1989

Relationship Between Child Temperament, Parental Knowledge of Child Development, and Parental Stress

Nancy J. Carbonell

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Relationship between child temperament, parental knowledge of child development, and parental stress

Carbonell, Nancy Jo, Ph.D.
Andrews University, 1989
Andrews University
School of Education

RELATIONSHIP BETWEEN CHILD TEMPERAMENT, PARENTAL KNOWLEDGE OF CHILD DEVELOPMENT, AND PARENTAL STRESS

A Dissertation
Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy

by
Nancy J. Carbonell
March 1989

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ABSTRACT

RELATIONSHIP BETWEEN CHILD TEMPERAMENT, PARENTAL KNOWLEDGE OF CHILD DEVELOPMENT, AND PARENTAL STRESS

by

Nancy J. Carbonell

Chair: Donna J. Habenicht
ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University
School of Education

Title: RELATIONSHIP BETWEEN CHILD TEMPERAMENT, PARENTAL KNOWLEDGE OF CHILD DEVELOPMENT, AND PARENTAL STRESS

Name of researcher: Nancy J. Carbonell

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Date completed: March 1989

Problem

Despite current awareness that temperament of children has been related to parental frustration and lack of child developmental knowledge has led to unrealistic expectations and parental stress, definitive information is needed regarding the relationship between (1) child temperament, (2) parental knowledge of child development, and (3) parental stress.

Method

One-hundred and forty mothers with 3-year-old children were studied using the Thomas and Chess' Parent Questionnaire to measure
parental perception of child temperament, the Knowledge of Child Development Inventory (Larsen & Juhasz) to assess maternal knowledge of child development, and Abidin's Parenting Stress Index to measure maternal stress. Demographic information was also collected.

Data were analyzed using a zero-order correlation, a stepwise-multiple-regression analysis, canonical-correlation analysis, and a univariate and multivariate-analysis of variance.

Results

Knowledge of child development modestly contributed to reducing parental stress in all areas (accounting for approximately 5% of the variance). Mothers with difficult children experienced the most parental stress of any group, while mothers of easy children experienced the least. Poor adaptability, high intensity in expression, unpredictability, and high activity were the temperament traits that contributed the most to overall parental stress (p < .0005), accounting for approximately 44% of the variance. Children with these traits were more disrupting for the parent/child dyad and the parents were more frustrated in their parenting role (p = < .0005). The middle-income group was found to have a lower sense of competence, were more depressed, yet had better relationships with their spouses, good parent/child reinforcement, and children who adapted more easily (p < .04). Maternal age, work history, and socioeconomic level did not significantly affect parental stress.
Conclusions

Parents who know more about child development experience less stress as a parent. Certain child temperament traits make parenting more stressful. Maternal age, work history, or income level do not appear to influence parental stress.
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ACKNOWLEDGMENTS

In the long process of writing a dissertation, possibly the most important element was the support I received from the various people along the way. I owe many thanks:

To Donna Habenicht, for all the time and support she has invested in me and my preparation since the first day I started my studies here at Andrews University. Even in times of extreme anxiety, she gave me calm reassurance. Her relentless faith in me, her careful critiques as well as encouragement, will always be remembered.

To Wilfred Futcher, whose statistical guidance was invaluable. His help during many of my "emergencies," his patience, dedication, and humor have been greatly appreciated.

To Colleen Steck, John Youngberg, and Garth Thompson, for their commitment and helpful counsel on this dissertation.

To Joyce Jones, for her helpful feedback and editorial comments.

To all the mothers and institutions who participated in this research and made this dissertation possible.

To Dr. Stella Chess, for granting me the privilege to speak with her on the phone and discussing with me various issues of my dissertation. Her charm, scholarship, suggestions, and comments were special to me and greatly appreciated.
To all my colleagues at the Samaritan Center where I work, for their continual support and interest.

To my mother, Gloria Berry, who during her parenting gave me love and encouragement at every stage of my life.

To my son, David, for all he has taught me about children and parenting, and for the joy and meaning he has brought to my life.

And finally a special thank you to my husband, Robert, for his love and support, for his help with "computerees," for his time helping me enter into the computer the raw data, for his sharing the responsibilities around the house, for his insights and countless discussions that helped to clarify and form my thinking—all done while he himself was in the process of completing his own doctoral dissertation. A more sensitive, supportive companion I cannot imagine.

I am deeply grateful to all these people and for the part they played in helping this dissertation become a reality.
CHAPTER I

INTRODUCTION

Rearing children is one of the major developmental tasks for many adults (Havighurst, 1972). Few choices in an adult's life bear the import that comes with the decision to rear children (Gilberg, 1975). Parenthood means new challenges, new tasks, new responsibilities, and changes in life-style. Experiencing success and enjoyment in parenting determines how satisfying and fulfilling parenthood will be.

Some parents, however, find parenting a stressful experience. LeMasters (1957) and Dyer (1963) found parenthood a time of extreme crisis. Campbell, Converse, and Rogers (1976) found that young parents experienced high levels of stress when establishing their new families, and attributed it, in part, to a lack of definitive information with regard to parenting. Studies on exceptional or abused children have shown high levels of parental stress because of inappropriate expectations (Barkley, 1981a; Blumberg, 1980; Kogan, 1980; Kogan, Tyler, & Turner, 1974; Long & Moore, 1979; Mash & Johnston, 1983; Patterson, 1980; Twentyman & Plotkin, 1982).

DeLissovoy (1973) reported that only 5 of the 23 parents who participated in his study expressed enjoyment at having a child. He
suggested that lack of knowledge and experience led these parents to have unrealistic expectations of child development. Rossi (1968) suggested that parenthood is not a job with established guidelines for success. As Lawton and Coleman (1983) pointed out, parenting, for the most part, remains an unguided life task.

Statement of the Problem

Theories and research have long focused on the many ways in which parental behavior affects the child (Baumrind, 1966; Becker, 1964; Buss, 1981; Martin, 1975; Straus, 1964). However, during the last two decades studies on how the child's characteristics (temperament) affect the behavior of the parent have shifted the focus somewhat (Bell, 1968, 1971, 1974; Bell & Harper, 1977; Grusec & Kuczynski, 1980; Harper, 1971, 1975; Thomas, Chess, & Birch, 1968). Thomas, Chess, and Birch (1968) found that temperamental differences in children, evident from birth, affected the parent-child relationship. They suggested that understanding children's temperament and educating parents on how to deal with their children would possibly prevent future child delinquency and parental frustration.

Despite current awareness that temperament of children has been related to behavior disorders and parental frustration (Cameron, 1977; Graham, Rutter, & George, 1973; Thomas et al, 1963, 1968, 1977) and that lack of child developmental knowledge has led to unrealistic expectations and parental stress (Bromowich, 1976; Chamberlin, 1974; DeLissovoy, 1973; Johnson, 1972; Lobitz & Johnson, 1975; Rickard, Forehand, Wells, Griest, & McMahon, 1981; Rickard, Graziano &
Forehand, 1984), the literature appears to be lacking in definitive information regarding the relationship between:
(1) children's temperament, (2) parental knowledge of child development, and (3) parental stress.

A study focusing on the relationship between a child's temperament, parental knowledge of child development, and parental stress was needed. It was thought that seeking information on the interplay of these three variables might possibly reveal ways to eliminate the stressful cycle experienced by many parents of normally growing children.

**Purpose of the Study**

The purpose of this study was to ascertain if there was any relationship between parental knowledge of child development, perceived child temperament, and the stress experienced by parents of normally growing children.

**Research Questions**

Four major research areas served as the foci for this investigation: (1) perception of child temperament, (2) parental knowledge of child development, (3) parental stress, and (4) demographic characteristics. The questions asked in each of these areas were as follows:

1. How does parental knowledge of child development affect the stress levels of parents?
2. Do parents of temperamentally different children report different parental stress levels?
3. How do the three variables, parental stress, parental knowledge of child development, and perceived child's temperament, relate and interact with each other?

4. Do parents who have different demographic characteristics experience lesser or greater parenting stress levels?

**Hypotheses**

Nine major hypotheses were investigated in this research. The first research question led to the following hypothesis:

**Hypothesis One**

There will be a statistically significant relationship between the parental stress scores and the parental knowledge of child development score.

The second research question led to Hypotheses Two and Three:

**Hypothesis Two**

There will be a statistically significant relationship between parental perception of child temperament style and parental stress.

**Hypothesis Three**

There will be a statistically significant relationship between parental perception of child temperament traits and parental stress.

The third research question led to Hypotheses Four and Five:

**Hypothesis Four**

There will be a statistically significant multiple correlation between the total parental stress scores and a linear
combination of parental knowledge of child development scores and child temperament.

**Hypothesis Five**

There will be a significant correlation between a linear combination of the 13 stress sub-scale scores and a linear combination of the total Parent Knowledge of Child Development score and the nine temperament scores obtained from the Parent Questionnaire.

The fourth research question led to the following four hypotheses:

**Hypothesis Six**

There will be a statistically significant relationship between parental stress scores and the different parental age groups.

**Hypothesis Seven**

There will be a statistically significant relationship between parental stress scores and the parents' work history (always worked outside home, worked some of the time outside the home, or never worked outside of the home).

**Hypothesis Eight**

There will be a statistically significant relationship between parental stress scores and the different socio-economic levels.

**Hypothesis Nine**

There will be a significant multiple correlation between total stress scores and a linear combination of age, work history, and socio-economic status of parents.
Assumptions

The underlying assumptions of this study were:

1. Success or failure as a parent is subjectively defined by each parent. Parenting is dependent on a reciprocal process between the parent and the child. The behavior of each affects the other's response.

2. Most parents desire to experience fulfillment and satisfaction from rearing children.

3. The mothers in the study will be cooperative and honestly answer the questions asked.

4. Mothers are able to accurately describe their child's temperament.

Significance of the Study

This research may add to the knowledge in parental perception of child temperament, parental knowledge of child development, and parental stress, as well as provide information that would alert the counselor or parent to possible interactions which might be influencing the parent-child dyad. Because parenthood is a major developmental task for many adults, finding ways to make it a more enjoyable and satisfying experience is of great importance.

Many researchers who have studied parent-child relationships have employed a deficit model which has focused on the "negative," "undesirable" behaviors of children who come from homes in which some "deficiency" exists (Walters & Walters, 1980). This research deals with parent-child relationships in families of normally growing
children, and may contribute to reducing the scarcity of knowledge in this area.

The correlational data gathered from this investigation may be used to generate hypotheses for possible counseling interventions in order to help families experiencing stress in child rearing.

Theoretical Framework

The specific research questions have been selected from broad based theory, research, and practice concerning the parenting experience. Together they hinted toward possible reasons why some parents experience excessive amounts of parental stress.

To begin with, how people see things and how these interpretations affect interpersonal relationships and interactions have long been major theoretical concerns in psychology (Bell, 1979; Parke, 1978). Parental burnout, caused by dysfunctional levels of parental stress, is believed to be based primarily on inappropriate parental expectations and perceptions (Procaccini & Kiefaber, 1983). Darley and Fazio (1980) recently reported how the perceiver's attributions and expectancies influenced social behavior and how one's beliefs affected interpretation and response to social events. Lobitz and Johnson (1975) proposed that parents often see the behavior of their non-deviant children as a problem because of their own maladjustment as parents. The joy or anguish over parenthood thus appears to be affected by the parents' interpretation of their child's behavior.
Secondly, several studies (DeLissovoy, 1973; Rickard et al, 1981; Thomas et al, 1968) have suggested that child temperament and parental knowledge of child development are important variables affecting the parent-child relationship. How a parent perceives the child's temperament may affect how she interprets and responds to that child. The evaluation component of temperament may be even more crucial in the parent-child dyad when the parent is dealing with unhealthy levels of parental stress. Bromowich (1976) and others (Chilman, 1964; Endres & Evans, 1969; Gutelius et al, 1977) have observed that mothers who knew more about child development were better able to read their child's behavioral cues and, consequently, were more satisfied with the parenting role. It was hypothesized that these two elements would have a significant effect on parental stress.

Many of the studies on parental stress have dealt with homes of abused or exceptional children (Mash & Johnston, 1983; Patterson, 1980; Twentyman & Plotkin, 1982). It is believed that the same issues are present in families with normally growing children. Lastly, in practice parental stress often appears to stem from "unnecessary" parental concerns. Often appropriate and age-expected behaviors in children create anxiety in parents who see normal child behavior as inappropriate. For example, expecting a three-year-old to remain perfectly still and quiet during an hour-long sermon is actually developmentally impossible for most children this age. Even toilet-training proves to be something many parents misunderstand. Brazelton (1962) reported that out of 1,000 children of upper middle
class, well-educated parents, 75% were over two years of age before completing daytime toilet training. And yet Stehbens and Silber (1971) reported that 55% of the 71 mothers in their study anticipated daytime toilet training to be completed before two years of age.

Thus it is believed that little knowledge about child development, how a mother perceives her child's temperament, and inappropriate interpretations of child behavior possibly contribute to creating unnecessary worries and stress for the mother.

**Definition of Terms**

Terms commonly used throughout this investigation are defined as follows:

**Child Development.** Child development is a gradual patterning process extending over time which, according to individual maturation, brings forth characteristic behaviors and trends in the physical, social, emotional, and cognitive realms of child development (Singh, 1975).

**Parental Stress.** In this study parental stress refers to excessive degrees of stress which affect the parent-child system and which often lead to dysfunctional parenting behaviors, as measured by the Parenting Stress Index (Abidin, 1983).

**Temperament.** Temperament refers to characteristic ways a child tends to behave and interact with the environment. Thomas, Chess, and Birch (Thomas et al, 1963, 1977) in their New York Longitudinal Study (NYLS) identified nine dimensions of temperament or behavior style that describe variations in a child's reactivity to the environment. The nine categories of temperament as defined by
their study are: activity, rhythmicity, approach/withdrawal, adaptability, intensity of reaction, quality of mood, distractibility, persistence, and sensory threshold. Temperament is concerned with the "how" of behavior.

**Temperamentally Difficult Child.** The constellation of traits which describes a temperamentally difficult child is defined by five of the nine categories of temperament: (1) Rhythmicity—the child experiences irregular body functions such as sleeping, eating, and elimination; (2) approach/withdrawal—the child tends to withdraw from new situations and/or environments; (3) intensity—the child reacts intensely to stimuli; (4) mood—the child projects negative mood responses; and (5) adaptability—the child appears to be non-adaptive to new environments and/or situations.

**Temperamentally Easy Child.** The five characteristics that are used to define a temperamentally easy child are the same as those used to define a temperamentally difficult child. By contrast, however, the temperamentally easy child shows the opposite constellation: (1) regularity—the child experiences regular body functions such as sleeping, eating, and elimination; (2) approach/withdrawal—the child approaches new environments and/or situations readily; (3) mood—the child projects positive mood patterns; (4) adaptability—the child appears adaptive to new environments and/or situations; and (5) intensity—the child reacts mildly or moderately to stimuli.

**Temperamentally Slow-to-warm-up Child.** The three statistically significant characteristics which define the temperamentally slow-to-warm-up child are: (1) approach/withdrawal and (2) intensity—
-the child withdraws, usually quietly (with low intensity), from new situations; and (3) adaptability--the child is slow to adapt to the new. "Slow-to-warm-up" children may vary in whether they are easily distracted or not, or whether they may or may not have long attention spans or be particularly persistent (Thomas et al., 1968).

Temperamentally Unclassified. Because of the varying and different combinations of temperament traits which individual children manifest, this group is composed of those children who did not fit into the other three patterns of behavior.

Delimitations

The sample was restricted to English-speaking mothers, aged 23 or older, who had reared their children since birth, who were not receiving inpatient or outpatient treatment for any medical, mental, or emotional disability, and who had preschool-age children three years of age (36-48 months) who did not require specific medical or educational support services. Results should not be generalized to other populations.

Limitations

Because of the nature of this study, a randomized, experimental model was not practical and this is thus a limitation.

Organization of the Study

This study is organized into five chapters.

Chapter 1 presents an introduction to the research problem, statement of the problem, purpose of the study, research questions, research hypotheses, methodological assumptions, significance of the
study, theoretical background related to this topic, definitions of commonly used terms, and delimitations and limitations of this study.

Chapter 2 surveys the literature in three areas: stress research, child development research, and temperament research.

Chapter 3 describes the methodology followed in data collection and analysis, and the findings and the interpretation of the results follow in Chapter 4.

Chapter 5 provides a summary of the study, discussion of the results, implications of the findings for parents, teachers, and counseling interventions, and recommendations for further research.
CHAPTER II

REVIEW OF LITERATURE

This chapter presents a review of relevant research in the following three main areas: (1) parental stress, (2) child development, and (3) temperament.

**Parental Stress Research**

Work on life events and stress (McCubbin, Joy, Cauble, Comeau, Patterson, & Needle, 1980), as well as on the transition to parenthood (Belsky, Spanier, & Rovine, 1983; Jacoby, 1969; Roberts, 1983; Rossi, 1968; Russell, 1974; Weinberg & Richardson, 1981), has shown that the first child can be one of the most significant stressful life events experienced by an individual. Even marital satisfaction appears to be affected negatively with the arrival of a child (Campbell, 1981; Glenn & McLanahan, 1982; Goldberg & Easterbrooks, 1984; Houseknecht, 1979; White, Booth, & Edwards, 1986). Hoffman and Manis (1978) noted that the first stage of parenting, representing the transition from nonparenting, was the most intense for both positive and negative affect.

Experts suggest that stress is present in all families and is the family's way of accommodating and adapting to new circumstances.
(Germain, 1979; Gilberg, 1975; McCubbin & Patterson, 1983; Minuchin, 1974; Pardeck, 1987; Walsh, 1982). Part of what identifies this period of transition are the feelings of uncertainty, anxiety, and a sense of loss (Olson, McCubbin, Barnes, et al., 1983). Hart (1986) warned, however, that although people need a certain amount of stress to keep them alive, too much can be harmful. He also noted that when most people use the term "stress," they usually are referring to the harmful aspect of overstress.

Parenting has been shown to be stressful because most adults are not prepared to assume the task of parenting (Brazelton, 1976; Brooks, 1981; De Rosis, 1970; Dyer, 1963; Hobbs, 1965, 1968; LeMasters, 1957, 1974; LeMasters & DeFranc, 1983; Miller & Sollie, 1980; Rossi, 1968; Wolfensberger & Kurtz, 1971). Research suggests that it is the lack of understanding that results in the fear and concern parents experience with child-raising (Campbell, Converse, & Rogers, 1976; Pasley & Gecas, 1984). Yet society has not created institutions to help meet the needs of parents today. Society and the media, rather, "fantasize the process of parenthood. . . . When realities of child rearing present themselves, the partners may then feel guilty and anxious because they do not resemble the model presented to them" (Gilberg, 1975, p. 60).

Lawton and Coleman (1983) noted that unfulfilled idealism on the part of the parents contributed to their source of guilt and disabling anxiety in parent-child interactions. Society's myths concerning parenting need to be exposed and parental roles redefined (Lawton & Coleman, 1983; Paget, 1982).
Some researchers have found that, in general, one is likely to experience less positive parental interaction if the child's behavior does not facilitate the child-caregiver dyad (Bell, 1968, 1971; Korner, 1974; Lewis & Lee-Painter, 1974). A survey by Bradburn (1969) found that child management was one of the primary sources of tension and concern for adults raising normally developing children at all social levels.

Studies that compare mothers and fathers show that even though both parents experienced parental stress, the stress experienced by the mother is generally greater (Entwisle & Doering, 1981; Harriman, 1983; Hobbs & Cole, 1976; Hobbs & Wimbish, 1977; Miller & Sollie, 1980; Roberts, 1983; Russell, 1974; Steffensmeier, 1982; Wilkie & Ames, 1986). Experts suggest one reason might be that the expectations for mothers are higher than they are for fathers (McBride, 1983, 1973; Russo, 1976). Although the role is important to both sexes, it is one in which women are traditionally expected to succeed more than men (Cherlin, 1984).

