is negative, then $PI < 50\%$ and $QI > 50\%$.

Because we are mainly interested in the changes that occur after the birth of the infant, only analyses relevant to the changes that occurred from Time 2 and Time 3 are discussed. The results summarized in Table 13 through Table 15 present the point estimate (size) and the standard error (SE) for the sample statistics (Δ , STG, and ir). In addition, confidence intervals for the population statistics (Δ' , STG', and ir') are presented.

The tables report the 90% confidence interval, the PI and the odds that the population statistic is > 0 for all cases where a positive directional hypothesis was proposed. For these cases, our prediction is confirmed if $.66 \leq PI \leq 1.0$. On the other hand, we conclude that the prediction is wrong if $PI \leq .33$. And, we suspend judgement on whether the prediction is confirmed or not if the results show that $.34 \leq PI \leq .65$.

In the case of a negative directional hypothesis the 90% confidence interval, the QI and the odds that the population statistic is ≤ 0 are reported. Our prediction is considered to be confirmed if $.66 \leq QI \leq 1.0$. It is considered to be wrong if $QI \leq .33$. And, we suspend judgement on whether the prediction is confirmed or not if $.34 \leq QI \leq .65$.

In the case of a non-directional hypothesis, only the 95% confidence interval is reported. The PI/QI and the odds ratio are not relevant in this case and the decision to reject or accept the hypothesis is based on whether zero is included in the confidence interval or not.

Following is a brief discussion on the analysis of change in DOTS-R, DOTS-R:Ethnotheory, and the two maternal functioning measures from Time 2 (pre-birth) to Time 3 (post-birth).

TABLE 13. Analysis of Change in DOTS-R From Time 2 to Time 3

Sub-Scale	Sample Statistic	Size	SE	90% / 95% Confidence Interval	PI or QI	Odds Ratio	Prediction	Prediction Supported?
Activity Level	Δ	.04	.06	$-0.05 \leq \Delta' \leq 0.13$	.76	3:1	$\Delta' > 0$	Yes
	STG	.29	.05	$0.21 \leq STG' \leq 0.38$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.21	.18	$-0.49 \leq ir' \leq 0.08$	.88	7:1	$ir' < 0$	Yes
Approach-Withdrawal	Δ	.02	.06	$-0.07 \leq \Delta' \leq 0.11$	.64	2:1	$\Delta' > 0$	SJ
	STG	.28	.05	$0.20 \leq STG' \leq 0.36$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	.11	.23	$-0.27 \leq ir' \leq 0.49$	.32	.5:1	$ir' < 0$	No: Wrong direction
Flexibility-Rigidity	Δ	.03	.08	$-0.10 \leq \Delta' \leq 0.16$	.65	2:1	$\Delta' > 0$	SJ
	STG	.46	.06	$0.36 \leq STG' \leq 0.55$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.44	.12	$-0.65 \leq ir' \leq -0.24$	.99	999:1	$ir' < 0$	Yes
Quality of Mood	Δ	.1	.05	$0.01 \leq \Delta' \leq 0.19$	NA	NA	$\Delta' \neq 0$	Yes
	STG	.25	.04	$0.18 \leq STG' \leq 0.31$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.54	.13	$-0.75 \leq ir' \leq -0.34$	.99	999:1	$ir' < 0$	Yes
Task Orientation	Δ	-.1	.04	$-0.17 \leq \Delta' \leq -0.03$	.99	100:1	$\Delta' < 0$	Yes
	STG	.18	.05	$0.10 \leq STG' \leq 0.25$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.53	.15	$-0.76 \leq ir' \leq -0.29$	.99	999:1	$ir' < 0$	Yes

Notes:

NA= Not Applicable

SJ= Suspend Judgement

TABLE 14. Analysis of Change in DOTS-R:Ethnotheory From Time 2 to Time 3

Sub-Scale	Sample Statistic	Size	SE	90% / 95% Confidence Interval	PI or QI	Odds Ratio	Prediction	Prediction Supported?
Activity Level	Δ	-.03	.08	$-0.18 \leq \Delta' \leq 0.12$	NA	NA	$\Delta' \neq 0$	No
	STG	.37	.07	$0.26 \leq STG' \leq 0.48$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.44	.15	$-0.68 \leq ir' \leq -0.19$	.99	999:1	$ir' < 0$	Yes
Approach-Withdrawal	Δ	-.08	.07	$-0.22 \leq \Delta' \leq 0.06$	NA	NA	$\Delta' \neq 0$	No
	STG	.29	.07	$0.17 \leq STG' \leq 0.41$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.25	.20	$-0.58 \leq ir' \leq 0.08$	.90	9:1	$ir' < 0$	Yes
Flexibility-Rigidity	Δ	-.09	.08	$-0.24 \leq \Delta' \leq 0.06$	NA	NA	$\Delta' \neq 0$	No
	STG	.27	.08	$0.13 \leq STG' \leq 0.40$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.12	.34	$-0.68 \leq ir' \leq 0.43$	.64	2:1	$ir' < 0$	SJ
Quality of Mood	Δ	NE	NE	NE	NA	NA	$\Delta' \neq 0$	NE
	STG	NE	NE	NE	NE	NE	$STG' > 0$	NE
	<i>ir</i>	NE	NE	NE	NE	NE	$ir' < 0$	NE
Task Orientation	Δ	-.03	.07	$-0.16 \leq \Delta' \leq 0.10$	NA	NA	$\Delta' \neq 0$	No
	STG	0.0	.05	$-0.08 \leq STG' \leq 0.08$	.50	1:1	$STG' > 0$	SJ
	<i>ir</i>	0.0	NE	NE	NE	NE	$ir' < 0$	NE

Notes:

NA= Not Applicable

NE= Can Not Be Estimated

SJ= Suspend Judgement

TABLE 15. Analysis of Change in Maternal Functioning From Time 2 to Time 3

Scale /Sub-Scale	Sample Statistic	Size	SE	90% / 95% Confidence Interval	PI or QI	Odds Ratio	Prediction	Prediction Supported?
CES-D (Depression)	Δ	-2.2	1.3	$-4.65 \leq \Delta' \leq 0.23$	NA	NA	$\Delta' \neq 0$	No
	STG	8.6	.84	$7.18 \leq STG' \leq 9.93$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.61	.09	$-0.75 \leq ir' \leq -0.46$	.99	999:1	$ir' < 0$	Yes
STAI: State Anxiety	Δ	-3.0	1.5	$-5.87 \leq \Delta' \leq -0.15$	NA	NA	$\Delta' \neq 0$	Yes
	STG	10.4	.96	$8.77 \leq STG' \leq 11.93$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.65	.08	$-0.78 \leq ir' \leq -0.52$	.99	999:1	$ir' < 0$	Yes
STAI: Trait Anxiety	Δ	.69	.71	$-0.71 \leq \Delta' \leq 2.09$	NA	NA	$\Delta' \neq 0$	No
	STG	2.6	.75	$1.37 \leq STG' \leq 3.82$	.99	999:1	$STG' > 0$	Yes
	<i>ir</i>	-.86	.12	$-1.0 \leq ir' \leq -0.66$	.99	999:1	$ir' < 0$	Yes

Note: NA= Not Applicable

Analysis of Change in Maternal Behavioral Demands

As Table 13 indicates and in support of our hypotheses, on average, after the birth of their infants the mothers' Activity Level increases, their Task Orientation decreases and their Quality of Mood changes in the positive direction. Note that, for the Activity Level subscale, a classical test of significance would have failed to reject the null hypothesis and would have concluded that, on average, birth did not have a significant effect on the mother's Activity Level. However, the odds ratio indicates an approximate 3:1 chance that Δ' was in the predicted direction.

We predicted that the mothers' Approach and flexibility would increase after they had their babies. However, with a PI of .64 for the Approach-Withdrawal Δ' confidence interval and a PI of .65 for the Flexibility-Rigidity Δ' confidence interval, we decided to suspend judgement on whether our predictions regarding these maternal temperament dimensions are confirmed or not.

Change analysis also revealed that there is a birth-by-subject interaction for all five maternal temperament dimensions. As can be deduced from the large PI's and odds ratios associated with the confidence intervals for STG', the birth-by-subject interaction is very strong.

The next question that was investigated was: To what extent can we explain the variation in effect size as caused by different responses to the birth for mothers at different initial levels on the DOTS-R dimensions. Results indicated that for all the DOTS-R dimensions except Approach-Withdrawal, part of the birth-by-subject interaction can be explained by differences in initial levels of the dimensions. Note that in the case of the Activity Level impact correlation, a traditional test of significance would have failed to reject the null hypothesis and would have concluded that the initial level of activity has no impact on the amount of change in Activity Level.

The *ir*'s, however, are not perfect which means that the interaction is complex rather than simple. The interaction cannot be explained by considering only the initial level of activity. Part of the variation in change scores can be explained by differences in initial level—the higher the initial Activity, Flexibility, Quality of Mood and task-orientation levels, the smaller the change score. However, some moderator variable(s) also contributes to differences in the response of the mother's temperament to the birth event.

The Approach-Withdrawal QI and odds ratio for the *ir*' confidence interval do not lend support to our prediction that for Approach-Withdrawal *ir*' is less than zero. In other words, the mother's initial level of Approach-Withdrawal is not negatively correlated to the amount of change in the mother's level of Approach-Withdrawal after the birth of the infant. Since a QI of .32 (with an odds ratio of .5:1) implies a PI of .68 (with an odds ratio of 2:1), it seems that the opposite of our prediction is true. That is, in the case of Approach-Withdrawal, *ir*' is greater than zero. This means that mothers who start out low on Approach before their infant's birth experience smaller increases in their tendency to approach new situations after the birth of their infants than mothers who start out high on Approach.