It has also been suggested that women are harder on themselves than men when they do not experience success in parenting (McBride, 1983; Rosenfield & Stephan, 1978). Men appear to have more "ego-saving attributions" than do females (Rosenfield & Stephan, 1978). Studies report that mothers who share daily stress and responsibility with spouse or other social supports, however, experience less stress in many areas of family and life in general (Burke & Weir, 1977; Crnic, Greenberg, Robinson, & Ragozin, 1984; Kaplan, Cassel, & Gore, 1977; Tucker, 1978).
Another reason why mothers tend to experience more stress than fathers may be because women often view the changes that parenting brings with it as a restriction on their freedom. Although mothers are more likely than fathers to say that being a parent gave them "a great deal" of fulfillment, they are also more negative than fathers when describing how children have affected their lives (Veroff, Douvan, & Kulka, 1981).

White, Booth, and Edwards (1986) suggest that children seem to increase the traditionalism of the division of labor, which although positively evaluated by husbands, appears to reduce marital satisfaction further for wives. Goetting (1986) suggests that motherhood and fatherhood in this society are defined differently. Motherhood is viewed as the primary form of parenthood and thus offers greater potential role fulfillment to the mother. However, in the process, the burden of parenting lies more heavily on the mother than on the father and restricts her "freedom" to a much greater degree. Baruch, Biener, and Barnett (1987) note that little attention has been given the stress women experience in the home:

Because stress research has tended to focus on men, the workplace has both implicit and explicit been identified as the primary stressor. . . . The home, in contrast, has been viewed as a sanctuary, as a benign environment in which one recuperates from problems at work. This picture reflects not only a male-based view but also the assumption that for women the roles associated with home --wife, mother, homemaker-- are somehow "natural" and free from undue stress. (p. 130)

Maternal-role satisfaction is suggested as an important element when looking at parent-child relationships (Baruch, 1972; Lerner & Galambos, 1985). Lerner and Galambos (1985) found that it was the level of maternal-role satisfaction that actually affected the
Highly dissatisfied mothers had high levels of rejection and, in turn, more difficult children, whereas mothers who were highly satisfied with their roles displayed higher levels of warmth and acceptance.

Mothers appear to feel maximally stressed when their children are under 6 years of age (Campbell, 1975; Chamberlin, 1974; Goodenough, 1931; Stolz, 1967). Mothers with "non-problem" preschool children were disrupted on an average of 3.4 times per hour (Fawl, 1963). Furey and Forehand (1986) found that the best predictor of a clinic-mother's satisfaction with her child was her child's behavior. One study of 800 mothers with preschoolers found that 91% indicated at least mild concern about some aspect of their child's behavior, and 28% said their child's behavior was causing them serious concern (Hornberger, Bowman, & Greenblatt, 1960). Monat and Lazarus (1985) noted that the stress experienced in child care and training is more distressful in the early years of child development than in the later years. For these reasons, this research studied mothers with preschool children.

Pasley and Gecas (1984) found that parents who believe that parenting the very young child is the most difficult stage of parenting see themselves as responsible for the difficulty. They report lacking the necessary time, patience, and skills for meeting the needs of their children. Freudenberger and Richelson (1980) defined burn-out as a state of fatigue or frustration brought about by devotion to a cause, a way of life, or a relationship that failed to produce the expected reward (p. 13). Procaccini and Kiefaber (1983)
discussed the need for parents to reevaluate and realistically form their parental expectations in order to avoid "parent burn-out." Without a thorough understanding of children's developmental norms, parents might not establish appropriate expectations for their children. Chamberlin (1974) and Curran (1985) found that many parental concerns and conflicts were clearly related to misinterpretation of typical stage-related behaviors. This lack of understanding could lead to unhealthy parent-child relations (Bronson, 1974; Field, Widmayer, Stringer, & Ignatoff, 1980).

Perception seems to be important when coping with stress (Gerhardt, 1979; Glass, 1983). Maternal stress levels have been related to the mothers' perceptions of their children and associated with parent ratings of child deviance (Forehand, Lautenschlager, Faust, & Graziano, 1986; Forehand, Brody, & Smith, 1986; and Middlebrook & Forehand, 1985). A study comparing two groups of mothers (one in a maritally distressed group and the other in a maritally nondistressed group) reported that the mothers who were significantly more anxious and depressed perceived their children as having significantly more behavior problems (Bond & McMahon, 1984). Even average mothers, who were more anxious, tended to have distorted perceptions of their infants' behavior (Nover, Shore, Timberlake, & Greenspan, 1984). Other studies have found that mothers experiencing high anxiety levels tended to rate their infants as being temperamentally difficult even though the children were not rated "difficult" independently (Sameroff, Seifer, & Ellias, 1982; Vaughn et al, 1987; Ventura & Stevenson, 1986). This also supported the findings of
Griest, Wells, and Forehand (1979) and Lobitz and Johnston (1975) that parental perceptions do not always correlate with children's actual behavior.

Other studies have found the opposite to be true. Parental complaints about their hyperactive children, at least, appeared to reflect genuine difficulties in the areas of high activity and poor attention span (Barkley, 1981b; Campbell, Szumowski, Ewing, Gluck, & Breaux, 1982; Douglas, 1980).

Summary

Stress in parenting is a reality. Parents experience stress for various reasons: (1) lack of preparation for the task of parenthood, (2) unrealistic expectations, (3) poor parent-child relationships, (4) restriction of parental freedom, and (5) negative parental perceptions. The negative emotional state of a parent appear to affect the amount of parental stress experienced.

Child Development Research

Parenting is a task that requires special skills and knowledge. These skills are not inborn but must be learned (Morris, London, & Glick, 1976). Most young people, however, never receive adequate training for parenthood (Bigner, 1979). A study focusing on unmarried female university students, ages 17 to 23, found that knowledge of normal development was both over- and underestimated regardless of the age of the student or year in school (Shaner, Peterson, & Roscoe, 1985). DeLissovoy (1973) suggested that it was the lack of knowledge of child development leading to unrealistic expectations of
child development that caused the adolescent parents in his study to experience severe frustrations as parents. The parents did not have the tolerance to accept behavior that was actually age appropriate for their children.

Field, Widmayer, Stringer, and Ignatoff (1980) demonstrated that a lack of understanding of children's developmental norms often led parents to form inappropriate expectations for their children and thus led to unhealthy parent-child relationships. Parents who abuse and neglect their children frequently commit errors in expecting too much or too little of them (Twentyman & Plotkin, 1982; Wolfensberger & Kurtz, 1971). With the rise of families in need of working mothers, Garbarino (1986) suggested that a greater number of parents may inappropriately expect more from their children at younger ages because the mothers cannot do as much for them. The implication is that there is something wrong with the children if they cannot meet those demands.

An early study by Ackerley (1935) to determine the needs of parents of elementary-school children found that the responses of parents to the questions relating to the seven areas of child development showed either a lack of knowledge or inability to apply generalizations pertaining to child development. Rickard, Forehand, Wells, Griest, and McMahon (1981) suggested that the parent's knowledge of child development norms was one factor that influenced parental interpretation of a child's behavior. They concluded that the effectiveness of clinical interventions possibly lay in teaching parents basic normative information about their children.
Rickard, Graziano, and Forehand (1984) found that some clinic-referred children in their sample showed no evidence of behavioral difference from non-clinic children. They suggested that some children were referred to clinics because their parents’ lack of knowledge about child-development norms led them to have unrealistic expectations and, consequently, to interpretations of the child’s behavior as deviant. Although it appears that adults’ knowledge of and appropriate expectations for the child’s competencies greatly facilitate parenting (Gullo, Bersani, & Conlin, 1987), research on how much parents know about child development is scarce (Rickard, Graziano, & Forehand, 1984).

A group of parents of preschool children (approximately 200 children from age 2 years until school-entry age) were followed in order to ascertain the common types of problems these parents experienced during this period of time (Chamberlin, 1974). It was found that many parental concerns and conflicts were clearly related to misinterpretation of typical stage-related behaviors, “such as the curiosity of toddlers, 2-year-old negativism, and 4-year-old back talk and sass” (p. 39). Winch (1963) noted that a characteristic of American parents is their uncertainty about how to raise children. Nover, Shore, Timberlake, & Greenspan (1984) suggested that the concerns expressed by mothers were not so much about their infant’s development, but rather whether they were able to adapt their parenting style to the ever-changing developmental needs of their children. Children at each stage of development have specific
developmental needs, and the parenting role demands change with the development of their children (Duvall, 1971).

A study on the mothers' perceptions of their competence in managing selected parenting tasks at five stages of parenting (Ballenski & Cook, 1982) revealed that overall these mothers reported feeling highly competent in most areas of parenting. However, Clark-Stewart's survey (1978) showed that the majority of parents sought and requested information on children's overall development in order to facilitate parenting. Many parents felt unprepared and inadequate. Clark-Stewart (1978) and Zigler (1976) attributed this mainly to the lack of guidance traditionally offered by family members due to increased mobility in present American society. Parents have lost the contact and daily support of extended family members and are often on their own to deal with their questions on parenting (Lerner, 1979).

DeLissovoy (1973) found, however, that even when the young parents turned to their families for advice, the help they received was limited and was not very effective in helping the parents cope with their children. He stated that parental knowledge of child development may lower parental irritability and raise the threshold of tolerance. Chamberlin (1974) suggested that many parental conflicts and concerns were related to one's understanding of the typical stage related behaviors and individual differences in temperament of children.

For some parents, popular literature has replaced the
extended family as a resource concerning child-rearing (Bigner, 1972; Clarke-Stewart, 1978; Winch, 1963). Lerner (1979) found that particular areas of development induced parents to read. In her sample of 100 mothers, 40% turned to a book for toilet-training advice. This often only contributed to the chaos. Many times confusing and contradictory information is handed out, all claiming to be the best.

Others seek guidance from their child's pediatrician (Lerner, 1979), and yet Starfield and Borkowe (1969) found that less than half the questions about child behavior raised by mothers were acknowledged and dealt with by the physician. Korsch, Gozzi, and Negrete (1968) found that only the parents with more education tended to express fears and hopes to physicians. The authors noted that those most in need of education tended to receive the least. Chamberlin and Szumowski (1980) found that there was a modest relationship between physician effort and mother gain in knowledge about child development. Braga and Braga (1975) suggested that parents who knew the norms of child development were at an advantage in that it enabled them to rely on their own judgment on issues regarding children and not solely depend on others' assessments and opinions.

DeRosis (1970) suggested that parent-education courses were greatly needed in the school systems. This viewpoint has recently been repeated by Getz and Gunn (1988), who believe that with the demise of the extended family as a predominate family structure, there are fewer intergenerational guidelines and supports for parenting. Croake and Glover (1977) defined parent education as "the
purposive learning activity of parents who are attempting to change their method of interaction with their children for the purpose of encouraging positive behavior in their children" (p. 151). They, along with others (Crimmins, Bradlyn, Lawrence, & Kelly, 1984; Eyberg & Johnson, 1974; Forehand & King, 1977; Patterson, 1974; Swetnam, Peterson, & Clark, 1982; Strom & Cooledge, 1984), reported that parent education helped to improve parental attitudes and perceptions towards the child in question. Mothers receiving a special program of guidance through the first three years of the child's life (dealing with such subjects as toilet training, shyness, children's curiosity) reported fewer behavioral problems (Gutelius, Kirsch, McDonald, et al, 1977). Knowledge of child development appears to help parents understand how children develop and what factors enhance or interfere with their development (Braga & Braga, 1975; Gullo, Bersani, & Conlin, 1987; Levenson, Hale, Hollier, & Tirado, 1978).

On the contrary, Chamberlin and Szumowski (1980) found that knowledge of child development did not seem to make child-rearing easier for the mother. In fact, it was found that mothers receiving more teaching input described more problem behaviors in their children. An earlier study (Owings, 1931) found that knowledge of child development made no change in parental attitude. This study proposed to further define whether or not parental knowledge of child development contributes to reducing parental stress levels.
Summary

Research on parental knowledge of child development is scarce. Existing studies appear to indicate, however, that lack of child-development knowledge led parents to (1) experience more anxiety, (2) form inappropriate expectations, (3) misinterpret typical stage-related behavior, and (4) experience a less healthy parent-child relationship. Inadequate training for the parenting experience produces parents who are uncertain about how to raise their children. Although a number of studies suggest that parent education is helpful for parenting, there are conflicting data as to whether parent education in the area of child development helps, hinders, or makes no difference in the parent-child relationship.

Temperament Research

Recent research on children's temperament has done much to relieve mothers of the inappropriate burden of guilt they had previously suffered (Thomas, Chess, & Birch, 1968; Thomas, Chess, & Korn, 1982). As Walters and Stinnett (1971) stated:

The era of viewing children solely as products of their parents' influence is past, for it is recognized that children themselves exert powerful influences upon parent-child relationships. (pp. 129-130)

Since Thomas, Chess, Birch, Hertzig, & Korn (1963) conducted their classic study on temperament (the New York Longitudinal Study, NYLS), increasing interest in the role child temperament plays within the parent-child relationship has been evident.

Temperament can be equated to the term "behavioral style" and deals with: (1) the how of behavior, not the what or why (Buss &
Plomin, 1975; Thomas et al., 1963, 1968, 1977), (2) the individual differences in emotional expression (Goldsmith & Campos, 1986); and (3) the arousal component of behavior (Rothbart & Derryberry, 1981; Strelau, 1972). Many consider temperament to be biologically influenced as well (Buss & Plomin, 1975; Thomas & Chess, 1977; Wilson & Matheny, 1986). In this study the commonly used operational definition proposed by Thomas, Chess, and their colleagues (1963, 1977) was used.

The New York Longitudinal Study

The New York Longitudinal Study (NYLS) (Thomas et al., 1963, 1968) examined temperamental characteristics of children which affected the parent-child relationship. The purpose was to objectively define individual temperamental characteristics in children and discover how they interacted with parental attitudes, values, and practices to produce positive or pathological socialization outcomes in children. This study followed a group of children from early infancy to 10 years of age. Initially, data for the NYLS were collected through extensive structured interviews with parents of 141 3- to-5-month-old children. The questions asked dealt with the responses the children made in a variety of situations. An inductive content analysis of the data available on 136 children yielded nine dimensions of temperament: (1) Activity Level, (2) Rhythmicity, (3) Approach-Withdrawal, (4) Adaptability, (5) Intensity of Reaction, (6) Threshold of Responsiveness, (7) Quality of Mood, (8) Distractibility, and (9) Attention Span and Persistence. These nine
dimensions of temperament, as defined by Thomas and Chess, are presented in Table 1.

Originally the dimensions were considered to be independent factors; however, correlational studies and factor analytic techniques revealed that certain clusters appeared (Thomas et al., 1968). The three distinct constellations were identified as "easy children," "difficult children," and "slow-to-warm-up children." The "easy children," which comprised 40% of the NYLS sample, were characterized by regularity, positive approach responses to new stimuli, high adaptability to change, and a predominately positive, mild, or moderately intense mood. These children frequently contributed to "the mother's sense of well being and to her conviction that she was an effective, skillful, and 'good' parent" (Thomas et al., 1968, p. 85).

The "difficult children," 10% of the NYLS sample, were characterized by irregularity in biological functions, negative withdrawal responses to new stimuli, poor adaptability to change, and a predominately negative, intense expression of mood. These children made the greatest demands on the parents for effective functioning. Over 70% of the children labeled "difficult" later developed behavior problems serious enough to warrant psychological intervention (Thomas et al., 1968). These findings were later supported by McDevitt and Carey (1978), Rutter (1977), and Thomas and Chess (1984). Thomas, Chess, and Birch (1968) contended that the cases involving behavior disorders were the result of temperament-parenting interactions.

The "slow-to-warm-up children," which comprised 15% of the NYLS sample, were marked by a combination of negative responses of
TABLE 1

NINE CATEGORIES OF TEMPERAMENT AND DEFINITIONS

1. Activity Level: the motor component present in a given child's functioning and the diurnal proportion of active and inactive periods. Protocol data on motility during bathing, eating, playing, dressing and handling, as well as information concerning the sleep-wake cycle, reaching, crawling, and walking are used in scoring this category.

2. Rhythmicity (Regularity): the predictability and/or unpredictability in time of any function. It can be analyzed in relation to the sleep-wake cycle, hunger, feeding pattern, and elimination schedule.

3. Approach or Withdrawal: the nature of the initial response to a new stimulus, be it a new food, new toy, or new person. Approach responses are positive, whether displayed by mood expression (smiling, verbalizations, etc.) or motor activity (swallowing a new food, reaching for a new toy, active play, etc.). Withdrawal reactions are negative, whether displayed by mood expression (crying, fussing, grimacing, verbalizations, etc.) or motor activity (moving away, spitting new food out, pushing new toy away, etc.).

4. Adaptability: responses to new or altered situations. One is not concerned with the nature of the initial responses, but with the ease with which they are modified in desired directions.

5. Threshold of Responsiveness: the intensity level of stimulation that is necessary to evoke a discernible response, irrespective of the specific form that the response may take, or the sensory modality affected. The behaviors utilized are those concerning reactions to sensory stimuli, environmental objects, and social contacts.

6. Intensity of Reaction: the energy level of response, irrespective of its quality or direction.

7. Quality of Mood: the amount of pleasant, joyful, and friendly behavior, as contrasted with unpleasant, crying, and unfriendly behavior.

8. Distractibility: the effectiveness of extraneous environmental stimuli in interfering with or in altering the direction of their ongoing behavior.

9. Attention Span and Persistence: two categories which are related. Attention Span concerns the length of time a particular activity is pursued by the child. Persistence refers to the continuation of an activity in the face of obstacles to the maintenance of the activity direction.
mild intensity to new stimuli with slow adaptability after repeated contact. They showed less tendency toward irregularity in their biological functions than did the difficult child. Being slow to warm up to new stimuli, demands, or situations characterized these children.

Approximately 35% of the NYLS sample did not fit into the previous three patterns of temperament and thus remained unclassified. These children had varying and different combinations of temperamental traits which manifested themselves in a wide range of ways. Thomas and Chess (1977) emphasized that the various temperamental constellations all represent variations within normal limits and warned that in no case did a given pattern of temperament result in behavioral disturbance. "Deviant development was always the result of the interaction between a child's individual makeup and significant features in the environment" (p. 38). This was later supported by other studies (Belsky, 1984; Crowell, Feldman, & Ginsberg, 1988; Forehand, Brody, & Smith, 1986; Wolfson, Fields, & Rose, 1987) which found that the interaction of environmental and relationship factors were important and contributed to particular behavioral problems.

The NYLS study suggested that behavioral disturbance usually resulted when the standards, demands, and expectations of parents, peers, or teachers were excessive for an individual child. Thus, it was the environmental influences that interacted with a given temperament pattern to produce a pathogenic or positive personality in the child (Thorpe, 1985). Once the parents were reassured that
their child's difficult temperament was not created by them, and once they modified their own behavior, expectations, and child-care methods to suit the child's temperament, in all reported cases the parent-child relationship improved (Thomas, Chess, & Birch, 1968). Understanding the child's temperament thus becomes the means whereby mothers can effectively cope with infant demands, realizing that their child's behavior is not always a reflection of the parents competence as caretakers (Glass, 1983; Turecki & Tonner, 1987). Armed with the knowledge that their children are likely to react in certain ways, parents . . . are then in a strong position to anticipate difficulties and avoid situations that may overly tax the child. (Rubin, 1987, p. 227)

Thomas and Chess (1977) later proposed the importance of "goodness of fit," a term originally proposed by Henderson in 1913. "Goodness of fit" resulted when the "properties of the environment and its expectations and demands were in accord with the organism's own capacities, characteristics and style of behaving" (Thomas & Chess, 1977, p. 11). When there was consonance or agreement between the child and the environment, then optimal development was possible. "Poorness of fit" was just the opposite. This occurred when there was dissonance (disagreement) between environmental opportunities and demands and the individual's temperamental characteristics. Thomas and Chess (1977) acknowledged the fact, however, that good parent-child relationships did not imply a total absence of stress and conflict.

Demands, stresses and conflicts, when consonant with the child's developmental potentials and capacities for mastery, may be constructive . . . . The issue involved in disturbed behavioral function is rather one of excessive stress resulting from
poorness of fit and dissonance between environmental expectation and demands and the capacities of the child at a particular level of development. (p. 12)

Earls (1986) suggested that although certain temperamental characteristics are important as a first step in the development of psychopathology, environmental characteristics may become more important in determining the persistence and course of a disorder once it is set in motion.

Subsequently, Thomas and Chess (1977) were able to identify each of the nine categories of temperament in the following study populations: Puerto Rican working-class children, mentally retarded children, premature children with high incidence of neurological damage, children with congenital rubella, and an Israeli kibbutz group.

Other Studies on Temperament

A reanalysis of the data obtained from the NYLS was conducted by Cameron in 1977. Cameron utilized a cluster-analysis technique, extracting eight oblique parental clusters from the 70-item correlational matrix. These clusters dealt with parental disapproval, conflict, strictness/permissiveness, protectiveness, inconsistent discipline, depressed living standards, limitations of material supports for children, and a large family orientation. When the parental clusters were examined in relation to the children's temperamental characteristics, Cameron found the following: (1) two temperamental traits, adaptability and intensity, emerged as most powerful; (2) rhythmicity was associated with parental dimensions only during the first two years of the child's life; and (3) activity level did
not significantly relate across any age level. It was suggested that these findings support the interactional viewpoint of development (Cameron, 1977).

Earls and Jung (1987) found that the two temperamental traits that more powerfully predicted behavior problems in the home were poor adaptability and high intensity of emotional expression; this supports Cameron's (1977) findings. In the school setting, Nelson (1987) found that high activity levels, and low adaptability traits caused the teacher to feel more stress.

Buss and Plomin (1975) suggested only four temperamental dimensions: (1) emotionality (2) activity, (3) sociability, and (4) impulsivity (EASI). Emotionality was equivalent to intensity of reaction or arousal. Activity referred to total energy output. Sociability consisted mainly of the desire one had to be with others. Impulsivity referred to the quickness or inhibition of response. Their study with twins (1975) revealed much higher correlations for identical twins than for fraternal twins for all dimensions except impulsivity. Even though their research suggested that a genetic component may be involved, they also recognized that genetic factors could not account for all the variance. While genetic temperament may predispose an individual, the interaction between temperament and environment, especially during the critical developmental years, was also important.

Rowe and Plomin (1977) compared the nine temperamental traits proposed by the NYLS of Thomas and collaborators (1963, 1968) to Buss and Plomin's (1975) EASI temperament theory and found the following:
of the nine NYLS dimensions, only two, attention span-persistence and distractibility, were supported by factor analysis. The four EASI dimensions, (1) emotionality, (2) activity, (3) sociability, and (4) impulsivity, however, were replicated. From these results, the two systems were merged to form the Colorado Childhood Temperament Inventory (CCTI), a parental-rating instrument for children 1-6 years of age. It appears to be psychometrically promising but needs further research to demonstrate its validity.

Although most of the published research within the past 20 years has resulted in some way from the NYLS, many researchers found the NYLS Parent Questionnaire cumbersome to complete and score. Thus, Carey and McDevitt developed other questionnaires that were theoretically based on the New York Longitudinal Study (Thomas et al., 1963, 1968, 1977), yet were much easier to administer and to score.

The Infant Temperament Questionnaire (ITQ), with a test-retest reliability of .84 (Carey, 1970) and the Infant Temperament Questionnaire-Revised (Carey & McDevitt, 1978) were designed to measure infant temperament (ages 0 to 2 years). This instrument identified three diagnostic clusters: easy, intermediate, and difficult. The slow-to-warm-up category was dropped, placing all infants between difficult and easy into the "intermediate" group, and then subdivided into intermediate high (more difficult) and low (more easy) (McDevitt & Carey, 1978). Vaughn et al. (1987) point out that these NYLS temperament dimensions were loosely preserved. They explained that Carey defined "difficult" babies as those having four or five of the
difficult category rated above the mean for his sample, with at least two of these being greater than one standard deviation above the mean. "Easy" babies were defined as having no more than two dimensions ratings above the mean for the sample, and none greater than one standard deviation above the sample mean. All other infants were diagnosed as being "intermediate" (p. 153).

The Behavioral Style Questionnaire (B.S.Q.) (McDevitt & Carey, 1978), with a test-retest reliability coefficient of .89, was designed to determine temperamental characteristics of 3-7 year-old children. The norming sample was 350 children distributed into the clusters identified by Thomas et al. (1977) plus one called the intermediate cluster: difficult 65 (18.6%), slow-to-warm-up 56 (16%), intermediate 113 (32.3%), and easy 116 (33.1%). In their study, 67.7% were included in one of the three clusters (difficult, slow-to-warm-up, or easy) as compared to the 65% in the NYLS. Although the Carey instruments have been widely used (Ploman, 1983), the Infant Temperament Questionnaire, in particular, has been placed under intense psychometric scrutiny and its psychometric properties have been questioned (Hubert, Wachs, Peters-Martin, & Qandour, 1982; Vaughn et al., 1987).

Several studies on the effects of child temperament on the parent's transition to parenthood showed that child temperament appeared to have an important mediating effect on the parents' adjustment to parenthood (Dickie & Gerber, 1980; Gerson, 1973; Lerner & Busch-Rossnagel, 1981). Dunn & Kendrick (1980), who studied the relationship between the mother's description of her first child's
temperament and the child's own behavior in reaction to the birth of a sibling, demonstrated that mothers behaved differently with children of different temperament. Parents of infants perceived as having an easier temperament generally experienced more positive changes compared to parents of infants perceived as being more difficult (Sirignano & Lachman, 1985). The more rhythmic, predictable babies, who tended to awaken less often at night, were perceived as being less difficult by their mothers (Sprunger, Boyce, & Gaines, 1985).

More research has demonstrated a significant relationship between particular temperament constellations in children, increased incidence of behavioral problems and family stress (Barron & Earls, 1984; Billman & McDevitt, 1980; Buss & Plomin, 1975; Carey, 1974; Graham et al., 1973; Himmelfarb, Hock, & Wenar, 1985; Maurer, Cadoret, & Cain, 1980; Milliones, 1978; Rutter, Birch, Thomas, & Chess, 1964). Mash and Johnston's findings (1983) suggested that the greatest difference between parental-stress levels arose because of the child's individual characteristics. Mothers who had temperamentally active children with low attention spans were more negative in affect, more nonaccepting, and more submissive to their children (Webster-Stratton, & Eyberg, 1982). The researchers suggested this occurred because children with a more difficult temperament demanded so much more from their mothers. Parents of active children tended to get into power struggles with their children, while interactions involving less active children were generally more peaceful and harmonious (Buss, 1981). The more difficult the child temperament, the
more critical, disapproving, and severe was the mother's behavior (Battle & Lacey, 1972). Several writers have suggested that parents need to understand more about their child's temperament in order to recognize its possible influence on their behavior as parents (Buss, 1981; Gordon, 1981; Nelson & Simmerer, 1984). Mothers who were aware of their child's behavioral cues were more likely to be successful in dealing with their child (Chess, Thomas, & Birch, 1965).

Others have indicated that the quality of the mother's behavior toward the child might be moderated or influenced by the child's response to the mother (Beckwith, 1972; Clarke-Stewart, 1973, Osofsky & Danzger, 1974). Milliones (1978) and Anderson, Lytton, and Romney (1986) found that the mother's response was often dictated by the child temperament. They suggest that, because these interactions are mainly driven by the child and not the mother, Thomas and Chess's (1977) "goodness of fit" model (the conjunction of difficult behavior by the child with negative practices by the mother produces adverse effects) was not corroborated in their study.

Scholom, Zucker, and Stollak (1979) sought to elaborate on the NYLS findings and examine whether it was possible to establish a pattern among temperament factors that might enable one to describe a high-risk family temperament style. This problem could be conceptualized as one of "goodness of fit" between the various temperamental attributes of family members. Similarity of temperamental attributes of 132 families with children ages 3 and 4 were correlated with an adjustment score. Results suggest that similarity across all factors and family members significantly results in better adjustment.
for girls. For boys, a different trend was seen. The greater the similarity between infant boy and father temperament, the poorer the adjustment; dissimilarity between infant boy and father resulted in better adjustment for boys. From this data, the general model of "goodness of fit" was not clear.

Other studies have dealt with how the mother’s temperament and emotional state have affected her perceptions of her child’s temperament. Parental perceptions are an integral part of social reality and must be considered in order to better understand the real meaning of the terms used to define temperament (Bates, 1983). Lerner and Galambos (1985) found that mothers who were dissatisfied with their roles showed more rejection of the child and, in turn, had more difficult children. Recent studies have found that depressed mothers, or mothers who are experiencing marital dissatisfaction and a high level of child disruptive behaviour, see their infants as more difficult (Entwisle & Doering, 1981; Forehand, Brody, & Smith, 1986; Ventura & Stevenson, 1986). However, it remains unclear from these studies whether caring for an infant with a difficult temperament caused the parent’s depression, or whether the initially depressed parent viewed the infant’s temperament as more difficult (Ventura & Stevenson, 1986).

Gordon (1983) suggested that being an easy or difficult child was different depending on whether one was a girl or a boy. She found that mothers tended to perceive a greater difference between difficult and easy girls than between difficult and easy boys. Matheny, Wilson, and Thoben (1987), on the other hand, found only a
marginal correlations between child temperament and characteristics of mother, none of which reached .30.

More recently, both the significance of the difficult behaviour constellation and its validity as a measure of child temperament have attracted considerable debate (Bates, 1980, 1983; Carey, 1982, 1983; Daniels, Plomin, & Greenhalgh, 1984; Matheny, Riese, & Wilson, 1985; Sameroff, Seifer, & Elias, 1982; St. James-Roberts & Wolke, 1988). One basis for this concern is whether the difficult behavior is legitimately viewed as reflecting normal individual temperament or rather reflecting a state of disturbance in the child (i.e., infection, teething, stomach-aches) (Barron & Earls, 1984; Hart, Bax, & Jenkins, 1984). Another concern is whether the parents' reports of their children's behaviors measure the child or parental variables (Bates, 1983; Harriman, 1983). If temperament is the overall behavioral style of an individual, it might be expected that temperament patterns would be discernable by different raters.

However, low correlations between mother and observer ratings are frequently found (Billman & McDevitt, 1980; Northam, Prior, Sanson, & Oberklaid, 1987). Northam et al. (1987) argued one possibility was the lack of high agreement between raters, which does not necessarily invalidate the concept of temperament. It could be that children actually behave differently in different contexts (p. 222). A second possible explanation may be that temperament ratings reflect not only the child's behavior but also the interactional style between parent and child (p. 222). This has been substantiated by other research which suggests that parental reports represent both
child and parental factors (Bates & Bayles, 1984; Matheny et al., 1985; Vaughn, Bradley, Joffe, Seifer, & Barglow, 1987).

Northam et al.'s (1987) third possible explanation for the relatively low correlations between raters may be due to rater bias (p. 222). Different raters may view the same behavior differently. It has been suggested that certain characteristics of the rater (socio-economic status, knowledge of child development, psychological attributes, previous exposure to other children, for example) affect a rater's conception of what is "normal," and therefore affects one's expectations, attitudes, and interpretations of a particular child (Bates, 1980; Earls, 1981).

Campbell (1979) found that behavioral differences evident in early infancy led mothers to perceive their babies as easy or difficult and that this perception possibly persisted long after the behavioral differences were no longer apparent. Parents of slow-to-warm-up children reacted with greater intolerance and impatience when the withdrawal reactions occurred in areas which were of high priority in their value system (Thomas et al., 1968).

The mother's negative perception of the child might possibly generate a vicious cycle of negative behavior, exacerbating the negative behavior of the child, thus further fortifying the mother's negative perception (Schachter & Stone, 1985). Bates (1983) suggested, however, that the assumption that parents were in various ways subjective in their reports about their children did not need to be seen as a criticism of parents' shortcomings or as a
methodological impediment. It could be seen as affirming the importance of how people see social events. As Harriman (1983) stated:

Although the validity of self-reports gives rise to question, it seems important to consider that the changes one perceives to be real make up the reality upon which one acts and reacts. (p. 388)

In this study the mother's perception of her child's temperament and its effects on maternal stress are very important.

Summary

Research in the area of temperament support that children are born with certain temperament traits which can affect the parent-child relationship. Both the child and the parent contribute to the type of interaction experienced between the two. Child temperament affects parental adjustment to parenthood. Parents who perceive their children as having an "easy" temperament tend to experience a better relationship with their child. Unhappy experiences often lead parents to perceive their child as more difficult. It was suggested that parents needed to understand their children's temperament in order deal more effectively with their child's behavior.
CHAPTER III

METHODOLOGY

This chapter presents information regarding the subjects, procedures, instruments, and analyses that were used to carry out this investigation.

Type of Research

This research was a correlational and comparative study which proposed to investigate the relationship between parental knowledge of child development, perceived child temperament, and the stress experienced by parents of normally growing children. Using a survey approach, data were collected on three variables: (1) parental perception of child temperament, (2) parental knowledge of child development, and (3) parental stress.

Population

The subjects in this study were mothers within the Berrien County (Michigan), South Bend/Mishawaka (Indiana) area, and the San Joaquin (California) area. They were selected from populations of pediatrician offices, day-care centers, preschools, and churches. The mothers were chosen because they met the following criteria: (1) were the primary caretaker of a child aged 36 to 47 months,
(2) spoke and understood English, (3) were at least 23 years of age, (4) agreed to participate in the study, and (5) neither mother nor child required any type of regular support services or were receiving inpatient or outpatient medical, emotional, or physical treatment for on-going major illness. The final sample consisted of 140 mothers.

Variables

The three independent variables in this study were (1) parental knowledge of child development, (2) the set comprising temperament: the four constellations of child's perceived temperament (difficult, easy, slow-to-warm-up, and unclassified) and the nine categories of temperament, and (3) the set of demographic variables (mother's age, mother's work history, and mother's socio-economic level). The dependent variable was parental stress, comprised of the four sets of parental stress scores obtained from the Parent Stress Index (PSI): total parental stress score, child-domain stress score, parent-domain stress score, and the 13 subscales separately.

Instrumentation

Parent Questionnaire

From the data collected during the New York Longitudinal Study (Thomas, Chess, & Birch, 1963, 1968), Thomas, Chess, and Korn (1977) developed the Parent Questionnaire. The instrument measures the nine categories of temperament established by an inductive content analysis of the parental interview protocols obtained from the study in 1963. It consists of 72 items, 8 items covering each of the nine categories of temperament: (1) activity level; (2) rhythmicity,
defined as how regular the child is in behaviors such as eating and sleeping; (3) adaptability to new or altered situations; (4) approach/withdrawal, defined as the nature of the initial response to a new stimulus, be it a new food, new toy, or new person; (5) intensity of reaction, as expressed in the energy level of a response; (6) quality of mood, the amount of pleasant, happy behavior as contrasted with unpleasant, unhappy behavior; (7) distractibility, defined as how much the environment impinges on the child; (8) attention span and persistence in behavior; and (9) sensory threshold, defined as the strength of stimulation necessary to evoke a response. From these nine categories, three constellations emerged (Thomas, Chess, & Birch, 1968) representing temperamental tendencies and were named (1) difficult child, (2) easy child, and (3) the slow-to-warm-up child. The five characteristics used to define the constellations of temperamentally difficult or easy child were: (1) rhythmicity, (2) approach/withdrawal, (3) mood, (4) adaptability, and (5) intensity. The three characteristics used to define the constellation of the temperamentally slow-to-warm-up child were: (1) approach/withdrawal, (2) intensity, and (3) adaptability.

**Description and Scoring of the Parent Questionnaire**

The Parent Questionnaire asks the parent to judge whether certain behaviors occur hardly ever, infrequently, once in a while, sometimes, often, very often, or almost always. Parents circle the number from 1 (hardly ever) to 7 (almost always) which best describes their child’s behavior. Eight questions are asked for each
temperament category: four in each of the upper and lower extremes of the behavioral range involved (e.g., High and Low Activity, Adaptive and Non-Adaptive, etc.). For scoring purposes, the four upper extreme questions are scored in the positive direction and the four lower extreme questions are scored in the negative direction. Thus, an upper extreme question rated "7—almost always" is assigned a weighted score of 7. A lower extreme question rated "7—almost always" is assigned a weighted score of 1. The range of scores for the complete category is from 8 to 56. These scores then represent the relative frequency of either upper or lower extremes of the behavioral range in the particular category. For example, a weighted score in the 50s in Activity would mean an almost-always occurrence of High Activity and a hardly ever occurrence of Low Activity for the child.

The category totals are added together to equal the final temperament rating. Whether the children can be classified as "difficult," "easy," or "slow-to-warm-up" depends on the total scores of those categories that identify the different constellations. For the purpose of this study a temperamentally difficult child is one whose temperament scores in Rhythmicity, Approach/Withdrawal, Mood, and Adaptability fall below the median score of the population under study, and whose temperament score in Intensity falls above the median. The temperamentally easy child is one whose temperament scores in Rhythmicity, Approach/Withdrawal, Mood, and Adaptability fall above the median score of the population under study, and whose temperament score in Intensity falls below the median. The
temperamentally slow-to-warm-up child is one whose temperament scores in approach/withdrawal, intensity, and adaptability categories fall lower than the median. Following procedures used in other temperament research (Thomas & Chess, 1980, 1989; Thorpe, 1985), the median is used as a cut-off point.

Development of the Parent Questionnaire

The Parent Questionnaire emerged from the New York Longitudinal Study which was based on Thomas and Chess' clinical experience, concerns, and insights. The original data were collected over a two-year period on 80 children whose behavioral development was followed from the first months of life (Thomas, Chess, Birch, Hertzig, & Korn, 1963). The parental reports on their children's reaction to diverse situations were scored by trained interviewers and were used to evaluate the reliability and validity of the data obtained. The reliability of the scoring techniques was substantiated by the high level of interscorer and intrascorer reliability achieved. The validity of the parental reports was tested by comparing the scores obtained from the interview with the scores derived from protocols of direct observation of the child's behavior by two independent trained observers. The results of these comparisons found that the direct observation scores agreed with the parent interview scores at the .01 level of confidence. The two independent direct observations were in agreement with one another at the .05 level of confidence. The assessment of reliability and validity permitted the researchers to conclude, thus, that the data obtained from parental interviews were a valid reflection of the child's
behavior. Although no actual correlation coefficient was reported, Bates (1980) stated that the correlation coefficient probably lies somewhere between .33 and .46 based on the sample size for the test. This modest level of validity originally obtained by Thomas et al. (1963) has since been replicated in other studies (Bates, Freeland, & Lounsbury, 1979; Carey & McDevitt, 1978).

The temperament model proposed by Thomas and Chess has served as the impetus for much of the research on temperament conducted within the United States (Thorpe, 1985). The majority of the subsequent studies (Bates, Freeland, & Lounsbury, 1979; Bates, Ohlson, Pettit, & Bayles, 1982; Carey & McDevitt, 1978; Lerner, Palermo, Spiro, & Nesselroads, 1982; Thorpe, 1985) have focused on the validity and reliability of the NYLS questionnaires. While the scaling properties of the NYLS instruments are not yet definitive, they appear to offer promise for temperament research (Thorpe, 1985).

The Knowledge of Child Development Inventory

The Knowledge of Child Development Inventory (KCDI) was developed by Larsen and Juhasz (1986) and is a 56-item multiple-choice test. It tests knowledge of child development from birth to age 3 in the areas of emotional, cognitive, physical, and social development. The parents are asked to mark the alternative that best answers the question. Each question has four alternatives to choose from and there is only one correct answer for each question. Each correctly answered question receives a score of 1. These scores are then added to give a final score ranging from 0 to 56. A total score
of 0 means very poor knowledge of child development and a total score of 56 means very good knowledge of child development.

Content validity was obtained through an analysis of the instrument by four experts in child development. They were asked to focus on item construction and on completeness of question coverage. Ratings for item-construction were: 37 items excellent, 13 items good, and 6 items adequate. The completeness of question coverage was rated excellent.

Criterion validity of .83 was obtained using the Pearson product-moment correlation to compare scores on the KCDI with scores on a true-false test taken from an instructor’s manual on child development (Smart & Smart, 1977). A reliability of .93 was obtained after utilizing Cronbach’s alpha coefficient of internal consistency.