Post-hoc correlation analyses were performed in an attempt to discover any moderators among the demographic variables. The correlations were all corrected for attenuation due to the imperfect reliability of the change scores, and are presented in Table 16 below along with the two-tailed 95% confidence interval associated with each. The table also presents the decision reached with respect to the null hypothesis:

$$H_0: \rho = 0$$

Where ρ represents the population correlation.

Inspection of the correlations presented in Table 16 revealed that the number of birth complications moderates the change in the mother's Activity Level from pre- to post-delivery—the fewer the complications the bigger the change in Activity Level scores.

In addition, the correlations indicate that the mother's level of education, the degree to which the pregnancy was planned, and the mother's income level are moderators of the amount of change in her Approach-Withdrawal level from pre- to post-delivery. The more educated the mother is, the more planned the pregnancy was, and the higher the income level, the less the change in the mother's Approach-Withdrawal score.

The change in Quality of Mood seems to be moderated by the number of birth complications and by the degree to which the pregnancy was planned. The larger the number of birth complications and the more the pregnancy was planned, the smaller the size of the change in the mother's Quality of Mood score.

No significant moderators emerged for the two remaining DOTS-R dimensions—Flexibility-Rigidity and Task Orientation.

It is important to note that these correlation analyses are all post-hoc in nature and therefore their results need to be replicated in a different study before we conclude that the relationships found do indeed exist in the population.

TABLE 16. Correlations Between Demographics and DOTS-R Change Scores

Variable	$\Delta_{(2-3)}$				
	Activity Level	Approach-Withdrawal	Flexibility-Rigidity	Quality of Mood	Task Orientation
Age	$r_a = -.01$ $r_c = -.02$ $-.27 \leq \rho \leq .25$ $\therefore$ Fail to reject H_0	$r_a = -.17$ $r_c = -.27$ $-.42 \leq \rho \leq .08$ $\therefore$ Fail to reject H_0	$r_a = .02$ $r_c = .03$ $-.24 \leq \rho \leq .28$ $\therefore$ Fail to reject H_0	$r_a = -.15$ $r_c = -.22$ $-.40 \leq \rho \leq .10$ $\therefore$ Fail to reject H_0	$r_a = -.05$ $r_c = -.10$ $-.30 \leq \rho \leq .20$ $\therefore$ Fail to reject H_0
Number of Birth Complications	$r_a = -.25$ $r_c = -.38$ $-.49 \leq \rho \leq -.10$ $\therefore$ Reject H_0	$r_a = -.18$ $r_c = -.28$ $-.43 \leq \rho \leq .07$ $\therefore$ Fail to reject H_0	$r_a = -.14$ $r_c = -.18$ $-.39 \leq \rho \leq .11$ $\therefore$ Fail to reject H_0	$r_a = -.25$ $r_c = -.36$ $-.49 \leq \rho \leq -.01$ $\therefore$ Reject H_0	$r_a = .03$ $r_c = .06$ $-.22 \leq \rho \leq .28$ $\therefore$ Fail to reject H_0
Education	$r_a = .15$ $r_c = .23$ $-.10 \leq \rho \leq .40$ $\therefore$ Fail to reject H_0	$r_a = -.33$ $r_c = -.52$ $-.56 \leq \rho \leq -.01$ $\therefore$ Reject H_0	$r_a = .04$ $r_c = .05$ $-.21 \leq \rho \leq .29$ $\therefore$ Fail to reject H_0	$r_a = -.11$ $r_c = -.16$ $-.36 \leq \rho \leq .14$ $\therefore$ Fail to reject H_0	$r_a = -.12$ $r_c = -.24$ $-.37 \leq \rho \leq .13$ $\therefore$ Fail to reject H_0
Degree to Which Pregnancy Was Planned	$r_a = -.03$ $r_c = -.05$ $-.28 \leq \rho \leq .22$ $\therefore$ Fail to reject H_0	$r_a = -.34$ $r_c = -.54$ $-.57 \leq \rho \leq -.11$ $\therefore$ Reject H_0	$r_a = -.06$ $r_c = -.08$ $-.31 \leq \rho \leq .19$ $\therefore$ Fail to reject H_0	$r_a = -.35$ $r_c = -.51$ $-.57 \leq \rho \leq -.13$ $\therefore$ Reject H_0	$r_a = .18$ $r_c = .35$ $-.07 \leq \rho \leq .43$ $\therefore$ Fail to reject H_0
Income	$r_a = .01$ $r_c = .02$ $-.25 \leq \rho \leq .27$ $\therefore$ Fail to reject H_0	$r_a = -.25$ $r_c = -.40$ $-.49 \leq \rho \leq -.01$ $\therefore$ Reject H_0	$r_a = -.02$ $r_c = -.03$ $-.28 \leq \rho \leq .24$ $\therefore$ Fail to reject H_0	$r_a = -.12$ $r_c = -.17$ $-.37 \leq \rho \leq .13$ $\therefore$ Fail to reject H_0	$r_a = -.00$ $r_c = .00$ $-.26 \leq \rho \leq .26$ $\therefore$ Fail to reject H_0

Notes:

 r_a = Attenuated sample correlation r_c = Corrected sample correlation ρ = Population correlation H_0 = Null hypothesis

Analysis of Change in Maternal Expectational Demands

Results of the change analysis of the DOTS-R:Ethnotheory scales are presented in Table 14, "Analysis of Change in DOTS-R:Ethnotheory From Time 2 to Time 3," on page 67. Program WITHIN was not able to estimate statistics for the Quality of Mood subscale due to the fact that it is composed of only one item and therefore its reliability can not be calculated.

As Table 14 indicates, and contrary to our predictions, on average, after the birth of their infants the mothers' expectational demands with regards to their infants' Activity Level, Approach-Withdrawal, Flexibility-Rigidity, and Task Orientation do not change significantly.

Change analysis also revealed that there is a birth by subject interaction for the Activity Level, Approach-Withdrawal, and Flexibility-Rigidity expectations. As can be deduced from the large PI's and odds ratios associated with the STG' confidence intervals for these subscales, the birth-by-subject interaction was very strong. Judgement was suspended with regards to the significance of the interaction for the Task Orientation demands. With a PI of .5 and an odds ratio of 1:1 no conclusions could drawn regarding the population birth by subject interaction.

The next question that was investigated was: To what extent can we explain the variation in change scores by differences in initial levels. Results indicate that for the Activity Level and Approach-Withdrawal demands, part of the birth-by-subject interaction can be explained by differences in initial scores. Note that in the case of the impact correlation for the Approach-Withdrawal demands, a traditional test of significance would have failed to reject the null hypothesis and would have concluded that the initial level of Approach demands has no impact on the amount of change in Approach demands after birth occurs.

The *ir*'s, however, are not perfect. Part of the variation can be explained by differences in initial level—the higher the initial levels of demands for Activity Level, Flexibility, Quality of Mood and Task-Orientation, the smaller the change score. Some moderator variable(s) also contribute to variations in the changes in mothers' expectational demands. These were explored and will be discussed below.

The Flexibility-Rigidity QI and odds ratio for the *ir*' confidence interval are borderline and therefore we suspend judgement with regards to our prediction that for Flexibility-Rigidity demands, *ir*' is less than zero. Program WITHIN could not estimate the SE, 95% confidence interval, QI, and odds ratio for the task-Orientation demands because the sample data estimated the standard deviation of true change scores—the STG—to be zero. If this is true in the population, then the self impact correlation—the *ir*—is undefined. In any case, estimation of the corrected self impact correlation is unstable for this data. And, the standard error of *ir* can not be estimated using the current method (Hunter, 1995).

Post-hoc correlation analyses were performed in an attempt to discover any moderators among the demographic variables. The correlations were all corrected for attenuation and are presented in Table 17 below along with the two-tailed 95% confidence interval associated with each. The table also presents the decision reached with respect to the null hypothesis: $H_0: \rho = 0$. The corrected correlations between demographics and the change in Quality of Mood demands were not possible to estimate because the reliability of the Quality of Mood demands is undefined. Program CORRECT was also not able to estimate the corrected correlations between demographics and the change in Task Orientation demands because the reliability of the Task Orientation demands at Time 2 is negative.

Inspection of Table 17 revealed that none of the demographic variables moderate the change in the mother's demands. Two of the correlations, however, came very close to being significant. For both the correlation between education and the change in Approach-

Withdrawal demands and the correlation between age and the change in Task Orientation demands, zero was far off the center of the confidence interval.