Parenting Stress Index

Identification of parental stress was determined by the Parenting Stress Index (PSI) (Abidin, 1983). The instrument consists of two main domains and 13 subscales. It contains 101 items: 47 items comprise the child domain (6 subscales) and 54 items comprise the parent domain (7 subscales). For 89 of the items, parents are asked to mark the degree to which they agree or disagree with the comment on a Likert scale of 1 to 5: (1) strongly agree, (2) agree, (3) not sure, (4) disagree, and (5) strongly disagree. Twelve of the items are in the multiple-choice form and parents are asked to choose the answer that best completes the question.

The six subscales which comprise the child domain are: (1) Child Adaptability/Plasticity (a child’s ability or inability to
adjust to changes), (2) Acceptability of Child to Parent (how well the child matches the parent's "hoped-for" child), (3) Child Demandingness/Degree of Bother (how demanding the parent perceives their child to be), (4) Child Mood (general disposition of child), (5) Child Distractibility/Activity (attention span and activity of child), and (6) Child Reinforces Parent (whether or not the parent experiences her child as a source of positive reinforcement). High stress scores in this domain are associated with children who display qualities that make it difficult for parents to fulfill their parenting role.

The seven subscales that comprise the parent domain are: (1) Parent Depression, Unhappy, Guilt, (2) Parent Attachment (parental attachment to child), (3) Restrictions Imposed by Parental Role (parental control and domination by child), (4) Parents Sense of Competence, (5) Social Isolation (isolation from peers, relatives, and other emotional support systems), (6) Relationship with Spouse, and (7) Parental Health. High scores in this domain suggest that the sources of stress and potential dysfunction of the parent-child system may be related to dimensions of the parent's functioning. The parent feels overwhelmed and inadequate to the task of parenting.

For scoring purposes, each subscale is scored by adding the weights of the numbers above the answers selected (i.e., an answer on the Likert scale of 4 would receive a score of 4; an answer on the Likert scale of 2 would receive a score of 2). The Domain score is obtained by adding all the subscale scores in a given Domain. The Total Stress Score is obtained by adding the two Domain scores.
Parents who earn raw scores at or above 260 are considered to be experiencing stress beyond the normal range.

**Development of the Parenting Stress Index**

The questions on the PSI were collected by conducting a review in the research literature, which resulted in 95% of the items included on the PSI being directly related to specific research findings (Abidin, 1983). Revisions were made by ratings and suggestions of a panel of six professionals with prominent reputations as researchers and clinicians in the child development and clinical child psychology area. Through various field testings, the present form was developed and normed on a sample of 534 mothers who were drawn from a private group-pediatric practice.

Content Validity was obtained by field testings and a rating performed by a panel of six professionals in the area of early parent-child relationships. Concurrent, construct, and discriminant validity were individually demonstrated by various studies (see Abidin, 1983, pp. 9-14). Factorial validity of the PSI was investigated by three factor analyses: Child Domain formed the data for the first analysis, Parent Domain formed the data for the second analysis, and the 13 subscales formed the data for the third analysis. The six-factor solution found in the Child Domain accounted for 41% of the variance, the seven-factor solution found in the Parent Domain accounted for 44% of the variance, and the two-factor solution obtained from the 13 subscales accounted for 58% of the variance. The pattern of factor loadings reported supports the notion that each
subscale is measuring a moderately distinct source of stress (Abidin, 1983).

Alpha reliability coefficients were determined. The reliability coefficients found were the following: for the two domains, .89 (Child Domain) and .93 (Parent Domain); for the Total Stress Score, .95. These coefficients are sufficiently large to indicate a high degree of internal consistency for these measures (Abidin, 1983). The reliability coefficients for the 13 subscales lie between .55 to .80 and are listed in Appendix A.

Test-retest reliabilities obtained from four different studies also supported the stability of the PSI scales. Burke’s study (cited in Abidin, 1983) obtained a Spearman rank-order coefficient of .817 for the Child Domain and .706 for the Parent Domain. Abidin (1983) reported Pearson correlations of .83 for the Child Domain, .91 for the Mother Domain, and .96 for the Total Stress Score. Zakreski’s study (cited in Abidin, 1983) obtained test-retest reliability coefficients of .77 for the Child Domain, .69 for the Mother Domain, and .88 for the Total Stress Score. Hamilton (cited in Abidin, 1983) reported reliability coefficients of .55 for the Child Domain, .70 for the Parent Domain, and .65 for the Total Stress Score.

Family Information Data Sheet

The Family Information Data Sheet was designed by the researcher in order to obtain specific demographic information about the parents participating in this study. Questions were asked concerning the mother’s age, work history, and socio-economic status.
Procedures

Permission to conduct the research with the participating population was obtained at the various agencies before the mothers were contacted. The qualifying mothers received a letter explaining the nature of the study and inviting them to participate. Mothers were reassured that the researcher acknowledged that parents try to do what they feel is best for their child and are not expected to be experts in child development. It was also explained that if the mother wished at any time to refuse to answer any question or to terminate the study, she was free to do so. Once they agreed to participate, mothers received a packet containing the three instruments (the Parent Questionnaire, the Knowledge of Child Development Inventory, and the Parenting Stress Index), the PSI answer sheet, a request form to obtain the results of the study, the Family Information Data Sheet, and a self-addressed, stamped envelope with which to return the completed surveys. The packets were handed out and returned during the months of January through May of 1987. Of the 220 packets handed out, 142 responded, but two were returned unfinished, leaving 140 usable sets of data.

Hypotheses and Statistical Analysis

The hypotheses tested were:

Hypothesis One

There will not be a statistically significant relationship between parental knowledge of child development and parental stress.

As this was tested on three different levels, necessitating three separate analyses, the three relevant sub-hypotheses are here
stated. The Literature Review in Chapter 2 appeared to support a directional statement of sub-hypothesis 1a.

1a: There will not be a significant negative correlation between parental knowledge of child development and parental stress.

For sub-hypothesis 1a, a zero order correlation was obtained between the parental-knowledge-of-child-development total score and the parental total stress score.

1b: There will not be a significant multiple correlation between parental knowledge of child development and the linear combination of the two domain scores of stress (child domain and parent domain).

For sub-hypothesis 1b, a multiple-regression analysis was used to obtain a multiple correlation coefficient between parental-knowledge-of-child-development total score and the two domain scores of stress (child domain and parent domain).

1c: There will not be a significant multiple correlation between parental knowledge of child development and the 13 parent/child subscale scores of stress.

For sub-hypothesis 1c, a multiple-regression analysis was used to obtain a multiple-correlation coefficient between the parental knowledge of child development total score and the 13 parent/child subscale scores (using stepwise regression).

**Hypothesis Two**

There will not be a statistically significant relationship between parental perception of child temperament style and parental stress.
As this was tested on two separate levels, necessitating two different analyses, the two relevant sub-hypotheses are here stated. For each of these hypotheses, the parents were categorized into the following four groups, according to their perception of their child temperament: (1) difficult, (2) easy, (3) slow-to-warm-up, and (4) unclassified.

2a: There will not be a significant difference among the overall mean stress scores of the four temperament groups.

For sub-hypothesis 2a, a one-way analysis of variance was used to compare the four groups of temperament on the parental total stress score.

2b: There will not be a significant difference among the centroids of these four groups of temperament on the 13 stress variables found within the sub-scales of the PSI.

For sub-hypothesis 2b, a Multivariate Analysis of Variance was used, followed by discriminant analysis because the hypothesis was rejected, to compare the centroids of the four groups of temperament (difficult, easy, slow-to-warm-up, and unclassified). A centroid is the multivariate equivalent of the center of gravity for either group of parents. In this case, it was that point in 13-dimensional space which was determined by the group means of the 13 variables. Discriminant analysis was undertaken to identify the variables most responsible for separating the groups.

Hypothesis Three

There will not be a statistically significant relationship
between parental perception of child temperament traits and parental stress.

As this was tested on three separate levels, necessitating three different analyses, the three relevant sub-hypotheses are here stated.

3a: There will be no significant multiple correlation between the overall mean stress scores of the nine temperament traits.

3b: There will be no significant multiple correlation between the child or parent domain stress scores of each of the nine temperament traits.

3c: There will be no significant canonical correlation between the nine traits of temperament and the 13 stress variables found within the sub-scales of the PSI.

For Hypotheses 3a and 3b, a stepwise-regression analysis was used to obtain a multiple-correlation coefficient between the total stress score and the nine temperament traits separately (for Hypothesis 3a), and between the domain stress scores and the nine temperament traits separately (for Hypothesis 3b). Hypothesis 3c was tested by using a canonical-correlation analysis to explore the linear combinations of the nine temperament traits and the 13 stress subscales.

**Hypothesis Four**

There will not be a significant multiple correlation between total parental stress scores and a linear combination of parental knowledge of child development and child temperament.
A stepwise-regression analysis was used to obtain a multiple-correlation coefficient between total stress scores and the two independent variables, parental knowledge of child development, and child temperament.

**Hypothesis Five**

There will not be a significant correlation between a linear combination of the 13 subscale scores and a linear combination of the total parental-knowledge-of-child-development score and the nine temperament scores.

A canonical-correlation analysis was used to explore the linear combinations of the 13 stress subscales, parental knowledge of child development, and the nine temperament traits.

**Hypothesis Six**

There will not be a statistically significant relationship between parental age and parental stress.

As this was tested on two separate levels, necessitating two different analyses, the two relevant sub-hypotheses are here stated.

6a: There will be no significant differences among the overall mean stress scores of the three different age groups specified.

6b: There will be no significant difference among the centroids of the three age groups on the 13 stress variables found within the sub-scales of the PSI.

These two sub-hypotheses were tested in the identical manner as 2a and 2b.
Hypothesis Seven

There will not be a statistically significant relationship between parent's educational level and parental stress.

As this was tested on two separate levels, necessitating two different analyses, the two relevant sub-hypotheses are here stated.

7a: There will be no significant differences among the overall mean stress scores of the five groups of completed educational levels of the parents.

7b: There will be no significant difference among the centroids of the five educational levels completed on the 13 stress variables found within the sub-scales of the PSI.

These two sub-hypotheses were tested in the identical manner as 2a and 2b.

Hypothesis Eight

There will not be a statistically significant relationship between parent's socio-economic level and parental stress.

As this was tested on two separate levels, necessitating two different analyses, the two relevant sub-hypotheses are here stated.

8a: There will be no significant differences among the overall mean stress scores of the groups of socio-economic levels of the parents.

8b: There will be no significant difference among the centroids of the socio-economic groups on the 13 stress variables found within the sub-scales of the PSI.

These two hypotheses were tested in the identical manner as of 2a and 2b.
Hypothesis Nine

There will not be a significant multiple correlation between total stress scores and a linear combination of age, education, and socio-economic status of the parents.

A multiple-regression analysis was used to obtain a multiple-correlation coefficient between total stress scores and the three demographic variables of age, education, and socio-economic status of the parents.

An alpha of .05 was used to test the hypotheses.

In order to maintain the stability of the correlation matrix for the regression and multivariate analysis, a sample size of 140-210 persons was required. Power analysis indicated that a sample size of 140, with an alpha of .05 and an effect size correlation of .3, gave a power of .95. A sample of 210, with the same parameters, gave a power greater than .99. This study collected data from a sample of 142 persons, two of which were disqualified due to unfinished tests. These two people were contacted and invited to complete the tests. Although they agreed to do so, the tests were never sent back.

Summary

This chapter dealt with the type of research, description of the population, selection of the sample, variables identified, descriptions of the three instruments—Parent Questionnaire, The Knowledge of Child Development Inventory, and the Parenting Stress Index, procedure for collection of data, null hypothesis, and the statistical analysis to be used with each.
CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

Chapter IV has four parts. The first describes the data-producing sample; the second presents psychometric information for the Knowledge of Child Development Inventory, the Parent Questionnaire, and the Parenting Stress Index (PSI); the third presents the basic data from the study; and the fourth presents the research questions along with the tests of hypotheses.

Demographic Data of Sample

The subjects of this study were 140 mothers selected from populations of mothers living in the Berrien County (Michigan) and the San Joaquin County (California) areas during the months of January through May 1987. The mothers were the primary caretakers of a child ages 36 to 47 months, and spoke and understood English.

Age of the Sample Subjects

Table 2 presents the data about the age of the subjects. While the entire sample ranged from 23 years to older than 31, the sample was predominantly mothers 26 years and older (87.14%).
TABLE 2

SAMPLE DISTRIBUTION BY AGE

<table>
<thead>
<tr>
<th>Age</th>
<th>Sample</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>23-25</td>
<td>18</td>
<td>12.86</td>
</tr>
<tr>
<td>26-30</td>
<td>56</td>
<td>40.00</td>
</tr>
<tr>
<td>31+</td>
<td>66</td>
<td>47.14</td>
</tr>
<tr>
<td>TOTAL</td>
<td>140</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Sample Distribution According to Agency

Table 3 shows the number and percentage of subjects according to agencies which participated in this study. The majority of the subjects were contacted in a preschool setting (69%). Although more mothers were initially contacted through local churches, especially those located in neighborhoods representative of lower-socio-economic status, only 1% responded. Follow-up procedures revealed this was due to three possible causes: (1) the ministers never contacted the potential subjects, (2) the mothers contacted had poor reading skills and could not complete the questionnaires, and/or (3) the contacted subjects did not wish to participate.
TABLE 3
SAMPLE DISTRIBUTION ACCORDING TO TYPE OF AGENCY CONTACTED

<table>
<thead>
<tr>
<th>Type of Agency</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool setting</td>
<td>97</td>
<td>69.3</td>
</tr>
<tr>
<td>Child-care setting</td>
<td>28</td>
<td>20.0</td>
</tr>
<tr>
<td>Pediatrics office</td>
<td>13</td>
<td>9.3</td>
</tr>
<tr>
<td>Church setting</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Socio-economic Status of Parents

Table 4 presents information on the sample’s socio-economic status. The majority of the mothers (72.14%) reported earning more than $20,000.00 per year. Although mothers from all socio-economic brackets were sought, the sample was predominantly higher-earning income families. This suggests that the facilities contacted to participate in this study (eight pre-schools; four day care centers; two churches; and two pediatric offices) provide services that mostly higher-earning income families can afford.

Work History of the Parents

Table 5 presents the number of mothers who have always worked, have worked some, or who have never worked outside the home since the birth of their 3-year-old. The majority of the mothers (78%) had worked outside the home.
### TABLE 4

**SAMPLE DISTRIBUTION OF SOCIO-ECONOMIC STATUS**

<table>
<thead>
<tr>
<th>Income</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information N/A</td>
<td>1</td>
<td>0.71</td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>6</td>
<td>4.29</td>
</tr>
<tr>
<td>$5,000 to $10,000</td>
<td>6</td>
<td>4.29</td>
</tr>
<tr>
<td>$10,000 to $15,000</td>
<td>8</td>
<td>5.71</td>
</tr>
<tr>
<td>$15,000 to $20,000</td>
<td>18</td>
<td>12.86</td>
</tr>
<tr>
<td>More than $20,000</td>
<td>101</td>
<td>72.14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

### TABLE 5

**SAMPLE DISTRIBUTION OF MATERNAL WORK HISTORY OUTSIDE HOME**

<table>
<thead>
<tr>
<th>Work History</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always have worked outside</td>
<td>38</td>
<td>27.15</td>
</tr>
<tr>
<td>Have worked some outside</td>
<td>71</td>
<td>50.71</td>
</tr>
<tr>
<td>Never have worked outside</td>
<td>31</td>
<td>22.14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Sources Mothers Used to Learn about Child Growth and Development

Table 6 presents data concerning where the mothers obtained their information about child growth and development. The mothers could identify more than one source of information. The majority (61%) reported they received most of their information from books or other media.

<table>
<thead>
<tr>
<th>Source</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books or other media</td>
<td>85</td>
<td>60.71</td>
</tr>
<tr>
<td>Family</td>
<td>39</td>
<td>27.86</td>
</tr>
<tr>
<td>Doctor/pediatrician</td>
<td>35</td>
<td>25.00</td>
</tr>
<tr>
<td>Friends</td>
<td>23</td>
<td>16.43</td>
</tr>
<tr>
<td>Teacher</td>
<td>16</td>
<td>11.43</td>
</tr>
<tr>
<td>Other</td>
<td>33</td>
<td>23.57</td>
</tr>
</tbody>
</table>

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Birth Order of the Children Described

Table 7 presents the birth order of the 3-year-old children the mothers were thinking of when answering the test instruments. The majority of the children were first-borns (49.29%), and the second largest group were mothers whose 3-year-old children were second-borns (32.14%).

<table>
<thead>
<tr>
<th>Birth Order</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-born</td>
<td>69</td>
<td>49.29</td>
</tr>
<tr>
<td>Second-born</td>
<td>45</td>
<td>32.14</td>
</tr>
<tr>
<td>Third-born</td>
<td>20</td>
<td>14.29</td>
</tr>
<tr>
<td>Fourth-born</td>
<td>1</td>
<td>0.71</td>
</tr>
<tr>
<td>Fifth-born</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sixth-born +</td>
<td>2</td>
<td>1.43</td>
</tr>
<tr>
<td>Information not available</td>
<td>3</td>
<td>2.14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Temperament of the Children Described

Table 8 compares the percentage of persons in each of the four temperament constellations (as described by Thomas, Chess, & Birch, 1963, 1968) in the present sample with those in the NYLS sample. The “easy children” were thus categorized by obtaining temperament scores that fell above the median of the population studied in Rhythmicity, Approach/Withdrawal, Mood, and Adaptability, and scores below the median in Intensity. They were characterized by regular-
ity, positive approach responses to new stimuli, high adaptability to change, and a predominately positive, mild, or moderately intense mood.

The "difficult children" were thus categorized by obtaining temperament scores that fell below the median in Rhythmicity, Approach/Withdrawal, Mood, and Adaptability, and scores above the median in Intensity. They were characterized by irregularity in biological functions, negative withdrawal responses to new stimuli, poor adaptability to change, and a predominately negative, intense expression of mood.

The "slow-to-warm-up children" were thus categorized by obtaining scores below the median in Approach/Withdrawal, Intensity, and Adaptability. They were characterized by a combination of negative responses of mild intensity to new stimuli with slow adaptability after repeated contact.

The data on the present sample reported more children classified in the undifferentiated category (81%), and many fewer in the easy group (5%) than in the NYLS research. In hopes of purposively gathering a sample much like the one obtained in the NYLS study, the researcher subsequently contacted various preschool teachers and a physician, asking if they had 3-year-old students or patients who could be clearly described as difficult or easy according to Thomas and Chess’ classifications. Only a few were described as possibly being easy and none as being clearly difficult. Therefore, no attempt was made to gather further data.
TABLE 8
MATERNAL PERCEPTION OF
CHILD TEMPERAMENT

<table>
<thead>
<tr>
<th>Temperament Group</th>
<th>Present Sample</th>
<th>NYLS Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage</td>
<td>Percentage</td>
</tr>
<tr>
<td>Difficult</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Easy</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Slow-to-warm-up</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>81</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Basic Data

Tables 9 through 11 summarize the possible and actual ranges, the means, the standard deviations, and the alpha coefficients of the Knowledge of Child Development Inventory, the Parent Questionnaire, and the Parenting Stress Index along with their scales and subscales.

Table 9 shows that the mean score for the mothers on the Knowledge of Child Development Inventory in this study was 45.34 with a standard deviation of 5.69 compared to the mean score of 37.85 and standard deviation of 5.98 of the normative sample. The subjects in this study appeared to know more about child development than the normative group. This could be because the normative group was younger than the mothers in this sample. The point-multiserial correlation coefficient range for items of the Knowledge of Child Development Inventory, measuring the consistency between each item and the overall scale, is presented in Appendix A, and showed that 38
out of 56 multserials were in the commonly accepted point-multiserial range of .3 to .8.

**TABLE 9**

**RANGES, MEANS, AND STANDARD DEVIATIONS OF THE KNOWLEDGE OF CHILD DEVELOPMENT INVENTORY**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Possible Range</th>
<th>Actual Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Coeff. Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normative Group</td>
<td>1-56</td>
<td>37.85</td>
<td>5.98</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>Present Sample</td>
<td>1-56</td>
<td>8-54</td>
<td>45.343</td>
<td>5.69</td>
<td>.83</td>
</tr>
</tbody>
</table>

Table 10 presents the possible and actual ranges, the means, the standard deviations, and the alpha coefficients for the Parent Questionnaire. The point-multiserial correlation coefficient ranges for items identifying the nine temperament groups in the Parent Questionnaire, measuring the consistency between each item and the overall scale, is presented in Appendix A, and showed that 67 out of 72 multserials were in the commonly accepted point-multiserial range of .3 to .8.
TABLE 10

RANGES, MEANS, AND STANDARD DEVIATIONS OF THE PARENT QUESTIONNAIRE*

<table>
<thead>
<tr>
<th>Scale/Subscale</th>
<th>Possible Range</th>
<th>Actual Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Coeff. Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>8-56</td>
<td>18-47</td>
<td>31.986</td>
<td>6.308</td>
<td>.5393</td>
</tr>
<tr>
<td>Rhythmicity</td>
<td>8-56</td>
<td>19-54</td>
<td>38.129</td>
<td>6.967</td>
<td>.5163</td>
</tr>
<tr>
<td>Adaptability</td>
<td>8-56</td>
<td>24-55</td>
<td>41.488</td>
<td>6.167</td>
<td>.4615</td>
</tr>
<tr>
<td>Approach/Withdrawal</td>
<td>8-56</td>
<td>17-56</td>
<td>35.400</td>
<td>8.681</td>
<td>.6971</td>
</tr>
<tr>
<td>Sensory threshold</td>
<td>8-56</td>
<td>10-47</td>
<td>25.157</td>
<td>7.425</td>
<td>.5832</td>
</tr>
<tr>
<td>Intensity</td>
<td>8-56</td>
<td>14-49</td>
<td>32.093</td>
<td>7.356</td>
<td>.5709</td>
</tr>
<tr>
<td>Mood</td>
<td>8-56</td>
<td>27-54</td>
<td>41.321</td>
<td>5.829</td>
<td>.4077</td>
</tr>
<tr>
<td>Distractibility</td>
<td>8-56</td>
<td>18-52</td>
<td>37.693</td>
<td>7.189</td>
<td>.6256</td>
</tr>
<tr>
<td>Persistence</td>
<td>8-56</td>
<td>19-49</td>
<td>32.471</td>
<td>5.873</td>
<td>.3415</td>
</tr>
</tbody>
</table>

*Parent Questionnaire = parental assessment of child temperament.

Table 11 presents the possible and actual ranges, the means, the standard deviations, and the alpha coefficients for the Parenting Stress Index. The point-multipleserial correlation coefficient ranges for items in the 13 stress subscales of the Parenting Stress Index, is presented in Appendix A, and showed that 98 out of 101 multiseri­als were in the commonly accepted point-multipleserial range of .3 to .8.
<table>
<thead>
<tr>
<th>Scale/Subscale</th>
<th>Possible Range</th>
<th>Actual Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Coeff. Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Domain</td>
<td>47-235</td>
<td>61-159</td>
<td>101.278</td>
<td>20.185</td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td>11-55</td>
<td>13-41</td>
<td>26.036</td>
<td>5.187</td>
<td>.6699</td>
</tr>
<tr>
<td>Acceptability</td>
<td>7-35</td>
<td>7-33</td>
<td>12.707</td>
<td>4.093</td>
<td>.7556</td>
</tr>
<tr>
<td>Demandingsness</td>
<td>9-45</td>
<td>9-36</td>
<td>18.893</td>
<td>5.371</td>
<td>.7554</td>
</tr>
<tr>
<td>Mood</td>
<td>5-25</td>
<td>5-21</td>
<td>10.343</td>
<td>0.091</td>
<td>.7281</td>
</tr>
<tr>
<td>Distractibility/Activity</td>
<td>9-45</td>
<td>10-40</td>
<td>23.093</td>
<td>5.406</td>
<td>.7515</td>
</tr>
<tr>
<td>Reinforces parent</td>
<td>6-30</td>
<td>6-22</td>
<td>10.207</td>
<td>3.365</td>
<td>.6603</td>
</tr>
<tr>
<td>Parent Domain</td>
<td>54-270</td>
<td>69-218</td>
<td>121.871</td>
<td>27.561</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>9-45</td>
<td>9-41</td>
<td>19.493</td>
<td>5.798</td>
<td>.8233</td>
</tr>
<tr>
<td>Attachment</td>
<td>7-35</td>
<td>7-24</td>
<td>12.693</td>
<td>3.572</td>
<td>.5920</td>
</tr>
<tr>
<td>Restriction of role</td>
<td>7-35</td>
<td>7-33</td>
<td>18.629</td>
<td>5.525</td>
<td>.8340</td>
</tr>
<tr>
<td>Sense of competence</td>
<td>13-65</td>
<td>14-52</td>
<td>28.129</td>
<td>6.902</td>
<td>.8061</td>
</tr>
<tr>
<td>Social isolation</td>
<td>6-30</td>
<td>6-28</td>
<td>13.136</td>
<td>4.201</td>
<td>.7836</td>
</tr>
<tr>
<td>Relationship to spouse</td>
<td>7-35</td>
<td>7-32</td>
<td>17.593</td>
<td>5.118</td>
<td>.7350</td>
</tr>
<tr>
<td>Parent health</td>
<td>5-25</td>
<td>5-24</td>
<td>12.200</td>
<td>3.414</td>
<td>.6559</td>
</tr>
<tr>
<td>Total stress</td>
<td>101-505</td>
<td>134-368</td>
<td>223.149</td>
<td>44.612</td>
<td></td>
</tr>
</tbody>
</table>
Hypotheses Testing and Discussion of the Findings

The first research question, How does parental knowledge of child development affect the stress levels of parents? led to the testing of Hypothesis One.

**Hypothesis One:** There will not be a statistically significant relationship between parental knowledge of child development and parental stress.

This hypothesis was tested on three different levels, necessitating three separate analyses, relating to the three relevant sub-hypotheses.

1a: There will not be a significant negative correlation between parental knowledge of child development and parental stress.

1b: There will not be a significant multiple correlation between parental knowledge of child development and the linear combination of the two domain scores of stress (child domain and parent domain).

1c: There will not be a significant multiple correlation between parental knowledge of child development and the 13 parent/child subscale scores of stress.

**Hypothesis One: Results**

For sub-hypothesis 1a, a zero-order correlation was obtained between the parental knowledge of child development total score and the parental total stress score. The relationship between parental knowledge of child development and parental stress was statistically significant but small (-.2313). Results suggest that the better a
parent's knowledge of child development, the less stress a parent tends to experience.

For sub-hypothesis 1b, a multiple-regression analysis was used to obtain a multiple-correlation coefficient between the parental knowledge of child development total score and the two domain scores of stress (child domain and parent domain). The regression analysis yielded a modest multiple correlation of .2328, explaining only 5.4% of the variance.

The analysis of variance for the regression analysis yielded $F = 3.924$ with 2 and 137 degrees of freedom and $p = .02201$. The standardized-regression coefficients were -.141 for the child domain and -.108 for the parent domain. Thus, to a slight extent, a reduction of stress in both child and parent domains is related to an increase of knowledge of child development.

For sub-hypothesis 1c, a stepwise-multiple-regression analysis was used to obtain a multiple-correlation coefficient between the parental knowledge of child development total score and the 13 parent/child stress subscale scores (using stepwise regression). The 13 stress sub-scale scores were entered one at a time to correlate with the knowledge of child development score. Only one step, entering the variable "Acceptability of Child to Parent," was made due to insufficient tolerance for further stepping. This variable yielded a multiple-correlation coefficient of .2379, explaining 5.7% of the variance. The standardized regression coefficient was -.238. Therefore, this hypothesis was rejected. The greater the parent's knowledge of child development, the less stress they experienced in
accepting their child—the better the child matched the parent’s “hoped-for child.”

The second research question, Do parents of temperamentally different children report different parental stress levels? led to the testing of Hypothesis Two and Three.

Hypothesis Two: There will not be a statistically significant relationship between parental perception of child temperament style and parental stress.

Hypothesis Two was tested on two separate levels, necessitating two different analyses.

2a: There will not be a significant difference among the overall mean stress scores of the four temperament groups.

2b: There will not be a significant difference among the centroids of these four groups of temperament on the 13 stress variables found within the sub-scales of the PSI.

Hypotheses Two: Results

For each of these sub-hypotheses, the children were categorized into four groups: (1) difficult, (2) easy, (3) slow-to-warm-up, and (4) unclassified. The groups were formed according to the parents’ perception of their child’s temperament identified by their Parent Questionnaire scores.

For Hypothesis 2a a one-way analysis of variance was used to compare the four groups of temperament to the parental total stress score. The group means obtained were, by groups, Difficult = 289.33; Easy = 181.43; Slow-to-warm-up = 227.57; and Unclassified = 221.67.
The analysis of variance yielded $F = 7.44$, with 3 and 136 degrees of freedom, and $p = .0001$. Thus, Hypothesis 2a was rejected. Table 12 presents the table of contrasts for Hypothesis 2a. More stress was experienced by parents with difficult children than by any other group of parents, while less stress was reported by parents with easy children than by any other group of parents. There was no significant difference reported in stress levels between mothers in the slow-to-warm-up and unclassified groups.

**TABLE 12**

**TABLE OF CONTRASTS FOR HYPOTHESIS 2A**

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Difference of Mean</th>
<th>$t$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult - Slow-to-warm-up</td>
<td>61.76</td>
<td>3.0279</td>
<td>.0029  **</td>
</tr>
<tr>
<td>Difficult - Unclassified</td>
<td>67.66</td>
<td>3.8635</td>
<td>.0002  **</td>
</tr>
<tr>
<td>Difficult - Easy</td>
<td>107.90</td>
<td>4.6397</td>
<td>&lt;.00005 **</td>
</tr>
<tr>
<td>Slow-to-warm-up - Unclassified</td>
<td>5.90</td>
<td>0.4981</td>
<td>.6192</td>
</tr>
<tr>
<td>Slow-to-warm-up - Easy</td>
<td>46.14</td>
<td>2.3845</td>
<td>.0185  **</td>
</tr>
<tr>
<td>Unclassified - Easy</td>
<td>40.24</td>
<td>2.4717</td>
<td>.0167  **</td>
</tr>
</tbody>
</table>

**Significant at the .05 level.**

Following the test of Hypothesis 2a, it was decided to compare the four temperament groups on each of the separate 13 stress variables. Table 13 gives the means of the four groups on each of the 13 stress variables. The last two columns of Table 13 give the value of the F-ratio and the probability resulting from the one-way univariate analysis of variance for each variable.
TABLE 13
MEANS, VALUE OF F, AND PROBABILITY OF THE FOUR TEMPERAMENT
GROUPS ON EACH OF THE THIRTEEN STRESS VARIABLES

<table>
<thead>
<tr>
<th>Stress Scales</th>
<th>Diff.</th>
<th>Easy</th>
<th>Warm-up</th>
<th>Unclass.</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. Distrac./Hyper.</td>
<td>25.50</td>
<td>19.57</td>
<td>22.71</td>
<td>23.23</td>
<td>1.44</td>
<td>.2348</td>
</tr>
<tr>
<td>Ch. Rein. Parent</td>
<td>13.33</td>
<td>9.00</td>
<td>10.93</td>
<td>10.03</td>
<td>2.40</td>
<td>.0702</td>
</tr>
<tr>
<td>Child Mood</td>
<td>14.50</td>
<td>6.86</td>
<td>10.50</td>
<td>10.32</td>
<td>7.47</td>
<td>.0023</td>
</tr>
<tr>
<td>Child Acceptability</td>
<td>17.67</td>
<td>9.29</td>
<td>13.14</td>
<td>12.60</td>
<td>5.01</td>
<td>.025*</td>
</tr>
<tr>
<td>Child Adaptability</td>
<td>32.67</td>
<td>19.43</td>
<td>28.57</td>
<td>25.78</td>
<td>9.51</td>
<td>&lt;.0005*</td>
</tr>
<tr>
<td>Child Demandingness</td>
<td>26.17</td>
<td>14.14</td>
<td>19.07</td>
<td>18.78</td>
<td>6.08</td>
<td>.0025*</td>
</tr>
<tr>
<td>Parent Attachment</td>
<td>16.83</td>
<td>10.14</td>
<td>12.43</td>
<td>12.66</td>
<td>4.12</td>
<td>.0078*</td>
</tr>
<tr>
<td>Parent Sense of Comp.</td>
<td>36.67</td>
<td>22.86</td>
<td>29.07</td>
<td>27.88</td>
<td>4.78</td>
<td>.034*</td>
</tr>
<tr>
<td>Par. Restrict. of Role</td>
<td>23.83</td>
<td>16.57</td>
<td>18.43</td>
<td>18.50</td>
<td>2.11</td>
<td>.1015</td>
</tr>
<tr>
<td>Parent Depression</td>
<td>26.50</td>
<td>15.57</td>
<td>18.86</td>
<td>19.44</td>
<td>4.29</td>
<td>.0063*</td>
</tr>
<tr>
<td>Par. Rel. with Spouse</td>
<td>21.17</td>
<td>12.57</td>
<td>18.48</td>
<td>17.61</td>
<td>3.50</td>
<td>.0173*</td>
</tr>
<tr>
<td>Par. Social Isolation</td>
<td>17.67</td>
<td>13.57</td>
<td>13.50</td>
<td>12.82</td>
<td>2.69</td>
<td>.0486*</td>
</tr>
<tr>
<td>Parent Health</td>
<td>16.83</td>
<td>11.86</td>
<td>11.93</td>
<td>12.01</td>
<td>4.07</td>
<td>.0084*</td>
</tr>
</tbody>
</table>

* Significant at the .05 level.

The table indicates that, on each of these variables except Social Isolation, the stress mean was highest for the group with difficult children and lowest for the group with easy children, with the other two groups lying close together in the middle. For the variable Social Isolation, the undifferentiated mean was slightly lower than that for the easy group.

The differences were not significant for the variables Child Distractability/Hyperactivity, Child Reinforces Parent, and Parent Restrictions of Role.

The significant differences among the groups are the same for variables Child Mood, Child Acceptability, and Child Demandingness as they were for the total stress means. That is the stress mean was highest for the group with difficult children and lowest for the group with easy children, with the other two groups lying close together in the middle. The significant group differences for the other variables are as follows: (1) For variable Child Adaptability—The only non-significant difference is between the difficult and the slow-to-warm-up. (2) For variables Parent Attachment, Parent Depression, and Parent Health, the difficult group mean is significantly higher than the mean of all other groups. No other difference is significant. (3) For variable Parent Sense of Competence, all the group differences are significant except for those between the unclassified group and both easy and slow-to-warm-up groups. (4) For variable Parent Relationship with Spouse, the easy group mean was significantly lower than all other means. All other group differences were non-significant. And (5) for variable Parent Social Isolation, the difficult group mean is significantly higher than both the slow-to-warm-up and unclassified groups. All other differences are not significant.

Hypothesis 2b was analyzed by using a multivariate analysis of variance in order to compare the centroids of the four temperament groups. This multivariate test takes note of the inter-correlations.
among the 13 stress variables. It yielded an approximate chi-square of 64.1 with 39 degrees of freedom and a p = .0068. Because the hypothesis was rejected, it was followed by discriminant analysis, in order to identify the variables most responsible for separating the temperament groups. The group means obtained were, by temperament groups: (1) Difficult = 24.263; (2) Easy = 11.585; (3) Slow-to-warm-up = 20.596; and (4) Unclassified = 19.354.

Table 14 presents the discriminant function weights. Six scales from the Parental Stress Index were identified as the variables most responsible for distinguishing the four groups: (1) Child Adaptability, (2) Child Mood, (3) Parent Relationship with Spouse, (4) Parent Restriction of Role, (5) Child Reinforces Parent, and (6) Parent Social Isolation.

The discriminant function indicates that, on a syndrome defined as more stress with regard to their child's adaptability, negative mood, and their relationship with spouse, and less stress with regards to parental restriction of role, child/mother reinforcement, and social isolation, the parents with difficult children were higher than those with unclassified and slow-to-warm-up children, and still higher than those with easy children.

Out of 140 subjects, 6 (4%) saw their child as difficult, 7 (5%) saw their child as easy, 14 (10%) saw their child as slow-to-warm-up, and 113 (81%) were unclassified. Only 19% rated their child in one of the three temperament constellations. This sample was unlike those groups in the NYLS (1963), the Simonds and Simonds study (1981), or the McDevitt and Carey (1978) research, who found
### TABLE 14

**DISCRIMINANT FUNCTION WEIGHTS OF THIRTEEN STRESS VARIABLES VS. FOUR TEMPERAMENT GROUPS FOR HYPOTHESIS 2B**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Weight</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Distractability/Hyper.</td>
<td>5.6870</td>
<td></td>
</tr>
<tr>
<td>Child Reinforces Parent</td>
<td>-14.2819</td>
<td>5</td>
</tr>
<tr>
<td>Child Mood</td>
<td>19.1530</td>
<td>2</td>
</tr>
<tr>
<td>Child Acceptability</td>
<td>2.5960</td>
<td></td>
</tr>
<tr>
<td>Child Adaptability</td>
<td>27.1855</td>
<td>1</td>
</tr>
<tr>
<td>Child Demandingness</td>
<td>5.8538</td>
<td></td>
</tr>
<tr>
<td>Parent Attachment</td>
<td>7.8850</td>
<td></td>
</tr>
<tr>
<td>Parent Sense of Competence</td>
<td>6.3393</td>
<td></td>
</tr>
<tr>
<td>Parent Restrictions of Role</td>
<td>-14.9030</td>
<td>4</td>
</tr>
<tr>
<td>Parent Depression</td>
<td>1.1740</td>
<td></td>
</tr>
<tr>
<td>Parent Relation. with Spouse</td>
<td>16.7955</td>
<td>3</td>
</tr>
<tr>
<td>Parent Social Isolation</td>
<td>-13.7124</td>
<td>6</td>
</tr>
<tr>
<td>Parent Health</td>
<td>-6.6750</td>
<td></td>
</tr>
</tbody>
</table>
65%, 64.3%, and 67.7%, respectively, classified in one of the three groups. No obvious reason for such a difference was apparent. The present study's sample numbered 140, a few more in number than the NYLS (1963) (N=80), a few less than the Simonds and Simonds (1981) study (N=182), and less than in the McDevitt and Carey's study (1978) (N=350). Also, the present sample was the only one which included only children all of the same age. Yet all three studies sampled from a predominately white, middle to upper class, purposive sample. Thus, it appears that the majority of children in this study were less easy, less difficult, less slow-to-warm-up, and more unclassified in temperament than in the other studies here mentioned.

The small number of children perceived by their mothers in the difficult, easy, and slow-to-warm-up temperament groups makes the analysis of Hypothesis Two questionable when generalizing to other populations. Interpretations comparing stress to the four temperament constellations should be made with this in mind.

**Hypothesis Three:** There will not be a statistically significant relationship between parental perception of child temperament traits and parental stress.

Hypothesis Three was tested on three separate levels, necessitating three sub-hypotheses and three different analyses.

3a: There will be no significant multiple correlation between the overall mean stress scores and the nine temperament traits.

3b: There will be no significant multiple correlation
between the nine temperament trait scores and each separate stress
domain scores.

3c: There will be no significant canonical correlation
between the nine traits of temperament and the 13 stress variables
found within the sub-scales of the PSI.

Hypothesis Three: Results

Hypothesis 3a

For Hypothesis 3a a stepwise-multiple-regression analysis was
used to obtain a multiple-correlation coefficient between the total
stress score and the nine temperament traits.

Table 15 presents the summary of the stepwise-regression
analysis for Hypothesis 3a. The nine temperament traits were entered
one at a time to correlate with the parental total stress score.
Four steps were taken, utilizing four of the nine temperament traits.
The analysis of variance for step 4 yielded $F = 22.88$, with 4 and 135
degrees of freedom and $p < .0005$. This hypothesis was rejected.