TABLE 17. Correlations Between Demographics and DOTS-R:Ethnotheory Change Scores

Variable	$\Delta_{(2-3)}$				
	Activity Level	Approach-Withdrawal	Flexibility-Rigidity	Quality of Mood	Task Orientation
Age	$r_a = -.17$ $r_c = -.27$ $-.42 \leq \rho \leq .08$ $\therefore$ Fail to reject H_0	$r_a = -.12$ $r_c = -.21$ $-.37 \leq \rho \leq .13$ $\therefore$ Fail to reject H_0	$r_a = -.19$ $r_c = -.41$ $-.44 \leq \rho \leq .06$ $\therefore$ Fail to reject H_0	$r_a = -.16$ $r_c = \text{NE}$ $-.41 \leq \rho \leq .09$ $\therefore$ Fail to reject H_0	$r_a = -.23$ $r_c = \text{NE}$ $-.47 \leq \rho \leq .01$ $\therefore$ Fail to reject H_0
Number of Birth Complications	$r_a = -.04$ $r_c = -.06$ $-.29 \leq \rho \leq .21$ $\therefore$ Fail to reject H_0	$r_a = .15$ $r_c = .27$ $-.10 \leq \rho \leq .40$ $\therefore$ Fail to reject H_0	$r_a = -.07$ $r_c = -.15$ $-.32 \leq \rho \leq .18$ $\therefore$ Fail to reject H_0	$r_a = -.09$ $r_c = \text{NE}$ $-.34 \leq \rho \leq .16$ $\therefore$ Fail to reject H_0	$r_a = -.03$ $r_c = \text{NE}$ $-.28 \leq \rho \leq .22$ $\therefore$ Fail to reject H_0
Education	$r_a = .07$ $r_c = .11$ $-.18 \leq \rho \leq .32$ $\therefore$ Fail to reject H_0	$r_a = -.24$ $r_c = -.42$ $-.48 \leq \rho \leq .00$ $\therefore$ Fail to reject H_0	$r_a = -.10$ $r_c = -.22$ $-.35 \leq \rho \leq .15$ $\therefore$ Fail to reject H_0	$r_a = -.14$ $r_c = \text{NE}$ $-.39 \leq \rho \leq .11$ $\therefore$ Fail to reject H_0	$r_a = -.09$ $r_c = \text{NE}$ $-.34 \leq \rho \leq .16$ $\therefore$ Fail to reject H_0
Degree to Which Pregnancy Was Planned	$r_a = .05$ $r_c = .08$ $-.20 \leq \rho \leq .30$ $\therefore$ Fail to reject H_0	$r_a = -.02$ $r_c = -.04$ $-.28 \leq \rho \leq .24$ $\therefore$ Fail to reject H_0	$r_a = -.01$ $r_c = -.02$ $-.27 \leq \rho \leq .25$ $\therefore$ Fail to reject H_0	$r_a = .13$ $r_c = \text{NE}$ $-.12 \leq \rho \leq .38$ $\therefore$ Fail to reject H_0	$r_a = -.14$ $r_c = \text{NE}$ $-.39 \leq \rho \leq .11$ $\therefore$ Fail to reject H_0
Income	$r_a = .02$ $r_c = .03$ $-.24 \leq \rho \leq .28$ $\therefore$ Fail to reject H_0	$r_a = -.06$ $r_c =$ $-.31 \leq \rho \leq .19$ $\therefore$ Fail to reject H_0	$r_a = -.15$ $r_c = -.33$ $-.40 \leq \rho \leq .10$ $\therefore$ Fail to reject H_0	$r_a = -.09$ $r_c = \text{NE}$ $-.34 \leq \rho \leq .16$ $\therefore$ Fail to reject H_0	$r_a = -.04$ $r_c = \text{NE}$ $-.29 \leq \rho \leq .21$ $\therefore$ Fail to reject H_0

Notes:

r_a = Attenuated sample correlation

r_c = Corrected sample correlation

ρ = Population correlation

H_0 = Null hypothesis

NE = Not able to estimate

Analysis of Change in Maternal Functioning

As Table 15, “Analysis of Change in Maternal Functioning From Time 2 to Time 3,” on page 68 indicates, on average, after the birth of their infants the mothers' state anxiety decreases while their trait anxiety scores do not change significantly. Maternal depression seems to decrease after the birth of the baby. However, the change in depression score, while very close to being significant because zero is close to the upper end of the confidence interval, is not big enough to support our prediction concerning Δ' .

Change analysis also revealed that there is a birth by subject interaction for all three maternal functioning dimensions. As can be deduced from the large PI's and odds ratios associated with the confidence intervals for STG', the birth-by-subject interaction is very strong.

The next question that was investigated was: To what extent can we explain the variation in the size of the change scores for each maternal functioning dimension as caused by different initial levels of that dimension? As Table 15 indicates, for all the maternal functioning measures, a large part of the birth-by-subject interaction can be explained by differences in initial levels. The *ir*'s, however, are not perfect which means that the interaction is complex rather than simple. The interaction cannot be explained by considering only the initial level of activity. A large part of the variation in change scores can be explained by differences in initial level—the higher the initial depression, state anxiety, and trait anxiety levels, the smaller the change score. However, some moderator variable(s) also contributes to differences in the response of the mother's temperament to the birth event.

Post-hoc correlation analyses were performed in an attempt to discover any moderators among the demographic variables. The correlations were all corrected for attenuation due to the imperfect reliability of the change scores, and are presented in Table 18 below along

with the two-tailed 95% confidence interval associated with each. The table also presents the decision reached with respect to the null hypothesis: $H_0: \rho = 0$.

Inspection of the correlations presented in Table 18 revealed that the number of birth complications moderates the change in the mother's depression level from pre- to post-delivery—the more the complications the bigger the change in the depression level scores.

In addition, the correlations indicate that the mother's age is a moderator of the amount of change in her state anxiety level from pre- to post-delivery. The older the mother, the more the change in the mother's state anxiety score.

No significant moderators emerged for the change in the trait anxiety score from Time 2 to Time 3.

To reiterate a point made earlier, it is important to remember that these correlation analyses are all post-hoc in nature and therefore their results need to be replicated in a different study before we conclude that the relationships found do indeed exist in the population.

TABLE 18. Correlations Between Demographics and CES-D and STAI Scores

Variable	$\Delta_{(2-3)}$		
	Depression	STAI	
		State Anxiety	Trait Anxiety
Age	$r_a = -.01$ $r_c = -.01$ $-.29 \leq \rho \leq .27$ $\therefore$ Fail to reject H_0	$r_a = .28$ $r_c = .30$ $.05 \leq \rho \leq .55$ $\therefore$ Reject H_0	$r_a = -.18$ $r_c = -.46$ $-1.0 \leq \rho \leq .17$ $\therefore$ Fail to reject H_0
Number of Birth Complications	$r_a = .36$ $r_c = .40$ $.15 \leq \rho \leq .64$ $\therefore$ Reject H_0	$r_a = .17$ $r_c = .18$ $-.08 \leq \rho \leq .45$ $\therefore$ Fail to reject H_0	$r_a = -.19$ $r_c = -.49$ $-1.0 \leq \rho \leq .14$ $\therefore$ Fail to reject H_0
Education	$r_a = .08$ $r_c = .09$ $-.19 \leq \rho \leq .37$ $\therefore$ Fail to reject H_0	$r_a = .19$ $r_c = .20$ $-.06 \leq \rho \leq .46$ $\therefore$ Fail to reject H_0	$r_a = -.14$ $r_c = -.36$ $-1.0 \leq \rho \leq .28$ $\therefore$ Fail to reject H_0
Degree to Which Pregnancy Was Planned	$r_a = -.07$ $r_c = -.08$ $-.36 \leq \rho \leq .20$ $\therefore$ Fail to reject H_0	$r_a = .10$ $r_c = .11$ $-.16 \leq \rho \leq .38$ $\therefore$ Fail to reject H_0	$r_a = -.07$ $r_c = -.18$ $-.84 \leq \rho \leq .47$ $\therefore$ Fail to reject H_0
Income	$r_a = -.15$ $r_c = -.17$ $-.44 \leq \rho \leq .11$ $\therefore$ Fail to reject H_0	$r_a = .09$ $r_c = .10$ $-.17 \leq \rho \leq .37$ $\therefore$ Fail to reject H_0	$r_a = -.11$ $r_c = -.28$ $-.93 \leq \rho \leq .37$ $\therefore$ Fail to reject H_0

Notes:

 r_a = Attenuated sample correlation r_c = Corrected sample correlation ρ = Population correlation H_0 = Null hypothesis

Relationship Between Behavioral and Expectational Demands

Calculations of Pearson product-moment correlations provided information regarding the relationship between the mother's temperament and her demands both before and after the birth of the infant. The correlations were all corrected for attenuation due to the imperfect reliability of the DOTS-R and DOTS-R:Ethnotheory sub-scales. To test the prediction that maternal expectational demands would be different from maternal behavioral demands, a two-tailed 95% confidence intervals was constructed for each correlation coefficient. This information is presented in Table 19 and Table 20 below.

As can be seen in Table 19, contrary to our predictions, maternal behavioral demands are positively correlated with maternal expectational demands for Activity Level, Approach-Withdrawal, and Flexibility-Rigidity. In other words, the more active, approaching, and flexible the mother, the higher the levels of activity, approach, and flexibility she demands from her infant.

TABLE 19. Correlations Between DOTS-R And DOTS-R Ethnotheory at Time 2

Dimension for which Relationship was Assessed	r_a	r_c	95% Confidence Interval	Prediction Supported?
Activity Level	.25	.34	.01 $\leq p \leq$.49	No. Behavioral & expectational demands are positively related.
Approach-Withdrawal	.30	.38	.07 $\leq p \leq$.53	No. Behavioral & expectational demands are positively related.
Flexibility-Rigidity	.30	.46	.07 $\leq p \leq$.53	No. Behavioral & expectational demands are positively related.
Quality of Mood	.10	.11	-.15 $\leq p \leq$.35	Yes. Behavioral & expectational demands are not related.
Task Orientation	.20	.34	-.04 $\leq p \leq$.44	Yes. Behavioral & expectational demands are not related.

Notes:

r_a = Attenuated sample correlation

r_c = Corrected sample correlation

However, our predictions with regards to Quality of Mood and Task Orientation were supported. The mother's own Quality of Mood and level of Task Orientation do not appear to be related to her demands for Quality of Mood and Task Orientation.

The above-stated results only pertain to Time 2 (or pre-delivery) data. Information about the relationship between post-delivery behavioral demands and post-delivery expectational demands is presented in Table 20. It can be seen that the mother's Activity Level and her Task Orientation level are both positively related to her expectational demands for activity and Task Orientation—the more active and task oriented the mother, the higher the level of activity and the level of Task Orientation she demands in her infant.

In contrast, and in support of our predictions, Approach-Withdrawal, Flexibility-Rigidity, and Quality of Mood DOTS-R scores are not related to the equivalent DOTS-R:Ethnotheory scores. Mothers who have positive mood, are flexible, or have a high level of approach do not necessarily demand that their infants also have high levels of positive mood, approach, or flexibility.