Table 16 shows the regression coefficients for these four
temperament traits. Two of the temperament traits, Activity and
Intensity, yielded significant positive correlations with the total
stress score. The other two traits, Adaptability and Rhythmicity,
yielded significant negative correlations with the total stress
score. The linear combination of these four variables yielded a
multiple correlation coefficient of .6356, explaining 44.40% of the
variance.

The results indicated that the lower the score in Adap-
tability, the higher the score in Intensity, the lower the score in
Rhythmicity, and the higher the score in Activity, in descending order of importance, the higher the total parental stress score.

### TABLE 15

**SUMMARY TABLE**

**STEPWISE MULTIPLE-REGRESSION ANALYSIS FOR HYPOTHESIS 3A**

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Var. Entered</th>
<th>Multiple Increase F-to-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>1</td>
<td>Adaptability</td>
<td>.5273</td>
</tr>
<tr>
<td>2</td>
<td>Intensity</td>
<td>.5951</td>
</tr>
<tr>
<td>3</td>
<td>Rhythmicity</td>
<td>.6207</td>
</tr>
<tr>
<td>4</td>
<td>Activity</td>
<td>.6356</td>
</tr>
</tbody>
</table>

### TABLE 16

**VARIABLES IN EQUATION FOR HYPOTHESIS 3A**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error of Coeff.</th>
<th>Std. Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>-25.011</td>
<td>4.175</td>
<td>-.420</td>
</tr>
<tr>
<td>Intensity</td>
<td>11.744</td>
<td>3.339</td>
<td>.242</td>
</tr>
<tr>
<td>Rhythmicity</td>
<td>-8.691</td>
<td>3.520</td>
<td>-.171</td>
</tr>
<tr>
<td>Activity</td>
<td>8.006</td>
<td>3.887</td>
<td>.141</td>
</tr>
</tbody>
</table>

**Hypothesis 3b**

For Hypothesis 3b two stepwise-multiple-regression analyses were used to obtain a multiple-correlation coefficient between the nine temperament traits and the two domain scores separately. The nine temperament traits were entered one at a time to correlate with...
both the child-domain stress score and the parent-domain stress score.

Table 17 presents the summary of the stepwise-regression analysis for the child domain and temperament traits. Four steps were taken, utilizing four of the nine temperament traits. The analysis of variance for step 4 yielded $F = 13.687$, with 4 and 135 degrees of freedom and $p < .0005$. This hypothesis was rejected.

Table 18 shows the regression coefficients for these four temperament traits. The linear combination of these four variables yielded a multiple-correlation coefficient of .6769, explaining 45.81% of the variance. The results indicate that greater stress with regard to the child domain was experienced by those mothers who perceived their children as less adaptable, more intense, more active, and having a higher sensory threshold.

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Var. Entered</th>
<th>Multiple R</th>
<th>RSQ</th>
<th>Increase in RSQ</th>
<th>F-to-Enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adaptability</td>
<td>.5529</td>
<td>.3057</td>
<td>.3057</td>
<td>60.78</td>
</tr>
<tr>
<td>2</td>
<td>Intensity</td>
<td>.6350</td>
<td>.4032</td>
<td>.0975</td>
<td>22.38</td>
</tr>
<tr>
<td>3</td>
<td>Activity</td>
<td>.6610</td>
<td>.4370</td>
<td>.0338</td>
<td>8.15</td>
</tr>
<tr>
<td>4</td>
<td>Threshold</td>
<td>.6769</td>
<td>.4581</td>
<td>.0211</td>
<td>5.27</td>
</tr>
</tbody>
</table>
TABLE 18

VARIABLES IN EQUATION FOR HYPOTHESIS 3B
TEMPERAMENT TRAITS VS. CHILD DOMAIN

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>Std. Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>-12.956</td>
<td>1.745</td>
<td>-.480</td>
</tr>
<tr>
<td>Intensity</td>
<td>6.446</td>
<td>1.745</td>
<td>.294</td>
</tr>
<tr>
<td>Activity</td>
<td>4.644</td>
<td>1.673</td>
<td>.181</td>
</tr>
<tr>
<td>Threshold</td>
<td>3.145</td>
<td>1.371</td>
<td>.146</td>
</tr>
</tbody>
</table>

Table 19 presents the summary of the stepwise-regression analysis for the parent domain and temperament traits. Three steps were taken, utilizing three of the nine temperament traits. The analysis of variance for step 3 yielded $F = 18.34$, with 3 and 136 degrees of freedom and $p < .0005$. This hypothesis was rejected.

Table 20 shows the regression coefficients for these three temperament traits. The linear combination of these three variables yielded a multiple-correlation coefficient of .5367, explaining 28.80% of the variance. The results indicate that greater stress with regard to the parent domain was experienced by those mothers who perceived their children as less adaptable, more intense in mood, and less predictable (lower the score in rhythmicity).
TABLE 19
SUMMARY TABLE STEPWISE MULTIPLE-REGRESSION ANALYSIS FOR TEMPERAMENT TRAITS VS. PARENT DOMAIN FOR HYPOTHESIS 3B

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Variable</th>
<th>Multiple R</th>
<th>Increase in RSQ</th>
<th>F-to-Enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adaptability</td>
<td>.4485</td>
<td>.2011</td>
<td>34.74</td>
</tr>
<tr>
<td>2</td>
<td>Intensity</td>
<td>.4986</td>
<td>.2487</td>
<td>8.67</td>
</tr>
<tr>
<td>3</td>
<td>Rhythmicity</td>
<td>.5367</td>
<td>.2880</td>
<td>7.52</td>
</tr>
</tbody>
</table>

TABLE 20
VARIABLES IN EQUATION FOR HYPOTHESIS 3B TEMPERAMENT TRAITS VS. PARENT DOMAIN

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error of Coeff.</th>
<th>Std. Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>-13.136</td>
<td>2.800</td>
<td>-.357</td>
</tr>
<tr>
<td>Rhythmicity</td>
<td>-6.469</td>
<td>2.359</td>
<td>-.206</td>
</tr>
<tr>
<td>Intensity</td>
<td>6.256</td>
<td>2.206</td>
<td>.209</td>
</tr>
</tbody>
</table>

Hypothesis 3c

For Hypothesis 3c, a canonical-correlation analysis was used to explore the linear combinations of the nine temperament traits and the 13 stress subscales. The canonical correlation between the two sets of variables (temperament traits and stress subscale scores) was .785, yielding a Chi-square of 297.41, with 117 degrees of freedom, and $p < .000005$. Table 21 shows the standardized coefficients of set 1 variables (nine temperament traits) and set 2 variables (the 13
TABLE 21

STANDARDIZED COEFFICIENTS OF NINE TEMPERAMENT TRAITS
AND THE THIRTEEN STRESS SUBSCALE SCORES
FOR HYPOTHESIS 3C

<table>
<thead>
<tr>
<th>Set</th>
<th>Variable</th>
<th>Standardized Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (temperament)</td>
<td>Activity</td>
<td>.613 **</td>
</tr>
<tr>
<td></td>
<td>Rhythmicity</td>
<td>-.393 **</td>
</tr>
<tr>
<td></td>
<td>Adaptability</td>
<td>-.874 **</td>
</tr>
<tr>
<td></td>
<td>Approach/Withdrawal</td>
<td>-.017</td>
</tr>
<tr>
<td></td>
<td>Sensory threshold</td>
<td>.114</td>
</tr>
<tr>
<td></td>
<td>Intensity</td>
<td>.832 **</td>
</tr>
<tr>
<td></td>
<td>Mood</td>
<td>-.431 **</td>
</tr>
<tr>
<td></td>
<td>Distractibility</td>
<td>-.643 **</td>
</tr>
<tr>
<td></td>
<td>Persistence</td>
<td>.203</td>
</tr>
<tr>
<td>2 (stress)</td>
<td>Child Distrac./Hyperactivity</td>
<td>.843 **</td>
</tr>
<tr>
<td></td>
<td>Child Reinforces Parent</td>
<td>.506 **</td>
</tr>
<tr>
<td></td>
<td>Child Mood</td>
<td>.635 **</td>
</tr>
<tr>
<td></td>
<td>Child Acceptability</td>
<td>.456 **</td>
</tr>
<tr>
<td></td>
<td>Child Adaptability</td>
<td>.616 **</td>
</tr>
<tr>
<td></td>
<td>Child Demandingness</td>
<td>.621 **</td>
</tr>
<tr>
<td></td>
<td>Parent Attachment</td>
<td>.440 **</td>
</tr>
<tr>
<td></td>
<td>Parent Sense of Competence</td>
<td>.579 **</td>
</tr>
<tr>
<td></td>
<td>Parent Restrictions of Role</td>
<td>.491 **</td>
</tr>
<tr>
<td></td>
<td>Parent Depression</td>
<td>.611 **</td>
</tr>
<tr>
<td></td>
<td>Parent Relationship with Spouse</td>
<td>.427 **</td>
</tr>
<tr>
<td></td>
<td>Parent Social Isolation</td>
<td>.508 **</td>
</tr>
<tr>
<td></td>
<td>Parent Health</td>
<td>.470 **</td>
</tr>
</tbody>
</table>

** The major coefficients considered in the significant canonical function.
stress subscales) for the canonical function. An accepted criterion is to take into consideration all variables in each set in which the standardized coefficient is about 50% or more of the highest coefficient in that set. Such coefficients are marked with double asterisks. This function indicated that the mother whose child was perceived as being less adaptable, more intense, less distractible, of positive mood, more active, and less regular tends to suffer more stress with respect to all 13 areas of parental stress in the following order of importance (the further down on the list the less important the variable was considered): (1) Child Distractibility/Hyperactivity; (2) Child Mood; (3) Child Demandingness; (4) Child Adaptability; (5) Parent Depression; (6) Parent Sense of Competence; (7) Parent Social Isolation; (8) Child Reinforces Parent; (9) Parent Restrictions of Role; (10) Parent Health; (11) Child Acceptability; (12) Parent Attachment; and (13) Parent Relationship with Spouse.

Summary of Hypothesis Three

Hypothesis Three was tested on three separate levels, using three different analyses. For Hypotheses 3a and 3b a stepwise-multiple-regression analysis was used to obtain a multiple-correlation coefficient between the total stress score and the nine temperament traits separately (for Hypothesis 3a), and between the domain stress scores and the nine temperament traits separately (for Hypothesis 3b).

Hypothesis 3a was rejected. Results indicated that the less adaptable a child, the more intense a child's reaction to things or events, and the less predictable (regular) a child, the higher the
total stress score. Hypothesis 3b was rejected. Results suggested that greater stress with regard to the child domain was experienced by those mothers who perceived their children as less adaptable, more intense, more active, and having a higher sensory threshold. With regard to the parent domain, greater stress was experienced by those mothers who perceived their children as less adaptable, more intense in expression, less predictable (less rhythmicity), and high in threshold of responsiveness.

Hypothesis 3c was tested by using a canonical correlation analysis to explore the linear combinations of the nine temperament traits and the 13 stress subscales. Hypothesis 3c was rejected. Results suggest that mothers whose child was perceived as being less adaptable, more intense, less distractible, of positive mood, more active, and less regular tended to suffer more stress with respect to all 13 areas of parent stress.

The third research question, How do the three variables, parental stress, parental knowledge of child development, and perceived child's temperament relate and interact with each other? led to Hypotheses Four and Five:

Hypothesis Four: There will not be a significant multiple correlation between total parental-stress scores and a linear combination of parental knowledge of child development and child temperament.

Hypothesis Four: Results

A stepwise-regression analysis was used to obtain a multiple-correlation coefficient between the total stress scores and the total...
of parental-knowledge-of-child-development score and the nine temper-
ament scales. This was similar to sub-hypothesis 3a, except that the
variable, knowledge-of-child-development, was added. Table 22
presents the summary of the stepwise-regression analysis which was
similar to the results of sub-hypothesis 3a. Four steps were taken,
utilizing four out of the nine temperament traits. The analysis of
variance for step 4 yielded $F = 22.88$, with 4 and 135 degrees of
freedom and $p < .0005$. The hypothesis was rejected.

Table 23 shows the regression coefficients for these four
temperament traits. The linear combination of these four variables
yielded a multiple correlation of .6356, explaining 44.40% of the
variance. The results indicated that greater stress is related to
less adaptability, greater intensity, less predictability, and more
activity.

**TABLE 22**

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Variable</th>
<th>Multiple</th>
<th>Increase RSQ</th>
<th>F-to-Enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adaptability</td>
<td>.5273</td>
<td>.2780</td>
<td>53.14</td>
</tr>
<tr>
<td>2</td>
<td>Intensity</td>
<td>.5951</td>
<td>.3542</td>
<td>16.15</td>
</tr>
<tr>
<td>3</td>
<td>Rhythmicity</td>
<td>.6207</td>
<td>.3853</td>
<td>6.89</td>
</tr>
<tr>
<td>4</td>
<td>Activity</td>
<td>.6356</td>
<td>.4040</td>
<td>4.24</td>
</tr>
</tbody>
</table>

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TABLE 23
VARIABLES IN EQUATION FOR HYPOTHESIS 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error of Coeff.</th>
<th>Std. Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>-25.011</td>
<td>4.175</td>
<td>-.420</td>
</tr>
<tr>
<td>Intensity</td>
<td>11.744</td>
<td>3.339</td>
<td>.242</td>
</tr>
<tr>
<td>Rhythmicity</td>
<td>-8.691</td>
<td>3.520</td>
<td>-.171</td>
</tr>
<tr>
<td>Activity</td>
<td>8.006</td>
<td>3.887</td>
<td>.141</td>
</tr>
</tbody>
</table>

Hypothesis Five: There will not be a significant correlation between a linear combination of the 13 stress sub-scale scores and a linear combination of the total Parent Knowledge of Child Development score and the nine temperament scores.

Hypothesis Five: Results

A canonical-correlation analysis was used to explore the linear combinations of the 13 stress subscales, parental knowledge of child development, and the nine temperament trait. This resulted in a significant correlation of .78, yielding a Chi-square of 322.49, with 130 degrees of freedom, and p < .00005. Table 24 shows the standardized coefficients of set one (Parental knowledge of child development and 9 temperament traits), and set 2 variables (the 13 stress-subscale scores) for the canonical function. An accepted criterion is to take into consideration all variables in each set in which the standardized coefficient is about 50% or more of the highest coefficient in that set. Such coefficients are marked with double asterisks. Results showed that the mother who perceives her...
child as less adaptable, more intense, more active, more likely to withdraw from a new stimulus, and who has less knowledge of child development tended to experience more stress due to her child's distractibility/activity and experiences the parental role as something restricting and frustrating.

**TABLE 24**

STANDARDIZED COEFFICIENTS FOR HYPOTHESIS 5

<table>
<thead>
<tr>
<th>Set</th>
<th>Variable</th>
<th>Stand. Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (knowledge)</td>
<td>Knowledge of child development</td>
<td>-.285 **</td>
</tr>
<tr>
<td>(temperament)</td>
<td>Activity</td>
<td>.309 **</td>
</tr>
<tr>
<td></td>
<td>Rhythmicity (Regular)</td>
<td>-.092</td>
</tr>
<tr>
<td></td>
<td>Adaptability</td>
<td>-.396 **</td>
</tr>
<tr>
<td></td>
<td>Approach/Withdrawal</td>
<td>.183 **</td>
</tr>
<tr>
<td></td>
<td>Sensory threshold</td>
<td>.119</td>
</tr>
<tr>
<td></td>
<td>Intensity</td>
<td>.383 **</td>
</tr>
<tr>
<td></td>
<td>Mood</td>
<td>-.055</td>
</tr>
<tr>
<td></td>
<td>Distractibility</td>
<td>-.051</td>
</tr>
<tr>
<td></td>
<td>Persistence</td>
<td>.033</td>
</tr>
<tr>
<td>2 (stress)</td>
<td>Child Distractability/Hyperactivity</td>
<td>4.088 **</td>
</tr>
<tr>
<td></td>
<td>Child Reinforces Parent</td>
<td>-.980</td>
</tr>
<tr>
<td></td>
<td>Child Mood</td>
<td>1.094</td>
</tr>
<tr>
<td></td>
<td>Child Acceptability</td>
<td>.203</td>
</tr>
<tr>
<td></td>
<td>Child Adaptability</td>
<td>1.171</td>
</tr>
<tr>
<td></td>
<td>Child Demandingness</td>
<td>.652</td>
</tr>
<tr>
<td></td>
<td>Parent Attachment</td>
<td>-1.113</td>
</tr>
<tr>
<td></td>
<td>Parent Sense of Competence</td>
<td>-.478</td>
</tr>
<tr>
<td></td>
<td>Parent Restrictions of Role</td>
<td>2.342 **</td>
</tr>
<tr>
<td></td>
<td>Parent Depression</td>
<td>-.023</td>
</tr>
<tr>
<td></td>
<td>Parent Relationship with Spouse</td>
<td>-.771</td>
</tr>
<tr>
<td></td>
<td>Parent Social Isolation</td>
<td>.721</td>
</tr>
<tr>
<td></td>
<td>Parent Health</td>
<td>-.249</td>
</tr>
</tbody>
</table>

** The major coefficients considered in the significant canonical function.
The fourth research question, Do parents who have different demographic characteristics experience lesser or greater parenting stress levels? led to Hypotheses Six, Seven, Eight, and Nine.

**Hypothesis Six:** There will not be a statistically significant relationship between parental age and parental stress.

Hypothesis Six was tested on two separate levels, necessitating two different analyses for the following two sub-hypotheses.

6a: There will be no significant differences among the overall mean stress scores of the three different age groups specified.

6b: There will be no significant difference among the centroids of the three age groups on the 13 stress variables found within the sub-scales of the PSI.

**Hypothesis 6: Results**

For hypothesis 6a, a one-way analysis of variance was used to compare the three age groups ([1] 23-25 years old, [2] 26-30 years old, and [3] 31 years old or over) with respect to the parental total stress score. The F value obtained (1.8216) proved not to be significant at the .05 level. The hypothesis was not rejected. Age did not prove to be a factor affecting significantly the overall parental stress score.

Hypothesis 6b was analyzed by using a Multivariate Analysis of Variance in order to compare the centroids of the three age groups. The analysis yielded an approximate chi-square of 32.15 with 26 degrees of freedom and p = .19. It was not followed by
discriminant analysis since the hypothesis was not rejected. There was no significant difference between age groups with respect to the stress experienced in the 13 stress areas.

**Hypothesis Seven:** There will not be a statistically significant relationship between parent's work history and parental stress.

Hypothesis Seven was tested on two separate levels, necessitating two different analyses for the two sub-hypotheses stated below.

7a: There will be no significant differences among the overall mean stress scores of the three different groups of parental work histories specified.

7b: There will be no significant difference among the centroids of the three divisions of parent's work history on the 13 stress variables found within the sub-scales of the PSI.

**Hypothesis Seven: Results**

For hypothesis 7a, a one-way analysis of variance was used to compare the three groups of parental work history ([1] always worked outside of the home, [2] worked some of the time outside of the home, and [3] never worked outside of the home) to the parental total stress score. The F value obtained (.2594) proved to be not significant at the .05 level. The hypothesis was not rejected.

Parental work history did not prove to be a factor affecting significantly the overall parental stress score.

Hypothesis 7b was analyzed by using a Multivariate Analysis of Variance in order to compare the centroids of the three parental
work history groups. The analysis yielded an approximate chi-square of 27.02 with 26 degrees of freedom and a p = .41. It was not followed by discriminant analysis since the hypothesis was not rejected. The scales from the Parental Stress Index were not responsible for distinguishing the three groups.

**Hypothesis Eight:** There will not be a statistically significant relationship between parent's socio-economic level and parental stress.

Hypothesis Eight was tested on two separate levels, necessitating two different analyses for the two sub-hypotheses stated below.

8a: There will be no significant differences among the overall mean stress scores of the three different socio-economic levels specified.

8b: There will be no significant difference among the centroids of the three socio-economic groups on the 13 stress variables found within the sub-scales of the PSI.

**Hypothesis Eight: Results**

For hypothesis 8a, a one-way analysis of variance was used to compare the three socio-economic groups ( [1] Low = $10,000 or less a year, [2] middle = $10,000 to $20,000 a year, and [3] high = more than $20,000 a year) to the parental total stress score. The F value obtained (1.5994) proved not to be significant at the .05 level. The hypothesis was not rejected. Socio-economic level did not prove to
be a factor significantly affecting the overall parental stress score.

Hypothesis 8b was analyzed by using a Multivariate Analysis of Variance in order to compare the centroids of the three socio-economic groups. It yielded an approximate chi-square of 39.6 with 26 degrees of freedom and a $p = .04$. Because the hypothesis was rejected, it was followed by discriminant analysis, in order to identify the variables most responsible for separating the income groups. The group means obtained were, by income groups: (1) Low = -.262; (2) Middle = 4.365; and (3) High = -.631.

Table 25 presents the discriminant function weights. Five scales from the Parental Stress Index were identified as the variables most responsible for distinguishing the three groups: (1) Parent’s Sense of Competence, (2) Relationship with Spouse, (3) Child Reinforces Parent, (4) Parent Depression, and (5) Child Distractibility/Activity.

Data show that compared to the higher- and lower-income parents, the middle-income parents experience more doubts as to their parental sense of competence, better relationships with their spouses, experience more child/mother good and positive reinforcement, more depression, and tend to see their children as having more ability to adapt.


**TABLE 25**

**DISCRIMINANT FUNCTION WEIGHTS OF THIRTEEN STRESS VARIABLES VS. THREE SOCIO-ECONOMIC GROUPS**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Weight</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Distractability/Hyper.</td>
<td>-13.1548</td>
<td>5</td>
</tr>
<tr>
<td>Child Reinforces Parent</td>
<td>-26.2279</td>
<td>3</td>
</tr>
<tr>
<td>Child Mood</td>
<td>.8802</td>
<td></td>
</tr>
<tr>
<td>Child Acceptability</td>
<td>-7.7116</td>
<td></td>
</tr>
<tr>
<td>Child Adaptability</td>
<td>9.0883</td>
<td></td>
</tr>
<tr>
<td>Child Demandingness</td>
<td>8.4806</td>
<td></td>
</tr>
<tr>
<td>Parent Attachment</td>
<td>5.3802</td>
<td></td>
</tr>
<tr>
<td>Parent Sense of Competence</td>
<td>31.0142</td>
<td>1</td>
</tr>
<tr>
<td>Parent Restrictions of Role</td>
<td>2.5648</td>
<td></td>
</tr>
<tr>
<td>Parent Depression</td>
<td>14.7489</td>
<td>4</td>
</tr>
<tr>
<td>Parent Relation, with Spouse</td>
<td>-28.4901</td>
<td>2</td>
</tr>
<tr>
<td>Parent Social Isolation</td>
<td>1.1290</td>
<td></td>
</tr>
<tr>
<td>Parent Health</td>
<td>.8001</td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis Nine:** There will not be a significant multiple correlation between total stress scores and a linear combination of age, work history, and socio-economic status of the parents.

**Hypothesis Nine: Results**

A multiple-regression analysis was used to obtain a multiple-correlation coefficient between total stress scores and the three demographic variables of age, work history, and socio-economic status of the parents. With an insignificant F of 1.148, and 3 and 136 degrees of freedom, and a p = .3323, the hypothesis was not rejected at the .05 level. There was not a significant relationship between the total parental stress scores and a parent's age, work history, or socio-economic level.
Chapter 4 has presented an analysis of data obtained from 140 mothers selected from populations of mothers living in the Berrien County (Michigan) and the San Joaquin County (California) areas. Various demographic characteristics of the sample were first presented, followed by the basic data from the study. Last, the statistical tools and the results from the tests of the nine hypotheses were presented. Eleven of the 17 hypotheses/sub-hypotheses were rejected.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents a summary of the study, discussion and implications of the findings, and recommendations for further research. The summary briefly describes the problem statement, review of literature, the purpose of the study, methodology, and findings. Based on the findings, the conclusions and recommendations are given.

Summary

Statement of the Problem

Despite current awareness that temperament of children has been related to behavior disorders and parental frustration (Cameron, 1977; Thomas et al, 1963, 1968, 1977), and that lack of knowledge of child development has led to unrealistic expectations and parental stress (Bromowich, 1976; DeLissovoy, 1973; Rickard, Graziano, & Forehand, 1984), the literature appeared to be lacking in definitive information regarding the relationship between (1) parental stress, (2) child temperament, and (3) parental knowledge of child development.
Overview of Related Literature

Work on life events, stress, and parenting has shown that the arrival of the first child may lead to one of the most significant stressful life events experienced by an individual (Belsky, Spanier, & Rovine, 1983; Jacoby, 1969; McCubbin, Joy, Cauble, Comeau, Patterson, & Needle, 1980; Roberts, 1983; Rossi, 1968; Russell, 1974; Weinberg & Richardson, 1981). Parenting is stressful because most adults are not prepared to assume the task of parenting (Brazelton, 1976; Brooks, 1981; DeRosis, 1970; Dyer, 1963; Hobbs, 1965, 1968; LeMasters, 1957, 1974; LeMasters & DeFrain, 1983; Miller & Sollie, 1980; Rossi, 1968; Wolfensberger & Kurtz, 1971). Studies that compare mothers and fathers show that stress experienced by the mother is generally greater (Entwisle & Doering, 1981; Harriman, 1983; Hobbs & Cole, 1976; Hobbs & Wimbish, 1977; Miller & Sollie, 1980; Roberts, 1983; Russell, 1974; Steffensmeier, 1982; Wilkie & Ames, 1986). Maternal role satisfaction is suggested to be an important element when looking at parent-child relationships (Baruch, 1972; Lerner & Galambos, 1985). Chamberlin (1974) and Curran (1985) found that many parental concerns and conflicts were clearly related to misinterpretation of typical stage-related behaviors. This lack of understanding could lead to unhealthy parent-child relations (Bronson, 1974; Field, Widmayer, Stringer, & Ignatoff, 1980). DeLissovoy (1973) suggested that it was the lack of knowledge of child development, leading to unrealistic expectations of child development, that caused the adolescent parents in his study to experience severe frustrations as parents. The parents did not have the tolerance to accept
behavior that was actually age appropriate for their children. Field, Widmayer, Stringer, and Ignatoff (1980) demonstrated that a lack of understanding of children's developmental norms often led parents to form inappropriate expectations for their children, and thus led to unhealthy parent-child relationships. Although it appears that adults' knowledge of and appropriate expectations for a child's competencies greatly facilitate parenting (Gullo, Bersani, & Conlin, 1987), research on how much parents know about child development is scarce (Rickard, Graziano, & Forehand, 1984).

Recent research on children's temperament has done much to relieve mothers of the inappropriate burden of guilt they had previously suffered (Thomas, Chess, & Birch, 1968; Thomas, Chess, & Korn, 1982). Since Thomas, Chess, Birch, Hertzig, & Korn (1963) conducted their study on temperament (the New York Longitudinal Study, NYLS), increasing interest has been evident in the role a child's temperament plays within the parent-child relationship. The data from the NYLS yielded nine dimensions of temperament: (1) Activity Level, (2) Rhythmicity, (3) Approach-Withdrawal, (4) Adaptability, (5) Intensity of Reaction, (6) Threshold of Responsiveness, (7) Quality of Mood, (8) Distractibility, and (9) Attention Span and Persistence. The three distinct constellations identified were: (1) "easy children," (2) "difficult children," and (3) "slow-to-warm-up children." The NYLS study suggested that behavioral disturbance usually resulted when the standards, demands, and expectations of parents, peers, or teachers were excessive for an individual child. It was the environmental influences that interacted with a given temperament pattern to
produce a pathogenic or positive personality in the child (Thorpe, 1985). Several studies on the effects of a child's temperament on the transition to parenthood showed that the child's temperament appeared to have an important mediating effect on the parents' adjustment to parenthood (Dickie & Gerber, 1980; Gerson, 1973; Lerner & Busch-Rossnagel, 1981). More research has demonstrated a significant relationship between particular temperament constellations in children, increased incidence of behavioral problems and family stress (Barron & Earls, 1984; Billman & McDevitt, 1980; Buss & Plomin, 1975; Carey, 1974; Graham et al., 1973; Himmelfarb, Hock, & Wenar, 1985; Maurer, Cadoret, & Cain, 1980; Milliones, 1978; Rutter, Birch, Thomas, & Chess, 1964).

Purpose of the Study

The purpose of this study was to ascertain if there was any relationship between parental knowledge of child development, perceived child's temperament, and the stress experienced by parents of normally growing children.

Methodology

The survey approach to research was used. Being a correlational study, data were collected on three variables: (1) parental perception of child temperament, (2) parental knowledge of child development, and (3) parental stress.
Sample

The subjects in this study were mothers within the Berrien County (Michigan) and the San Joaquin (California) area. They were selected from populations of pediatrician offices, day-care centers, preschools, and churches. The mothers were chosen because they met the following criteria: (1) were the primary caretaker of a child between the ages of 36 and 47 months, (2) spoke and understood English, (3) were at least 23 years of age, (4) agreed to participate in the study, and (5) neither mother nor child required any type of regular support services or were receiving inpatient or outpatient medical, emotional, or physical treatment for on-going major illness. The final sample consisted of 140 mothers.

Instrumentation

The Parent Questionnaire, developed by Thomas et al. (1963, 1968) was used to measure parental perception of their child temperament. The Knowledge of Child Development Inventory, developed by Larsen and Juhasz (1986), was used to assess maternal knowledge of child development, and Abidin's (1983) Parenting Stress Index (PSI) measured maternal stress. The Family Information Data Sheet, designed by the researcher, was used to obtain specific demographic information about the parents participating in the study.

Analysis of Data

The first research question, "How does parental knowledge of child development affect the stress levels of parents?" led to the testing of Hypothesis One. The second research question, "Do parents
of temperamentally different children report different parental stress levels?" led to the testing of Hypotheses Two and Three. The third research question, "How do the three variables, parental stress, parental knowledge of child development, and perceived child temperament, relate and interact with each other?" led to the testing of Hypotheses Four and Five, and the fourth research question, "Do parents who have different demographic characteristics experience lesser or greater parenting stress levels?" led to Hypotheses Six, Seven, Eight, and Nine. Eleven out of the 17 hypotheses/sub-hypotheses were rejected.

Hypothesis One was tested on three different levels: (1) for sub-hypothesis 1a, a zero-order correlation was performed; (2) for sub-hypothesis 1b, a multiple-regression analysis was performed; and (3) for sub-hypothesis 1c, a stepwise-multiple regression was performed. All three were rejected.

Hypothesis Two was tested on two separate levels: (1) for sub-hypothesis 2a, a one-way univariate analysis of variance was performed; and (2) for hypothesis 2b, a multivariate analysis of variance was performed. Both were rejected.

Hypothesis Three was tested on three separate levels: (1) for sub-hypotheses 3a and 3b, a multiple-regression analysis, using stepwise regression, was performed; (2) for sub-hypothesis 3c, a canonical-correlation analysis was performed. All three were rejected.
For Hypothesis Four, a stepwise-regression analysis was performed and the hypothesis was rejected. Hypothesis Five was tested by using a canonical-coefficient correlation, and was likewise rejected.

Hypotheses Six, Seven, and Eight were tested on two levels: (1) first by using a one-way analysis of variance, and (2) by performing a multivariate-analysis of variance. Hypotheses 6, 7, and 8a were retained. Only sub-hypothesis 8b was rejected. For Hypothesis Nine, a multiple-regression analysis was performed and it was retained.

Findings and Discussion

The findings of this study are summarized by considering each of the nine null hypotheses which were tested.

Hypothesis One

There will not be a statistically significant relationship between the parental stress scores and the parental knowledge score on child development.

1a: There will not be a significant negative correlation between parental knowledge of child development and parental stress.

1b: There will not be a significant multiple correlation between parental knowledge of child development and the linear combination of the two domain scores of stress (child domain and parent domain).
There will not be a significant multiple correlation between parental knowledge of child development and each of the 13 parent/child subscale scores of stress.

This hypothesis was tested on three different levels, necessitating three separate analyses, along with the three relevant sub-hypotheses.

For sub-hypothesis 1a, a zero-order correlation was performed. The hypothesis was rejected. The relationship between parental knowledge of child development and parental stress was statistically significant but small (r = -0.2313). Results suggest that better parental knowledge of child development is slightly related to less parental stress. Knowledge of child development accounted for 5% of the variance.

For sub-hypothesis 1b, a multiple-regression analysis was performed. This hypothesis was rejected, yielding a p = 0.02. Results suggested that the better a parent's knowledge of child development, the less stress the parent will tend to experience in the child domain and in the parent domain. Knowledge of child development accounted for 5.4% of the variance.

For sub-hypothesis 1c, a multiple-regression analysis was performed. This hypothesis was rejected with a multiple-correlation coefficient of 0.2379. The greater the parent's knowledge of child development, the more acceptable she tended to view her child. Knowledge of child development accounted for 5.7% of the variance.
Discussion

First, the results of this study suggest that better knowledge of child development modestly contributes to less parental stress, in general. Parental knowledge of child development slightly benefits parent-child systems by possibly decreasing the overall stress a mother might feel toward certain characteristics of her child, as well as the various dimensions of her functioning as a parent. Knowing more about child development helps parents understand how children develop and what factors enhance or interfere with their development (Braga & Braga, 1975; Gullow et al., 1987; Levenson et al., 1978). Knowledge of child development possibly helps parents feel more adequate in their parenting role and not blame themselves for age-appropriate behaviors.

Second, the variable "Acceptability of Child to Parent" was found to be statistically significant. The more a parent knows about child development, the more acceptable her child is to her. Understanding which behavior is appropriate at each developmental stage possibly assures parents that their child is developing well and helps them react to annoying behavior more acceptably—as something due to necessary development that will be outgrown eventually. This research did not support the findings of Chamberlin and Szumowski (1980) and Owings (1931) which suggested that knowledge of child development either did not seem to make child-rearing easier or did not appear to make a change in parental attitude.
Hypothesis Two

There will not be a statistically significant relationship between parental perception of child temperament style and parental stress.

2a: There will be no significant difference among the overall mean stress scores of the four temperament groups.

2b: There will be no significant difference among the centroids of these four groups of temperament on the 13 stress variables found within the sub-scales of the PSI.

This hypothesis was tested on two different levels, necessitating two separate analyses, along with the two relevant sub-hypotheses.

For sub-hypothesis 2a, a one-way analysis of variance was used to compare the four temperament groups to the parental total stress score. The hypothesis was rejected, yielding a $p = .0001$. Results report that the most stress is experienced by parents with difficult children, while the least stress is experienced by parents with easy children. There was little difference in reported stress levels between mothers in the slow-to-warm-up and unclassified groups.

Following the test of Hypothesis 2a, it was decided to compare the four temperament groups on each of the separate 13 stress variables by performing a one-way univariate analysis of variance for each stress variable. Significant differences of the four groups were found in 10 of the 13 stress variables, and in all variables, except Social Isolation, the stress mean was highest for the group
with difficult children and lowest for the group with easy children. The slow-to-warm-up and unclassified groups lay close together in the middle. For variable Social Isolation, the undifferentiated mean was slightly lower than that for the easy group.

For sub-hypothesis 2b, a multivariate-analysis of variance was used in order to compare the centroids of the four temperament groups. The hypothesis was rejected, yielding a $p = .0068$. Because the hypothesis was rejected, it was followed by discriminant analysis, in order to identify the variables most responsible for separating the temperament groups. Data showed that parents with difficult children, when compared to the unclassified, slow-to-warm up, and easy temperament groups, tend to experience a syndrome defined as more stress with regard to their child's adaptability, child's negative mood, and relationship with spouse and less feelings of being restricted in their parenting role, better child/mother reinforcement, and less parental social isolation than the other three groups.

Discussion

First this study suggests that mothers who report their children to be difficult (poor in adaptability, high intensity, predominant negative mood, withdrawal to new stimuli, and unpredictable) experience the greatest overall stress than any other group of parents, while the group with easy children experience the least overall stress than any other group. The mothers in the difficult group also experience greater stress in 10 of the 13 stress areas, than any other group. These 10 areas are: (1) child's mood, (2) child
acceptance, (3) child adaptability, (4) child demandingness, (5) parental attachment, (6) mother's sense of competence as a parent, (7) maternal depression, (8) mother's relationship with spouse, (9) parental social isolation, and (10) parental health. Of these 10 areas, all but one (Social Isolation), are areas which parents with easy children experience less stress than any other group. Differences among the four groups were not significant for the variables Child Distr actability/Hyperactivity, Child Reinforces Parent, and Parent Restrictions of Role.

Webster-Stratton and Eyberg (1982) suggested that children with a more difficult temperament demanded a lot from their mothers. Their poor adaptability, negative mood, and high intensity possibly create power struggles between parent and child that would not exist with a child of easy temperament (Turecki & Tonner, 1985). The traits of a difficult child apparently complicate most areas of parenting. Sirignano and Lachman (1985) likewise reported that parents of children perceived as having an easier temperament generally experienced more positive experiences when compared to parents of children perceived to be more difficult.

Second, taking note of the inter-correlations among the 13 stress variables, the study suggests that parents with children of difficult temperament, when compared to the other three temperament groups are more likely to be high on a syndrome defined as experiencing more stress with regard to their child's adaptability, negative mood, and their relationship with spouse, and less stress with regards to parental restriction of role, child/mother reinforcement,
and social isolation. This means parents with difficult children tended to experience a syndrome defined as more stress in: (1) Child Adaptability—parenting is more difficult because of the child's inability to adjust to changes in the environment. Their tendency to overreact to changes in routines or environment is particularly stressful; (2) Child Mood—parenting is more stressful due to the child showing evidence of unhappiness and being of negative mood. A crying, fretful child shows evidence of dysfunction, and possibly creates further worry for the parents; and (3) Parent Relationship with Spouse—mothers of difficult children also reported poorer relationships with their spouses than the other three groups. At the same time less stress was experienced in three areas: (1) Parent Restriction of Role—the mothers reported feeling less restricted in their roles of parenting. They appeared to feel less controlled and dominated by their children's demands and needs; (2) Child Reinforces Parent—mothers also reported experiencing better mother/child interaction and reinforcement. A potential explanation might be related to the poor relationship the mother has with her spouse—either (a) because of her poor relationship with spouse she directs all her attention and energy onto her child, or (b) because her child is difficult she feels the need to dedicate her time to "helping him/her," possibly even to the expense of her marriage; and (3) Parent Social Isolation—mothers experienced less social isolation from peers, relatives, and other emotional support groups. Possibly the challenge of having a difficult child has led these mothers to seek advice, support, and friendship in other mothers or relatives--
creating a good support network around themselves. Other research (Entwisle & Doering, 1981; Forehand, Brody, & Smith, 1986; Ventura & Stevenson, 1986) reported that mothers who were experiencing marital dissatisfaction and a high level of child disruptive behaviour, saw their children as more difficult. Further studies are needed to determine if one causes the other.

It should be noted that the small number of children perceived by their mothers in the difficult (4%), easy (7%), and slow-to-warm-up (10%) temperament groups, as compared to the NYLS with 10% difficult, 40% easy, and 15% slow-to-warm-up, made the analysis of Hypothesis Two questionable when generalizing for other populations. It should also be noted that the median used to distinguish the various temperament groups, is the median of this population under study. This of course would differ from the medians of other studies, of other populations, making a comparison quite difficult and possibly inaccurate. Interpretations comparing stress to the four groups of temperament should be made with this in mind.

**Hypothesis Three:**

There will not be a statistically significant relationship between parental perception of child temperament traits and parental stress.

3a: There will be no significant multiple correlation between the overall mean stress scores of the nine temperament traits.

3b: There will be no significant multiple correlation
between the nine temperament trait scores and each separate stress
domain scores.

3c: There will be no significant canonical correlation
between the nine traits of temperament and the 13 stress variables
found within the sub-scales of the PSI.

Hypothesis Three was then tested on three separate levels,
necessitating three different analyses. For Hypotheses 3a and 3b, a
stepwise-regression analysis was used to obtain a multiple-
correlation coefficient between the total stress score and the nine
temperament traits separately (for Hypothesis 3a), and between the
domain stress scores and the nine temperament traits separately (for
Hypothesis 3b).