TABLE 20. Correlations Between DOTS-R And DOTS-R Ethnotheory at Time 3

Dimension for which Relationship was Assessed	r_a	r_c	95% Confidence Interval	Prediction Supported?
Activity Level	.38	.51	.16 ≤ p ≤ .60	No. Behavioral & expectational demands are positively related.
Approach-Withdrawal	.22	.30	-.02 ≤ p ≤ .46	Yes. Behavioral & expectational demands are not related.
Flexibility-Rigidity	.23	.40	-.01 ≤ p ≤ .47	Yes. Behavioral & expectational demands are not related.
Quality of Mood	.11	.12	-.14 ≤ p ≤ .36	Yes. Behavioral & expectational demands are not related.
Task Orientation	.25	.29	.01 ≤ p ≤ .49	No. Behavioral & expectational demands are positively related.

Notes:

r_a = Attenuated sample correlation

r_c = Corrected sample correlation

Absolute Difference Scores and Maternal Functioning

A Pearson correlation was used to test the prediction that larger difference scores between child temperament and maternal demands, regardless of the direction of the difference, would correlate positively with higher levels of maternal depression and anxiety. Two types of absolute discrepancy were examined:

1. Discrepancy_a: refers to the absolute discrepancy between child temperament (IBQ scores) and maternal behavioral demands (DOTS-R scores).
2. Discrepancy_b: refers to the absolute discrepancy between child temperament (IBQ scores) and maternal expectational demands (DOTS-R:Ethnotheory scores).

Results of the correlation analyses are summarized in Table 21 through Table 26 below. Each table presents the relevant attenuated correlation coefficients (r_a) followed by the corrected correlation coefficients (r_c), the 90% confidence interval, and the inference probability (PI) associated with each.

In addition, the power associated with each result is presented. Whenever conclusions are drawn from a set of data, there is a possibility of making one of two mutually exclusive types of error: a) Type I error—rejecting a true null hypothesis— or b) Type II error—failing to reject a false null hypothesis. While the probability of a Type I error (α) is specified by our choice of significance level, the exact probability of a Type II error (β) is unknown. The best that can be done is to keep β at a reasonably low value (Keppel and Zedeck, 1989). The statistical concept of power refers to the probability of correctly rejecting the null hypothesis. It is related to β as follows:

$$\text{Power} = 1 - \beta$$

TABLE 21. Correlations of Absolute Discrepancy Between DOTS-R and IBQ with Depression

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	.27	.33	.07 $\leq p \leq$.47	.99	Yes	72%	127
Approach-Withdrawal	.16	.19	-.05 $\leq p \leq$.37	.90	Yes	35%	400
Flexibility-Rigidity	.10	.12	-.11 $\leq p \leq$.31	.78	Yes	19%	1055
Quality of Mood	.14	.16	-.07 $\leq p \leq$.35	.86	Yes	29%	528
Task Orientation	.03	.04	-.18 $\leq p \leq$.24	.59	SJ	8%	11933

TABLE 22. Correlations of Absolute Discrepancy Between DOTS-R and IBQ with State Anxiety

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	-.20	-.24	-.40 $\leq p \leq$.00	.05	No	0%	248
Approach-Withdrawal	.08	.09	-.13 $\leq p \leq$.29	.73	Yes	15%	1660
Flexibility-Rigidity	.07	.08	-.14 $\leq p \leq$.28	.71	Yes	14%	2175
Quality of Mood	.03	.03	-.18 $\leq p \leq$.24	.59	SJ	8%	11933
Task Orientation	.22	.26	.02 $\leq p \leq$.42	.96	Yes	55%	202

TABLE 23. Correlations of Absolute Discrepancy Between DOTS-R and IBQ with Trait Anxiety

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	-.04	-.07	$-.25 \leq \rho \leq .17$	.38	SJ	3%	6703
Approach-Withdrawal	-.02	-.03	$-.23 \leq \rho \leq .19$	.44	SJ	4%	26875
Flexibility-Rigidity	.06	.10	$-.15 \leq \rho \leq .27$	.68	Yes	12%	2967
Quality of Mood	.07	.12	$-.14 \leq \rho \leq .28$	.71	Yes	14%	2175
Task Orientation	-.15	-.27	$-.36 \leq \rho \leq .06$	.12	No	0%	457

TABLE 24. Correlations of Absolute Discrepancy Between DOTS-R:Ethnotheory and IBQ with Depression

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	.04	.06	$-.17 \leq \rho \leq .25$	.62	SJ	9%	6703
Approach-Withdrawal	.05	.06	$-.16 \leq \rho \leq .26$	.65	SJ	10%	4282
Flexibility-Rigidity	-.03	-.04	$-.24 \leq \rho \leq .18$	.41	SJ	3%	11933
Quality of Mood	.13	.14	$-.08 \leq \rho \leq .34$	.85	Yes	27%	616
Task Orientation	.09	.12	$-.12 \leq \rho \leq .30$	.76	Yes	17%	1307

TABLE 25. Correlations of Absolute Discrepancy Between DOTS-R:Ethnotheory and IBQ with State Anxiety

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	-.14	-.19	-.35 $\leq p \leq$.07	.14	No	0%	528
Approach-Withdrawal	-.09	-.11	-.30 $\leq p \leq$.12	.24	No	1%	1307
Flexibility-Rigidity	-.08	-.11	-.29 $\leq p \leq$.13	.27	No	1%	1660
Quality of Mood	-.06	-.06	-.27 $\leq p \leq$.15	.32	No	2%	2967
Task Orientation	.28	.37	.08 $\leq p \leq$.48	.99	Yes	76%	117

TABLE 26. Correlations of Absolute Discrepancy Between DOTS-R:Ethnotheory and IBQ with Trait Anxiety

Discrepancy Dimension	r_a	r_c	90% Confidence Interval	PI	Prediction Supported?	Statistical Power	Sample Size Needed
Activity Level	.06	.12	-.15 $\leq p \leq$.27	.68	Yes	12%	2967
Approach-Withdrawal	.06	.11	-.15 $\leq p \leq$.27	.68	Yes	12%	2967
Flexibility-Rigidity	.20	.39	-.00 $\leq p \leq$.40	.95	Yes	48%	248
Quality of Mood	-.04	-.06	-.25 $\leq p \leq$.17	.38	SJ	3%	6703
Task Orientation	-.21	-.41	-.41 $\leq p \leq$ -.01	.05	No	0%	223

For example, if $\beta = .40$, then power = .60. This means that if we repeated the same study over and over, we would reject the null hypothesis 60% of the time. In other words, the higher the power, the more ability we have to detect a relationship that exists, in the population, between two variables.

One well-known way of increasing power is to increase the sample size. Table 21 through Table 26 present the sample size that would be needed in order to have a power of 95% for each of the correlations shown. Following is a brief discussion of the findings associated with each of the two types of absolute discrepancy.

Correlations Between Discrepancy_a and Maternal Functioning

Results summarized in Table 21 through Table 23 indicate that the absolute discrepancy between the mother's Activity Level and the infant's Activity Level was positively related to depression but not related to state anxiety. Judgement with respect to the relationship between an Activity Level discrepancy and trait anxiety was suspended because the PI was within the .34-.65 range.

The absolute discrepancy between the mother's Approach-Withdrawal level and the infant's Approach-Withdrawal level was positively related to depression and state anxiety. Notice that the zero point was approximately in the middle of the interval for both correlations. A classical test of significance would have failed to reject the null hypothesis at the .05 level. Judgement with respect to the relationship between an Approach-Withdrawal Level discrepancy and trait anxiety was suspended because the PI was within the .34-.65 range.

The absolute discrepancy between the mother's Flexibility-Rigidity level and the infant's Flexibility-Rigidity level was positively related to depression, state anxiety, and trait anxiety. Notice that the zero point was approximately in the middle of the interval for

all of the estimated population correlations. A classical test of significance would have failed to reject the null hypothesis at the .05 level.

The absolute discrepancy between the mother's Quality of Mood and the infant's Quality of Mood was positively related to depression and trait anxiety. Notice that the zero point was approximately in the middle of the interval for both correlations. A classical test of significance would have failed to reject the null hypothesis at the .05 level. Judgement with respect to the relationship between a Quality of Mood discrepancy and state anxiety was suspended because the PI was within the .34-.65 range.

Finally, the absolute discrepancy between the mother's Task Orientation level and the infant's Task Orientation level was positively related to state anxiety but not related to trait anxiety. Judgement with respect to the relationship between a Task Orientation discrepancy and depression was suspended because the PI was within the .34-.65 range.

Overall, out of the 15 predictions made, 9 were confirmed, 2 were not supported, and 4 were borderline.

Correlations Between Discrepancy_b and Maternal Functioning

Results summarized in Table 24 through Table 26 indicate that the absolute discrepancy between the mother's Activity Level and the infant's Activity Level was positively related to trait anxiety. Notice that the zero point was approximately in the middle of the interval for this correlation. A classical test of significance would have failed to reject the null hypothesis at the .05 level. On the other hand, the absolute discrepancy between the mother's Activity Level and the infant's Activity Level was not related to state anxiety. Judgement with respect to the relationship between an Activity Level discrepancy and depression was suspended because the PI was within the .34-.65 range.

The absolute discrepancy between the mother's Approach-Withdrawal level and the infant's Approach-Withdrawal level was positively related to trait anxiety. Notice that the

zero point was approximately in the middle of the interval for this correlation. A classical test of significance would have failed to reject the null hypothesis at the .05 level. On the other hand, the absolute discrepancy between the mother's Approach-Withdrawal level and the infant's Approach-Withdrawal level was not related to state anxiety. Judgement with respect to the relationship between an Approach-Withdrawal discrepancy and depression was suspended because the PI was within the .34-.65 range.

Similarly, the absolute discrepancy between the mother's Flexibility-Rigidity level and the infant's Flexibility-Rigidity level was positively related to trait anxiety. Notice that the zero point was approximately in the middle of the interval for this correlation. A classical test of significance would have failed to reject the null hypothesis at the .05 level. This discrepancy was not related to state anxiety. Judgement with respect to the relationship between a Flexibility-Rigidity discrepancy and depression was suspended because the PI was within the .34-.65 range.

The absolute discrepancy between the mother's Quality of Mood and the infant's Quality of Mood was positively related to depression. Notice that the zero point was approximately in the middle of the interval for this correlation. A classical test of significance would have failed to reject the null hypothesis at the .05 level. On the other hand, the absolute discrepancy between the mother's Quality of Mood and the infant's Quality of Mood was not related to state anxiety. Judgement with respect to the relationship between a Quality of Mood discrepancy and trait anxiety was suspended because the PI was within the .34-.65 range.

Finally, the absolute discrepancy between the mother's Task Orientation level and the infant's Task Orientation level was positively related to both depression and state anxiety. Notice that the zero point was approximately in the middle of the interval for both of these correlations. A classical test of significance would have failed to reject the null hypothesis at the .05 level. On the other hand, the discrepancy was not related to trait anxiety.

Overall, out of the 15 predictions made, 6 were confirmed, 5 were not supported, and 4 were borderline.

Difference Scores and Maternal Functioning

Exploratory correlation analyses were conducted in order to investigate whether the direction of a discrepancy has an impact on maternal functioning. A Pearson correlation was used to test the non-directional null hypothesis that correlations between difference scores and maternal functioning are not significantly different than zero. Two types of discrepancy were examined:

1. Discrepancy_c: refers to the discrepancy between child temperament (IBQ scores) and maternal behavioral demands (DOTS-R scores).
2. Discrepancy_d: refers to the discrepancy between child temperament (IBQ scores) and maternal expectational demands (DOTS-R:Ethnotheory scores).

Results of the correlation analyses are summarized in Table 27 through Table 32 below. Each table presents the relevant attenuated correlation coefficients (r_a) followed by the corrected correlation coefficients (r_c), the 95% confidence interval, and the power and needed sample size associated with each. Following is a brief discussion of the findings associated with each of the two types of discrepancy.

Correlations Between Discrepancy_c and Maternal Functioning

Results summarized in Table 27 through Table 29 indicate that, for 6 out of the 15 relationships investigated, the direction of the discrepancy between infant and mother is temperament characteristics is important.

A discrepancy where the child is higher than the mother on Activity Level, Quality of Mood, or Task Orientation is related to maternal depression.

TABLE 27. Correlations of Discrepancy Between DOTS-R and IBQ with Depression

Discrepancy Dimension	r_a	r_c	95% Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	-.26	-.32	$-.50 \leq \rho \leq -.02$	Reject H_0	57%	167
Approach-Withdrawal	-.14	-.17	$-.39 \leq \rho \leq .11$	Fail to reject H_0	20%	636
Flexibility-Rigidity	.17	.20	$-.08 \leq \rho \leq .42$	Fail to reject H_0	27%	423
Quality of Mood	-.50	-.59	$-.69 \leq \rho \leq -.31$	Reject H_0	99%	30
Task Orientation	-.47	-.58	$-.67 \leq \rho \leq -.27$	Reject H_0	99%	36

TABLE 28. Correlations of Discrepancy Between DOTS-R and IBQ with State Anxiety

Discrepancy Dimension	r_a	r_c	95% Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	-.04	-.05	$-.295 \leq \rho \leq .21$	Fail to reject H_0	6%	8075
Approach-Withdrawal	-.18	-.21	$-.43 \leq \rho \leq .07$	Fail to reject H_0	2%	311
Flexibility-Rigidity	-.04	-.05	$-.29 \leq \rho \leq .21$	Fail to reject H_0	6%	8075
Quality of Mood	-.27	-.31	$-.51 \leq \rho \leq -.03$	Reject H_0	61%	153
Task Orientation	-.23	-.28	$-.47 \leq \rho \leq .01$	Fail to reject H_0	46%	220

TABLE 29. Correlations of Discrepancy Between DOTS-R and IBQ with Trait Anxiety

Discrepancy Dimension	r_a	r_c	95 Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	.14	.25	$-.11 \leq \rho \leq .39$	Fail to reject H_0	20%	636
Approach-Withdrawal	.09	.15	$-.16 \leq \rho \leq .34$	Fail to reject H_0	11%	1575
Flexibility-Rigidity	-.04	-.07	$-.29 \leq \rho \leq .21$	Fail to reject H_0	6%	8075
Quality of Mood	.42	.71	$.21 \leq \rho \leq .63$	Reject H_0	97%	50
Task Orientation	.35	.62	$.13 \leq \rho \leq .57$	Reject H_0	87%	82

TABLE 30. Correlations of Discrepancy Between DOTS-R:Ethnotheory and IBQ with Depression

Discrepancy Dimension	r_a	r_c	95% Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	-.20	-.28	$-.44 \leq \rho \leq .04$	Fail to reject H_0	360%	299
Approach-Withdrawal	-.11	-.14	$-.36 \leq \rho \leq .14$	Fail to reject H_0	14%	1046
Flexibility-Rigidity	.02	.03	$-.24 \leq \rho \leq .28$	Fail to reject H_0	5%	26875
Quality of Mood	-.40	-.43	$-.61 \leq \rho \leq -.19$	Reject H_0	96%	58
Task Orientation	-.52	-.70	$-.71 \leq \rho \leq -.33$	Reject H_0	99%	26

TABLE 31. Correlations of Discrepancy Between DOTS-R:Ethnotheory and IBQ with State Anxiety

Discrepancy Dimension	r_a	r_c	95% Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	-.10	-.14	$-.35 \leq p \leq .15$	Fail to reject H_0	12%	1271
Approach-Withdrawal	-.05	-.06	$-.30 \leq p \leq .20$	Fail to reject H_0	7%	5159
Flexibility-Rigidity	.10	.13	$-.15 \leq p \leq .35$	Fail to reject H_0	12%	1055
Quality of Mood	.02	.02	$-.24 \leq p \leq .28$	Fail to reject H_0	5%	32375
Task Orientation	-.40	-.53	$-.61 \leq p \leq -.19$	Reject H_0	96%	58

TABLE 32. Correlations of Discrepancy Between DOTS-R:Ethnotheory and IBQ with Trait Anxiety

Discrepancy Dimension	r_a	r_c	95% Confidence Interval	Decision	Statistical Power	Sample Size Needed
Activity Level	.17	.34	$-.08 \leq p \leq .42$	Fail to reject H_0	27%	423
Approach-Withdrawal	.04	.07	$-.21 \leq p \leq .29$	Fail to reject H_0	6%	8075
Flexibility-Rigidity	-.17	-.33	$-.42 \leq p \leq .08$	Fail to reject H_0	27%	423
Quality of Mood	.21	.32	$-.03 \leq p \leq .45$	Fail to reject H_0	39%	269
Task Orientation	.52	.99	$.33 \leq p \leq .71$	Reject H_0	99%	26

Similarly, a discrepancy where the child is higher than the mother on Quality of Mood is related to state anxiety. On the other hand, a discrepancy where the mother is higher than her infant on Quality of Mood or Task Orientation is related to trait anxiety.

Correlations Between Discrepancy_d and Maternal Functioning

Results summarized in Table 30 through Table 32 indicate that, for 4 out of the 15 relationships investigated, the direction of the discrepancy between infant temperament and maternal demands is related to maternal functioning.

A discrepancy where the child is higher than the mother's expectational demands on Quality of Mood, or Task Orientation is related to maternal depression. Similarly, a discrepancy where the infant is higher than the mother's demands on Task Orientation is related to higher maternal state anxiety.

On the other hand, a discrepancy where the mother's expectational demand for Quality of Mood is higher than her infant's Quality of Mood score is related to trait anxiety.

Overall, it appears that the absolute discrepancy between maternal behavioral demands and infant temperament, as well as the absolute discrepancy between maternal expectational demands and infant temperament is more related to maternal functioning than the discrepancy between maternal behavioral demands and infant temperament, and the discrepancy between maternal expectational demands and infant temperament.

Following is a discussion of the methodological issues and the limitations of this study that may have contributed to the present findings.

Limitations of the study

- 1. The sample was relatively small, due to the sample attrition associated with longitudinal research. For example, the birth of a baby may entail moving to a larger home, hence increasing the chance of losing subjects. The MSU Becoming A Mother Study, which is the data set from which data for this study was obtained, originally recruited 119 families. However, only 60 families completed all waves of questionnaires. It is data from these 60 families that was used in this study. The small sample size reduced the power of the statistical tests and increased the probability of a Type II error.**
- 2. The subjects' demographic measures had limited variability. For example the majority of the sample was White, married, educated, from the middle and upper middle classes, and with very few birth complications. Recruitment for the MSU Becoming a Mother Study was aimed at both low and middle class communities. However, there were limited resources available to compensate participants, therefore many women tended to decline our offer to participate in the study. This restriction of range limits the generalizability of the results to the population. In addition, caution must be taken in interpreting the low correlation coefficients obtained in this study, as they may have resulted from the restriction of the range of values of one or both of the variables involved.**
- 3. The reliability of the DOTS-R:Ethnotheory scales, which are composed of only two items each, was inadequate. This problem was overcome by correcting for attenuation. However, the few number of items comprising each subscale may not be enough to accurately measure maternal demands, and thus the validity of the questionnaire for our sample may be questionable.**

4. Discrepancy scores, which are used to predict outcomes, tend to be less reliable than their component scores. Although this study corrected for attenuation, the small variation in the mothers' expectational as well as behavioral demands limited the ability of the discrepancy scores to predict maternal functioning measures. Similar problems of minimal variability associated with demands has emerged in other studies in this area of research (e.g., Hooker et al., 1984; Lerner, 1983; Palermo, 1982; Talwar 1988).
5. Possible reporter bias due to the fact that infant temperament was reported solely by the mother, who also reports her own temperament and her expectational demands. A description of an infant's temperament by the mother will possibly reflect the mother's subjective perception of the infant so that a discrepancy between maternal demands and infant temperament may be in reality a discrepancy between the mother's perception of her demands and her perception of her infant's temperament. Future research should attempt to address the question of how far an observer would agree with the mother in rating herself and her infant on temperamental traits.
6. The purpose of the DOTS-R:Ethnotheory was to identify and measure demands regarding the same underlying dimensions of temperament constantly evident across the age groups (Lerner and Lerner, 1986). Thus, it is possible that demands regarding some of the temperament attributes of the infant that play an important role in the mother's functioning were not assessed by the DOTS-R:Ethnotheory instrument. On the other hand, demands regarding some of the attributes actually assessed by the DOTS-R:Ethnotheory are unlikely to be relevant during infancy and therefore a discrepancy between these demands and the infant would not be expected to

play a key role in maternal functioning. Therefore, a measure of maternal demands needs to be developed which is sensitive to the dimensions of the infant temperament that are salient to mother-infant interaction.

A discussion of the major findings of the present study will be presented in the following chapter.

Chapter 4

Discussion

Individual differences in temperament are associated with variation in personal and social adjustment (Windle et al., 1986). As such, the role of temperament characteristics in influencing the quality of psychological adjustment has been a topic attracting increasing theoretical interest (Chess and Thomas, 1986; Plomin and Dunn, 1986). The Developmental Contextual Perspective (Lerner, 1982; Lerner and Kauffman, 1985; Lerner and Lerner, 1983; Thomas and Chess, 1977) stresses the relationship between the individual and the context as an important factor affecting functioning.

The “Goodness of Fit” model, devised by Thomas and Chess (1977) and developed further by Lerner and Lerner (1983) adopts this perspective. According to this model adaptation derives from a congruence or match between the characteristics of individuality of the infant and the demands of the social environment, as indexed by the expectations of key significant others with whom the infant interacts, for example the mother. When the set of organismic features of the infant provides a good fit with the demands of the mother, positive maternal functioning and better mother-child relationships should be found. Subsequently, healthy child adjustment should occur.

The present study was designed to closely examine the mechanisms of the “Goodness of Fit” model. In particular, this study was aimed at appraising a) the relationship between maternal behavioral demands and maternal expectational demands, b) the relationship between the infant’s fit with each type of maternal demands and maternal functioning, and c) whether or not the direction of the discrepancy between the infant’s temperament and each type of maternal demands makes a difference in terms of the mother’s functioning.

A detailed list of the hypotheses made in this study and whether the data lent them support or not is presented in Table 33 below. The major results of the present research will be discussed in the next sections.

TABLE 33. Summary of the Findings of the Present Study

Hypothesis	Hypothesis Supported For	Hypothesis Not supported for	Judgement suspended for
Mothers' expectational demands would not closely match their behavioral demands at Time 2	Quality of Mood Task Orientation	Activity Level (+) Approach (+) Flexibility-Rigidity (+)	
Mothers' expectational demands would not closely match their behavioral demands at Time 3	Approach-Withdrawal Flexibility-Rigidity Quality of Mood	Activity Level (+) Task Orientation (+)	
Absolute Discrepancy between maternal behavioral demands and infant temperament correlated with higher Depression	Activity Level Approach-Withdrawal Flexibility-Rigidity Quality of Mood		Task Orientation
Absolute Discrepancy between maternal behavioral demands and infant temperament correlated with higher State Anxiety	Approach-Withdrawal Flexibility-Rigidity Task Orientation	Activity Level	Quality of Mood
Absolute Discrepancy between maternal behavioral demands and infant temperament correlated with higher Trait Anxiety	Flexibility-Rigidity Quality of Mood	Task Orientation	Activity Level Approach-Withdrawal

TABLE 33 (cont'd)

Hypothesis	Hypothesis Supported For	Hypothesis Not supported for	Judgement suspended for
Direction of Discrepancy between maternal behavioral demands and infant temperament relevant with respect to the effect of the discrepancy on maternal Depression	Activity Level (-) Quality of Mood (-) Task Orientation (-)	Approach-Withdrawal Flexibility-Rigidity	
Direction of Discrepancy between maternal behavioral demands and infant temperament relevant with respect to the effect of the discrepancy on the mother's State Anxiety	Quality of Mood (-)	All others	
Direction of Discrepancy between maternal behavioral demands and infant temperament relevant with respect to the effect of the discrepancy on the mother's Trait Anxiety	Quality of Mood (+) Task Orientation (+)	Activity Level Approach-Withdrawal Flexibility-Rigidity	
Absolute Discrepancy between maternal expectational demands and infant temperament correlated with higher Depression	Quality of Mood Task Orientation		Activity Level Approach-Withdrawal Flexibility-Rigidity
Absolute Discrepancy between maternal expectational demands and infant temperament correlated with higher State Anxiety	Task Orientation	All others	

TABLE 33 (cont'd)

Hypothesis	Hypothesis Supported For	Hypothesis Not supported for	Judgement suspended for
Absolute Discrepancy between maternal expectational demands and infant temperament correlated with higher Trait Anxiety	Activity Level Approach-Withdrawal Flexibility-Rigidity	Task Orientation	Quality of Mood
Direction of Discrepancy between maternal-expectational demands and infant temperament relevant with respect to the effect of the discrepancy on Depression	Quality of Mood (-) Task Orientation (-)	Activity Level Approach-Withdrawal Flexibility-Rigidity	
Direction of Discrepancy between maternal-expectational demands and infant temperament relevant with respect to the effect of the discrepancy on State Anxiety	Task Orientation (-)	All others	
Direction of Discrepancy between maternal-expectational demands and infant temperament relevant with respect to the effect of the discrepancy on Trait Anxiety	Task Orientation (+)	All others	
Maternal temperament (behavioral demands) relatively stable before birth but shows instability from Time 2 to Time 3	Activity Level Approach-Withdrawal Task Orientation	Flexibility-Rigidity Quality of Mood	

TABLE 33 (cont'd)

Hypothesis	Hypothesis Supported For	Hypothesis Not supported for	Judgement suspended for
Maternal functioning relatively stable before birth but shows instability from Time 2 to Time 3	Depression Trait Anxiety	State Anxiety	
Mother's Activity Level, Approach, and Flexibility would increase after delivery	Activity Level		Approach-Withdrawal Flexibility-Rigidity
Mother's Task Orientation would decrease after delivery	Task Orientation		
Mother's Quality of Mood would change after delivery	Quality of Mood (I)		
Maternal expectational demands would change after delivery		All others	Quality of Mood (NE)
Maternal functioning would change after delivery	State Anxiety (D)	Depression Trait Anxiety	
Age correlated with the change in all DOTS-R, DOTS-R:Ethnotheory, and maternal functioning subscales	State Anxiety (+)	All others	
Number of birth complications correlated with the change in all DOTS-R, DOTS-R: Ethnotheory, and maternal functioning subscales	DOTS-R: Activity (-) DOTS-R: Mood (-) Depression (+)	All others	

TABLE 33 (cont'd)

Hypothesis	Hypothesis Supported For	Hypothesis Not supported for	Judgement suspended for
Education correlated with the change in all DOTS-R, DOTS-R: Ethnotheory, and maternal functioning subscales	DOTS-R: Approach (-)	All others	
Degree of planning correlated with the change in all DOTS-R, DOTS-R: Ethnotheory, and maternal functioning subscales	DOTS-R: Approach (-) DOTS-R: Mood (-)	All others	
Income correlated with the change in all DOTS-R, DOTS-R: Ethnotheory, and maternal functioning subscales	DOTS-R: Approach (-)	All others	
A significant birth-by-subject interaction exists for all DOTS-R, DOTS-R: Ethnotheory and maternal functioning subscales	All others		DOTS-R: Ethnotheory: Task Orientation DOTS-R: Ethnotheory: Quality of Mood (NE)
A significant impact correlation exists for all DOTS-R, DOTS-R: Ethnotheory, and maternal functioning subscales	All others	DOTS-R: Approach (+)	DOTS-R: Ethnotheory: Flexibility-Rigidity DOTS-R: Ethnotheory: Quality of Mood (NE) DOTS-R: Ethnotheory: Task Orientation (NE)

Notes:

(NE)= Can Not Be Estimated

(-)= Negative Relationship

(+= Positive Relationship

(I)= Increased

(D)= Decreased

Relationship Between Behavioral and Expectational Demands

Overall, the prediction that the mother's expectational demands would not closely match their behavioral demands received more support at the post-delivery measurement point (Time 3) than at the pre-delivery measurement point (Time 2). This lack of relationship between maternal temperament and maternal expectational demands supports the "Goodness-of-fit" premise that fit does not require similarity between behaviors because the mother may demand attributes that are different from her own temperament attributes. Fit would only mean similarity if the mother's expectations matched her own temperament. This was not the case, as far as the post-delivery data was concerned, in this study. This suggests some desire, on the mother's part, for complementarity between her own temperament and that of her infant's.

It is interesting to note that, whereas before birth the mother's expectational demands for Approach and Flexibility were positively related to her own levels of Approach and Flexibility, after the birth of the baby the mother's own levels of Approach and Flexibility seem to be different from her expectational demands concerning these attributes. On another level, results of the change analyses indicated that maternal expectational demands did not change from Time 2 to Time 3. On the other hand, after giving birth, the mother's levels of Approach and Flexibility seemed to increase, although, due to low power, the magnitude of the increase was not big enough to reach significance.

By combining these two sets of results, we can conclude that after giving birth, the mother seems to have higher levels of Approach and Flexibility while her expectational demands for these attributes remain constant. This makes sense when we consider the fact that new mothers taking care of their first-born infants quickly learn to be receptive to new situations and flexible when dealing with them.

Absolute Discrepancy Scores and Maternal Functioning

Overall, results indicated that a discrepancy between maternal behavioral demands and infant temperament was more related to maternal functioning than a discrepancy between maternal expectational demands and infant temperament. Mothers seemed to suffer more Depression and Anxiety when their infant's temperament was different than their own, than when the infant's temperament was different than their expectations.

It would be interesting to investigate these relationships into childhood and adolescence. With development, child temperament-demands fit could become less important to mother functioning. For example, with older children, who do not spend as much time with parents, fit with maternal behavioral demands may not have as much of an impact on the mother's functioning as it does in infancy when the mothers are with their infants for most of the day. In addition, mothers may adjust to their child's individuality so that the child's being "just like them" or not would not have as much impact on their functioning.

By itself, the discrepancy between expectational demands and infant temperament seems to be, at best, moderately related to maternal functioning. This contradicts the available literature that asserts the importance of the fit between the expectational demands of the significant others and the child's temperament for optimal functioning (Kelly, 1976; Milliones, 1978; Dunn & Kendrick, 1980; Linn & Horowitz, 1983; Thomas & Chess, 1976; Brazelton et al., 1974; Wolkind & De Salis, 1982).

This unexpected pattern could be attributed to the fact that Time 3 data was collected only two to three months post-delivery. This period of time may have not been long enough for the inexperienced first-time mother to form a clear picture of what her true expectational demands might be. This interpretation is supported by the change analysis which showed that, contrary to what we predicted, maternal expectational demands did not change much after the birth of the baby. In this case, then, maternal temperament might have served as a more accurate reflection of the mother's values and preferences.

Direction of Discrepancy and Maternal Functioning

Overall, taking the direction of the discrepancy into account when computing correlation coefficients between discrepancy scores and maternal functioning did not improve the chances of finding support for the hypotheses. This lends support to the “Goodness of Fit” premise (Chess and Thomas, 1977) that a child’s temperament trait has adverse effects if it results in a poorness of fit with expectational demands. Whether the child is higher or lower on the trait than expected by the parents is not necessarily relevant. What matters is the magnitude or the absolute value of the discrepancy.

A closer look at the results, however, reveals that the direction of the discrepancy does play a role, in the case of certain temperament attributes, with respect to specific aspects of maternal functioning. In particular, mothers of infants who exceeded maternal behavioral demands for Mood (i.e. the mother’s own level of Mood) had higher Depression and State Anxiety scores, while mothers whose behavioral demands for Mood (i.e. their own level of Mood) exceeded their infant’s level of Mood had higher Trait Anxiety scores.

These results are along the same lines of Lerner, Lerner and Zabski’s (1985) finding that students who exceeded the teacher’s demands for attention had higher adjustment ratings than students who showed less attention than demanded. More studies need to investigate this issue in order to find out which attributes are more adaptive when they are on target and which ones are more adaptive when they exceed or fall short of maternal demands.

A similar pattern emerged with respect to maternal expectational demands for Task Orientation and specific aspects of maternal functioning. Mothers of infants who exceeded maternal expectational demands for Task Orientation had higher Depression and State Anxiety scores. Perhaps when the highly-orienting infant is distracted away from the mother for a long period of time, the mother interprets this intense orienting in their newborns as a sign of alienation or lack of interest, on the part of the infant, in forming an “attachment” to the mother. And, perhaps, when the infant orients towards the mother for

a long period of time, the mother perceives this behavior as a sign of over-dependency on her that would interfere with her various other daily activities that do not involve the infant.

On the other hand, mothers whose expectational demands for Task Orientation exceeded their infant's level of Task Orientation had higher Trait Anxiety scores. This could be interpreted in light of the fact that infants who cannot orient towards any particular stimulus for as long a duration as their mothers expected them to, tend to "wear out" their mothers physically and emotionally.

Stability of Maternal Temperament and Maternal Functioning

In support of our hypotheses, the mother's Activity, Approach, Task Orientation, Depression, and Trait Anxiety levels were relatively stable before birth but showed instability from Time 2 to Time 3. However, contrary to what was expected, Maternal Flexibility, Mood, and State Anxiety seem to be more unstable between Time 1 and Time 2 than between Time 2 and Time 3. This finding seems to point to pregnancy as an important, emotionally-laden period during which first-time prospective mothers learn to become more flexible when faced with the unavoidable changes in routine.

Change in Maternal Variables After Delivery

After delivery, the mother's Activity Level increased, while her Task Orientation decreased reflecting the expected changes associated with new motherhood. Judgement was suspended for changes in the levels of maternal Approach and Flexibility. It seems that with a larger sample size, and therefore more statistical power, the increase in the mother's Approach and Flexibility levels could have reached significance.

It is interesting to note that the mother's Quality of Mood improves after delivery. It could be that the relief and security felt by the new mothers for having safely delivered their first-borns could contribute to this increase in maternal Quality of Mood.

On the other hand, maternal expectational demands did not change after delivery. This is an interesting finding, given the fact that most new mothers are expected to adjust their views and preferences regarding children's temperament, once they experience having a child of their own. As stated earlier, one reason for this finding may be that Time 3 testing was done too soon after delivery. In addition, it is possible that expectational demands regarding some of the three-month-old infant's attributes that are salient to a first-time mother were not assessed by the DOTS-R:Ethnotheory scale.

It is important to note that, overall, the functioning of the mothers in our study improved after delivery—Depression and Trait Anxiety did not change, while State anxiety decreased. This may reflect the fact that our sample was composed of relatively well-adjusted, educated, married, mature women who experienced few birth complications.

The amount of change in most maternal behavioral demands, maternal expectational demands, and maternal functioning did not seem to be strongly related to demographic variables, possibly because of the lack of variability in the sample's demographics. The cases where the relationship was significant, however, are interesting to discuss. For example, as would be expected, the number of birth complications was related to smaller changes (i.e. smaller increases) in maternal Activity and Mood, and to larger changes in maternal Depression. Mothers also experienced smaller improvements in their quality of Mood after delivery when the pregnancy was not planned to begin with. Finally, mothers with less education, less planning, and lower levels of income experienced smaller increases in their levels of Approach after delivery. This fits in with the vast amount of research that suggests a link between life stressors and difficulty adjusting to the newborn and to one's new role as a mother (Nuckolls et al., 1972; Cohen, 1979; Kaplan, 1982; Norbeck & Anderson, 1989).

Future Research Directions

This study added to the “Goodness of fit” literature because it was the first to investigate the difference/similarity between maternal behavioral demands and maternal expectational demands and to assess the “infant-behaviors” fit. Previous research only assessed the “infant-expectations” fit which, while important, is not sufficient for understanding the dynamics underlying maternal and infant functioning. Previous research assumed that maternal expectational demands accurately represent what mothers really want. This study showed that we cannot always assume that mothers express what they ultimately want through their expectational demands. Sometimes, investigating maternal behaviors, as well as expectations, can provide valuable insight into actual maternal demands.

In addition, while the “Goodness of fit” literature indicated that the mother-child fit is important for child functioning, the saliency of the mother-child fit for maternal functioning was not investigated before. Crockenberg (1986) has found a relationship between infant soothability and maternal responsiveness. That research was built on the assumption that mothers demand high soothability in their infants and that maternal responsiveness to the infant is an indicator of maternal functioning. The present study built on and reinforced these previous findings by directly assessing maternal demands and maternal functioning.

Although sample limitations in the present study led us to suspend judgement on a few questions, and to fail to support some interesting hypotheses, future directions to continue research are indicated from the present study’s findings.

First, it is evident that future research should include a much larger sample of individuals from a more diverse population. This would provide sufficient power to detect existing relationships. Moreover, future research should attempt to use a longer, more reliable instrument to assess maternal expectational demands. Perhaps, an independent

observer should also provide ratings of the mother and of the infant's temperament traits to overcome reporter bias.

Further research examining the mechanisms behind the Goodness of Fit model is suggested by the present study. Future research in the area should include a measure of maternal behavioral demands and should focus on the discrepancy between these behavioral demands and functioning, as well as the discrepancy between expectational demands and functioning.

Thomas et al. (1974) found an association between the child's fit with the demands of the physical setting and problem behaviors. For example, high activity level tended to cause problems for interaction for the Puerto Rican children who live in small apartments, but not for the core-sample children who typically lived in large houses. This present study did not assess demands of the physical setting, in order to control the number of questionnaires the subjects were required to fill out. Future research can look at these demands and investigate the effects of child-setting fit on functioning.

Furthermore, examination of both real and absolute discrepancy scores would help provide more information about the role that the direction of the discrepancy plays in influencing outcomes. Finally, future studies should attempt to include several measurement points at six-month intervals after delivery. This would allow examination of the processes that may not be apparent shortly after the birth of the baby.

Only in this way can researchers capture the true dynamics involved in the relationship between infants' temperament and their subsequent development.

APPENDIX

Appendix

Instruments Used In The Present Study

- 1. Demographic Information**
- 2. Dimensions of Temperament Survey-Revised**
- 3. Dimensions of Temperament Survey-Revised: Ethnotheory**
- 4. Infant Behavior Questionnaire***
- 5. Center for Epidemiological Studies-Depression Scale**
- 6. State-Trait Anxiety Inventory: Form Y***

*** Because of copyright laws, these questionnaires are not included in the Appendix**

ID#: - - - -
 Wave: - - - -
 Form: 101

DEMOGRAPHIC INFORMATION

Today's date _____
 Week of pregnancy _____
 Due Date _____

1. Gender: Female ☐ Male ☐
2. Age (years) _____
3. Are you currently employed? Full time ☐
 Part time ☐
 What is your occupation? _____
4. Do you do volunteer work? Please describe briefly _____
5. What is the highest level of education you have completed?
☐ High School or less
☐ Technical or trade school
☐ Some college
☐ College degree
☐ Some graduate study
☐ Graduate degree
6. Marital Status
☐ Single
☐ Cohabiting
☐ Divorced, remarried
☐ Married
☐ Separated
☐ Divorced
☐ Widowed
☐ Widowed, remarried
7. Have you ever fathered a child before?
 Yes ☐
 No ☐
8. How many children would you eventually like to have?

9. Do you have plans for your mate to work during the pregnancy?
 Yes, full time ☐
 Yes, part time ☐
 No ☐

ID#: _ _ _ _

10. Do you plan for your mate to return to work after the birth of your child?

Yes ☐
No ☐

11. Were you using birth control when you learned your mate was pregnant?

No ☐
Yes ☐ What method? _____

12. This pregnancy was

☐ expected
☐ unexpected
☐ planned

13. Do you belong to any organizations or groups?

Yes ☐
No ☐

Please list them below, and indicate your level of involvement in each

- a. Paid membership only
b. Officer
c. Involvement in activities/ projects
d. Attend meetings

Organizations	Level of Involvement
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

14. Ethnic Background

☐ Asian
☐ Black
☐ Caucasian
☐ Hispanic
☐ Native American
☐ Other (specify) _____

ID#: _ _ _ _

Please indicate what your total family income last year was before deductions and taxes. Include family income from all sources.

- ☐ a. < \$5,000
- ☐ b. \$5,000 - 9,999
- ☐ c. \$10,000 - 14,999
- ☐ d. \$15,000 - 19,999
- ☐ e. \$20,000 - 24,999
- ☐ f. \$25,000 - 29,999
- ☐ g. \$30,000 - 34,999
- ☐ h. \$35,000 - 39,999
- ☐ i. \$40,000 - 44,999
- ☐ j. \$45,000 - 49,999
- ☐ k. \$50,000 - 54,999
- ☐ l. \$55,000 - 59,999
- ☐ m. \$60,000 - 64,999
- ☐ n. > \$65,000

THANK YOU VERY MUCH FOR YOUR PARTICIPATION!!!!

ID#: — — — —
 Wave: — — — —
 Form: 1 0 1

HOW I BEHAVE

Please circle the answer that best describes how you generally behave.
 Please circle only one number for each statement.

	Really FALSE for me	Sort of FALSE for me	Sort of TRUE for me	Really TRUE for me
1. It takes me a long time to get used to a new thing in my home.	1	2	3	4
2. I can't stay still for long.	1	2	3	4
3. I laugh and smile at a lot of things.	1	2	3	4
4. Once I am involved in a task, nothing can distract me from it.	1	2	3	4
5. I keep working at a task until it's finished.	1	2	3	4
6. I move around a lot.	1	2	3	4
7. I can make myself at home anywhere.	1	2	3	4
8. I can always be distracted by something else, no matter what I may be doing.	1	2	3	4
9. I stay with an activity for a long time.	1	2	3	4
10. If I have to stay in one place for a long time, I get very restless.	1	2	3	4
11. I usually move towards new objects shown to me.	1	2	3	4
12. It takes me a long time to adjust to new schedules.	1	2	3	4
13. I do not laugh or smile at many things.	1	2	3	4

ID#: _____
 Wave: _____
 Form: I Q 3

	Really FALSE for me	Sort of FALSE for me	Sort of TRUE for me	Really TRUE for me
14. If I am doing one thing, something else occurring won't get me to stop.	1	2	3	4
15. My first reaction is to reject something new or unfamiliar to me.	1	2	3	4
16. Changes in plans make me restless.	1	2	3	4
17. I often stay still for long periods of time.	1	2	3	4
18. Things going on around me can <u>not</u> take me away from what I am doing.	1	2	3	4
19. Once I take something up, I stay with it.	1	2	3	4
20. Even when I am supposed to be still, I get very fidgety after a few minutes.	1	2	3	4
21. I am hard to distract.	1	2	3	4
22. On meeting a new person I tend to move towards him or her.	1	2	3	4
23. I smile often.	1	2	3	4
24. I never seem to stop moving.	1	2	3	4
25. It takes me no time at all to get used to new people.	1	2	3	4
26. I move a great deal in my sleep.	1	2	3	4
27. I do not find that I laugh often.	1	2	3	4
28. I move toward new situations.	1	2	3	4
29. I move a lot in bed.	1	2	3	4

ID#: — — — —
 Wave: — — — —
 Form: I 0 1

	Really FALSE for me	Sort of FALSE for me	Sort of TRUE for me	Really TRUE for me
30. In the morning, I am still in the same place as I was when I fell asleep.	1	2	3	4
31. When things are out of place, it takes me a long time to get used to it.	1	2	3	4
32. I don't move around much at all in my sleep.	1	2	3	4
33. My mood is generally cheerful.	1	2	3	4
34. I resist changes in routine.	1	2	3	4
35. I laugh several times a day.	1	2	3	4
36. My first response to anything new is to move my head toward it.	1	2	3	4
37. Generally I am happy.	1	2	3	4
38. I never seem to be in the same place for long.	1	2	3	4
39. I wake up at different times	1	2	3	4
40. I eat about the same amount for dinner whether I am home, visiting someone, or traveling.	1	2	3	4
41. I take a nap, rest, or break at the same times every day.	1	2	3	4
42. I usually get the same amount of sleep each night.	1	2	3	4
43. I seem to get sleepy just about the same time every night.	1	2	3	4
44. I get hungry about the same time each day.	1	2	3	4

ID#: — — — —
 Wave: — — — —
 Form: I U 1

	Really FALSE for me	Sort of FALSE for me	Sort of TRUE for me	Really TRUE for me
45. When I am away from home I still wake up at the same time each morning.	1	2	3	4
46. I eat about the same amount at breakfast from day to day.	1	2	3	4
47. I feel full of pep and energy at the same time each day.	1	2	3	4
48. I eat about the same amount at supper from day to day.	1	2	3	4
49. I wake up at the same time on weekends and holidays as on other days of the week.	1	2	3	4
50. My appetite seems to stay the same day after day.	1	2	3	4
51. The number of times I have a bowel movement on any day varies from day to day.	1	2	3	4
52. I usually eat the same amount each day.	1	2	3	4
53. I have bowel movements at about the same time each day.	1	2	3	4
54. No matter when I go to sleep, I wake up at the same time each morning.	1	2	3	4

ID# _____
 Wave: _____
 Form: III

HOW I WANT MY CHILD TO BEHAVE (Mother)

DIRECTIONS

All first time parents have their personal ideas about how they want their children to behave. In this questionnaire we would like to know what characteristics you would like to see in your child.

Here is a sample item:

	Really True For Me	Sort of True For Me	Sort of False For Me	Really False For Me
Some parents want children who read in their spare time rather than play games.	1	2	3	4

For each item, please let us know how true the statement is by circling the ONE response that is most appropriate for you. Remember, we are interested in knowing what YOU honestly want, not what you think all parents in general want.

Now, please complete the following items by circling the ONE response that best reflects what you think you will want from your CHILD.

	Really True For Me	Sort of True For Me	Sort of False For Me	Really False For Me
1. Some parents want children who are very physically active, who move around a lot.	1	2	3	4
2. Some parents want children who do not approach new situations right away, who stay back for a while before getting involved in a new activity or routine.	1	2	3	4
3. Some parents think that the appearance and attractiveness of their children is very important. They prefer that their children appear attractive.	1	2	3	4
4. Some parents want children who are in a good mood in all situations, who express positive emotions on all occasions.	1	2	3	4

ID# _____

- | | | | | |
|--|---|---|---|---|
| 5. Some parents want children who quickly shift their attention from one activity to another, who are easily redirected. | 1 | 2 | 3 | 4 |
| 6. Some parents prefer that their children be physically mature, that they look older than other children the same age. | 1 | 2 | 3 | 4 |
| 7. Some parents want children who keep an established routine, who will not easily change their style of doing things. | 1 | 2 | 3 | 4 |
| 8. Some parents want children who approach new situations right away, who do not hesitate to get involved in a new activity or routine. | 1 | 2 | 3 | 4 |
| 9. Some parents want children who are in a good mood only in certain situations, who express positive emotions only on particular occasions. | 1 | 2 | 3 | 4 |
| 10. Some parents want children who are <u>not</u> very physically active, who do not move around a lot. | 1 | 2 | 3 | 4 |
| 11. Some parents want children who are apt to change to a new routine, who can easily change their way of doing things. | 1 | 2 | 3 | 4 |
| 12. Some parents prefer that their children be less physically mature, that they look younger than other children the same age. | 1 | 2 | 3 | 4 |
| 13. Some parents want children who remain involved in a certain task or activity no matter what else happens, who cannot be easily redirected. | 1 | 2 | 3 | 4 |

PLEASE BE SURE YOU HAVE CIRCLED ONLY ONE NUMBER FOR EACH ITEM.

THANK YOU.

I.D. # _____
 Wave _____
 Form 207/107

NOW MY WEEK HAS BEEN

Circle the number for each statement which best describes how often you felt or behaved this way-DURING THE PAST WEEK.

	Rarely or None of the Time (Less than 1 Day)	Some or a Little of the Time (1-2 Days)	Occasionally or a Moderate Amount of Time (3-4 days)	Most or All of the Time (5-7 Days)
DURING THE PAST WEEK:				
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating: my appetite was poor.....	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.....	0	1	2	3
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.....	0	1	2	3
7. I felt that everything I did was an effort.....	0	1	2	3
8. I felt hopeful about the future.	0	1	2	3
9. I thought my life had been a failure.....	0	1	2	3
10. I felt fearful.....	0	1	2	3
11. My sleep was restless...	0	1	2	3
12. I was happy.....	0	1	2	3
13. I talked less than usual.	0	1	2	3
14. I felt lonely.....	0	1	2	3
15. People were unfriendly..	0	1	2	3
16. I enjoyed life.....	0	1	2	3
17. I had crying spells.....	0	1	2	3
18. I felt sad.....	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not get "going".	0	1	2	3

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