Hypothesis 3a was rejected yielding a p < .0005. Results
indicate that the less adaptable a child, the more intense a child’s
reaction to things or events, the less predictable (rhythmic) a
child, and the more active a child, the higher the total stress
score. These four temperament traits explained 44.40% of the
variance.

Hypothesis 3b was rejected, yielding a p < .0005. Results
suggest that greater stress with regard to the child domain was
experienced by those mothers who perceived their children as less
adaptable, more intense, more active, and having a higher threshold
of responsiveness, in descending order of importance. These four
temperament traits explain 45.81% of the variance, pointing to a sig-
nificant relationship between them and the child domain stress.
With regard to the parent domain, greater stress was experienced by those mothers who perceived their children as less adaptable, more intense in their reaction to daily happenings, and less predictable (less rhythmicity), in descending order of importance. These three temperament traits explained 28.80% of the variance in the parent domain stress.

Hypothesis 3c was tested by using a canonical-correlation analysis to explore the linear combinations of the nine temperament traits and the 13 stress subscales. Hypothesis 3c was rejected, resulting in a canonical correlation of .785. Results suggest that mothers whose child was perceived as being less adaptable, more intense, less distractible, of positive mood, more active, and less regular tended to suffer more stress with respect to all 13 areas of parent stress.

Discussion

First, this study suggests that mothers with a child who finds it hard to adapt to new or altered situations experience more overall stress, as well as more stress in the specific child and parent domains. Second, children who are more intense in their reaction (who respond with great energy) tend to produce higher overall parental stress levels, as well as higher stress levels in the child and parent domain. This is supported by other research which has found that high levels of disruptive behaviour (loud screaming, crying, intense interrupting, etc.) are stressful for parents (Entwisle & Doering, 1981; Forehand, Brody, & Smith, 1986; Ventura & Stevenson, 1986).
Third, children low in rhythmicity (less predictable sleep-wake cycles, hunger cycles, feeding patterns, and elimination schedules) appeared to increase overall parental stress, and stress in the parent domain. This was supported by other research (Sirignano & Lachman, 1985). Low rhythmicity causing more stress in the parent domain suggests that parents may tend to blame their child's irregularity on their inadequate parenting.

Fourth, two temperament characteristics were found to affect parental stress levels in the child domain alone: high Activity and high Threshold of Responsiveness. High activity levels associated with greater stress is supported by other research findings (Webster-Stratton & Eyberg, 1982; Buss, 1981). These children tend to be active every moment of the day, some even kicking and turning in their sleep. Keeping up with an active child can be frustrating and tiring to most parents.

High Threshold of Responsiveness means a child is not easily bothered by sensory stimuli, environmental objects, or social contacts. This would appear to lessen parental stress. Thomas and Chess (1977) and Turecki and Tonner (1985) suggest that low Threshold of Responsiveness causes a child to be more difficult. However, this research suggests that a high Threshold of Responsiveness might be equally stressful for parents. In practical life, a child who is not easily bothered by sensory stimuli, for example, might be too engrossed with his/her own activity to respond to social cues. A parent may need to call a child to supper many times before the child responds. Waking up in the morning might be very difficult, causing
parents to be late for work, or children late for school. These children might easily engage in loud activities (a noisy toy, for example) for longer periods of time, since loud noises do not bother them as much.

Fifth, results suggest that mothers whose children were perceived as being less adaptable, more intense, less distractible, happier in mood, more active, and less rhythmic (regular) (in descending order of importance) tended to suffer more stress with respect to all 13 variables of parental stress. These six of nine temperament traits significantly affected the stress level in all the dimensions of the parent-child system, with low Adaptability and high Intensity being the two most powerful temperament traits of the six. Other research findings also found Adaptability and Intensity as being the two most powerful temperament traits (Cameron, 1977; Earls & Jung, 1987).

Turecki and Tonner (1985) suggest that children who adapt poorly, are intense in their expression, irregular, more active, of negative mood, and very distractible are more difficult to deal with. The present study found that this was true in all but two areas: mood and distractibility. A child who was happier in mood and less distractible was found to be more stressful to parents in the present sample. Possibly the child who intensely shows his/her friendliness and actively displays it can be seen as someone quite annoying and disruptive as well. These children would be the ones who might overdo a good thing. Intensity might be the real issue when paired with either positive or negative quality of mood.
Being less distractible can have its problems, too. A parent who has a child who is less distractible finds it difficult, for example, to dissuade a child from engaging in unacceptable or dangerous activity. The child is not easily distracted from his/her task—which might not always be good.

Hypothesis Four

There will not be a statistically significant multiple correlation between the total parental-stress scores and a linear combination of parental-knowledge-of-child-development scores and child temperament.

For Hypothesis Four, a multiple-regression analysis was used and the hypothesis was rejected, yielding a p < .0005. Results suggest that greater parental stress is related to temperament that displays less adaptability, greater intensity, more predictability (rhythmicity), and more activity.

Discussion

The correlation between the total stress score and the two total scores of parent knowledge of child development and child temperament suggest that greater parental stress is related to the following four temperament traits: (1) less adaptability, (2) greater intensity, (3) less rhythmicity (predictability), and (4) more activity. These results replicated the results for the revised hypothesis 2a. Knowledge of child development was added in this hypothesis but did not correlate when in company of the temperament traits.
Hypothesis Five

There will not be a significant correlation between a linear combination of the 13 stress sub-scale scores and a linear combination of the total parent-knowledge-of-child-development score and the nine temperament scores obtained from the Parent Questionnaire.

A canonical-correlation analysis was used to test this hypothesis. The hypothesis was rejected, resulting in a canonical correlation of .78. Results report that the mother who perceives her child as less adaptable, more intense, more active, more likely to withdraw from a new stimulus, and who has less knowledge of child development (in descending order of importance) tends to experience more stress due to her child's distractibility/activity (child domain stressor) and experienced the parental role as something restricting and frustrating (parent domain stressor).

Discussion

Results suggest that a mother will tend to experience more stress particularly with the child's-distractibility/activity variable and with the parent-restrictions-of-role-variable, when the child is perceived to be temperamentally less adaptable, more intense, more active and more likely to withdraw from a new stimulus (approach/withdrawal), and the parent has less knowledge of child development.

Experiencing more stress in the child domain stressor, child's distractibility/activity, means the mothers in this study
believed that certain characteristics of their children (i.e., over-active, restless, distractible, having short attention spans, and not listening) produced behaviors that mothers had difficulty dealing with. Experiencing more stress in the parent domain stressor, parent-restrictions-of-role, suggests that the parents felt the parental role was restricting their freedom and frustrating them in their attempts to maintain their own identity.

Three out of the four temperament traits (low adaptability, high intensity, and high activity) found to be significant in producing more stress in these two areas for the parents in this study, were also found to create more problems in the home and school setting as well (Earls & Jung, 1987). Knowledge of child development was likewise significantly related to the child domain stressor, Child's Distractibility/Activity, and the parental domain stressor, Parent Restrictions of Role. As suggested by DeLissovoy (1973), lack of knowledge of child development possibly can create frustrations in parents because they have unrealistic expectations of child development, lacking tolerance toward behaviors that are actually age appropriate.

Hypothesis Six

There will not be a statistically significant relationship between parental stress scores and the different parental age groups.

6a: There will be no significant differences among the overall mean stress scores of the three different age groups specified.

6b: There will be no significant difference among the
centroids of the three age groups on the 13 stress variables found within the sub-scales of the PSI.

Hypothesis Six was tested on two separate levels, necessitating two different analyses. Hypothesis 6a was tested by using a one-way analysis of variance. The hypothesis was retained. Results suggested that age did not prove to be a factor which significantly affected overall parental stress. Hypothesis 6b was tested by using a multivariate-analysis of Variance. The hypothesis was retained. Results suggested that there was no significant difference between age groups with respect to the stress experienced in any of the 13 stress scores.

Discussion

Results suggest that age did not prove to be a factor which significantly affected overall parental stress nor the 13 stress sub-scores. Although previous research suggested that young mothers are less knowledgeable and less skillful than older parents who have more experience in childrearing (Field, 1981; Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982; Stevens, 1984), this study consisted of mothers 23 years or older, and supports Jones, Green, and Kraus' (1980) findings which suggest that no significant differences were found among mothers aged 19 years or older.

Hypothesis Seven

There will not be a statistically significant relationship between parental stress scores and the parents' work history (always
worked outside home, worked some of the time outside the home, or never worked outside of the home).

7a: There will be no significant differences among the overall mean stress scores of the three different groups of parental work histories specified.

7b: There will be no significant difference among the centroids of the three divisions of parent’s work history on the 13 stress variables found within the sub-scales of the PSI.

Hypothesis Seven was tested on two levels using a one-way analysis of variance for 7a, and a multivariate-analysis of variance for 7b. Results suggest that parent’s work history did not prove to be a factor significantly affecting the overall parental stress score nor any of the 13 stress subscales.

Discussion

In this study, work history did not appear to affect significantly the overall stress level nor the 13 stress subscale levels for the mothers. It made no difference if the mothers had always worked, worked some, or never worked outside the home. Dorr and Friedenber (1983) reported that the most important predictor of how entering the work force affects mother and child is the mother’s attitude about working. Mothers who have a sense of satisfaction and competence in their work roles have positive relationships with their children.

Hypothesis Eight

There will not be a statistically significant relationship
between parental stress scores and the different socio-economic levels.

8a: There will be no significant differences among the overall mean stress scores of the three different socio-economic levels specified.

8b: There will be no significant difference among the centroids of the three socio-economic groups on the 13 stress variables found within the sub-scales of the PSI.

Hypothesis Eight was tested on two separate levels, necessitating two different analyses. Results suggest that income level did not prove to be a factor significantly affecting overall parental stress score. Hypothesis 8a was retained. However, the discriminant analysis done on 8b was significant and suggests that compared to the higher- and lower-income parents, the middle-income group of parents experience a lower sense of competence, better relationships with their spouses, more positive mother/child reinforcement, more depression, and tend to see their children as being more adaptable. Hypothesis 8b was rejected.

Discussion

This research reported that, although overall parental stress was not significantly affected by the mother's income level, 6 of the 13 stress subscales correlated significantly with parental stress. Mothers in the middle-income group, when compared to the upper- and lower-income groups, experienced a lower sense of competence and more depression, yet received better emotional and active support in child management from their spouses, experienced more positive mother/child
reinforcement, and tended to see their children as having the ability to adapt well. According to Lerner (1979) low-income parents tended to be tired, embittered, sad, and resigned to their fate, yet in this present study the middle-income mothers appeared more depressed and had a lower sense of competence than the lower- or upper-income mothers. It is possible that middle-income mothers have more idealistic expectations that are harder to meet and which they have difficulty reconciling. They then experience more frustration by not reaching these expectations in life. For example, finances determine what type of house or in which neighborhood one lives. Higher-income families can possibly choose with greater ease where they live; lower-income families might just accept their fate; however, middle-income families possibly experience more failure if they are not able to provide a certain environment for their children. They did, however, experience better support in child management from their spouses, felt more loved and accepted by their children, and saw their children as being able to adjust better to changes in their physical and social environment than the other groups.

Hypothesis Nine

There will not be a significant multiple correlation between total stress scores and a linear combination of age, work history, and socio-economic status of parents.

A multiple-regression analysis was performed. The hypothesis was retained. There was not a significant relationship between the total parental-stress scores and a parent's age, work history, or socio-economic level.
Discussion

The three demographic predictors used in this study—age, work history, and income level—did not significantly affect overall parental stress. Although previous studies suggested there would be a relationship between these demographics and parental stress (Field, 1981; Ragozin et al, 1982; Stevens, 1984; Tucker, 1978), in this sample neither age, work history, nor how much a parent earns a year significantly affected parental stress levels.

Conclusions

From an analysis of the findings, the following conclusions were drawn:

1. The first research question asked, How does parental knowledge of child development affect the stress levels of parents? Results suggest that parents who know more about the stages of child development appear to experience less stress in all areas of parenting and are more accepting of their child.

2. The second research question asked, Do parents of temperamentally different children report different parental stress levels? Results suggest that of the four temperament groups, parents with difficult children experience the most overall parental stress, as well as the most stress in the majority of parenting stress areas, of any group. Parents with easy children experience the least overall parental stress, as well as the least stress in the majority of parenting stress areas, of any group.

Mothers with difficult children tended to experience more stress, than the other three temperament groups, with regards to
a syndrome defined as more stress with regard to their child's adaptability, negative mood, and their relationship with spouse, and less stress with regards to parental restriction of role, child/mother reinforcement, and social isolation. Certain child temperament traits appear to make parenting more stressful overall. These are:

1. poor adaptability—the child does not respond well to new or altered situations;
2. more intensity—the child responds with high energy level, irrespective of its quality or direction;
3. less predictability—the child is unpredictable in time of any function, such as feeding pattern or sleep-wake cycle; and
4. high activity—the child actively engages in daily tasks, with great gusto, whether it be bathing, eating, playing, dressing, or handling. These four temperament traits alone appear to be powerful predictors of parental stress.

3. The third research question asked, How do parental stress, parental knowledge of child development, and perceived child's temperament relate and interact with each other? This research suggests that overall parental stress is related more to temperament than to parental knowledge of child development, when measured together. However, when specifically studying the effects of child temperament and knowledge of child development on the different areas of parental stress, results suggest that a mother who perceives her child as being less adaptable, more intense, more active, and more likely to withdraw initially from new stimuli, and who has less parental knowledge of child development tends to
experience more stress due to her child's overactiveness, restlessness, and distractible characteristics, and experiences the parental role as something restricting and frustrating.

4. The fourth research question asked, Do parents who have different demographic characteristics experience lesser or greater parenting stress levels? Results suggest that there was no significant difference between groups divided by age, parental work history, or socio-economic level with regards to parental stress in general. It was found, however, that mothers in the middle-income group (earning $10,000 to $20,000 a year) when compared to the lower-income group ($10,000 or less a year) and the higher-income group ($20,000 or more a year), experienced a lower sense of competence, more depression, and yet better relationships with their spouses, more positive mother/child reinforcement, and tended to see their children as being more adaptable to changes in their physical or social environment.

Recommendations

Based on the foregoing findings and conclusions of this study, recommendations are proposed in two areas: for practice and for further research.

Practice

1. Knowledge of child development helps reduce parental stress and should be assessed when working with parents who are experiencing a dysfunctional, frustrating relationship with their children. Testing a parent's knowledge of child development would be
helpful when assessing how realistic a parent's perception is of their child's behavior, and could prove to be a rather straightforward way to reduce parental stress levels to some degree.

2. Educators or therapists working with families who are experiencing frustration in parenting or in child management should assess the child's temperament in parent/child dyads and suggest ways to enhance the "goodness of fit" between parent and child interactions.

3. Parent education classes should include a section on child temperament, possibly aiding parents to distinguish the temperamental traits of their child which appear to affect parenting the most.

Research

1. Further studies should be done on whether parent education on child temperament can significantly reduce parental stress.

2. This study should be replicated with populations of parents with children who are behaviorally challenging in order to ascertain whether the variables of knowledge of child development and temperament are significantly related to parental stress.

3. Since this study used parents with 3-year-old children, further studies should be done using a wider range of ages.

4. Further research is needed to investigate whether both extremes of the nine temperament traits are equally stressful.

5. Further studies on temperament and stress using a stress inventory are needed to possibly identify other temperament clusters which lead to greater parental stress.
APPENDICES
APPENDIX A

ITEM ANALYSES FOR THE KNOWLEDGE
OF CHILD DEVELOPMENT INVENTORY, THE PARENT
QUESTIONNAIRE, AND THE PARENTING STRESS INDEX
### RELIABILITY ON THE KNOWLEDGE OF CHILD DEVELOPMENT INVENTORY

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APPENDIX B

GLOSSARY
PLEASE NOTE:

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These consist of pages: 130-147
Family Information Data Sheet

This form is to be completed by the mother participating in this study. Please answer every question. Thank you.

1. Please circle your present age group:
   a. 23-25 years old   b. 26-30 years old   c. 31 or over

2. Total Family Income? (Circle one.)
   a. Less than $5,000   b. $5,000 to $10,000
   c. $10,000 to $15,000   d. $15,000 to $20,000
   e. More than $20,000

3. Are you presently employed outside of home?
   ___ Yes    ___ No
   If yes, how many hours per week? ___
   Occupation? ____________________________

4. How would you describe your work history since you have had children?
   ___ Always worked outside of the home
   ___ Worked some of the time outside of the home
   ___ Never worked outside of the home

5. Where did you get most of your information on child growth and development?
   ___ family   ___ friends
   ___ doctor/pediatrician   ___ books or other media
   ___ teacher

6. During the past two weeks, about how many hours a day has the child's father spent in the care and entertainment of the children?
   ___0 ___1 ___2 ___3 ___4 ___5 ___6 ___7 ___8

7. Birth Order of your three-year-old:
   ___1 ___2 ___3 ___4 ___5 ___6 ___More

8. Does anyone help you take care of this child?
   ___ Yes ___ No

9. Is this child in school?
   ___ Yes    ___ No
   If yes, how much of the time? ___ less than 1/2 time
   ___ 1/2 time
   ___ full time

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APPENDIX E
CORRESPONDENCE
December 17, 1986

To Whom It May Concern:

Nancy Carbonell, an experienced early childhood educator and counselor, is a Ph.D. candidate at Andrews University. As part of her doctoral studies, she is conducting research on how parental stress may be related to the parent's knowledge of child development and the individual child's temperament. As chairperson of her research advisory committee, I can certify that this research project meets all the guidelines for ethical concerns established by the American Psychological Association and has been approved by Andrews University.

I believe her research will make a significant contribution to our knowledge of parental stress and, consequently, our ability to help families cope with the stresses of rearing children in today's society. Your help in locating families to participate in this study is a very important contribution to this effort. In appreciation for your help, the results of the study will be made available to you should you wish to review them.

If you have any questions about this project, please feel free to call me at (616) 471-3308. Thank you again for your help.

Sincerely,

Donna J. Habenicht, Ed.D.
Professor of Educational and Counseling Psychology

[Signature]

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January, 1987

To Whom It May Concern:

As a professional who deals with families on a daily basis, I am sure you have observed that for some people parenting is an enjoyable experience while for others it is a stressful one.

At this time I am conducting a study for my doctoral dissertation in the area of family life. I am particularly interested in investigating how parental expectations of child development and the child's perceived temperament contribute to parental stress. Dr. Donna Habenicht, a child development specialist, is supervising this study.

In order to get a representative sample of "every-day-mothers," your organization was chosen to participate in this study. Your support and permission to contact the mothers of the preschoolers in your institution or office would make this study possible and be greatly appreciated.

For your information, the attached sheet explains the procedures of this study. I would like to thank you in advance for your support and assistance in making this project a reality.

Sincerely yours,

Nancy Carbonell
Doctoral Candidate
Andrews University
Procedures

1. The sample will consist of mothers, at least 23 years of age, who have normal children three years of age.

2. Each mother will initially be contacted in order to recruit her participation.

3. Each participating mother will be asked to complete four questionnaires: (a) one dealing with her knowledge of child development, (b) a questionnaire identifying her child's temperament, (c) a parental stress index, and (d) a family information questionnaire. It will take approximately one hour to fill out all four forms.

4. The information will be collected during the months of January and February, 1987.

5. Complete confidentiality and anonymity will be guaranteed. Each questionnaire will be identified by code number only.

6. Results will be analyzed for the entire sample of mothers. No analysis will be carried out by individual location.

7. Mothers who so indicate will receive the results of this study by mail.

8. The results will be distributed to all participating schools, churches and pediatrician offices.
December, 1986

Dear Mother of a 3-year-old:

Mothering a three-year-old is quite an undertaking! I know because I have one too.

I am conducting a research study in order to provide parents with the information which may be useful in reducing needless stress and to enhance the quality of motherhood. This study will provide information about your child's temperament and how this relates to mothering.

You have been selected to form part of a team, made up of two hundred mothers, and participate in this exciting study. This participation entitles you to receive back the results of your questionnaires, which could provide valuable insights into your relationship with your own child.

Thank you very much for taking the time to help us in this project. Your participation is crucial since only you can tell us what it is like to be a mother of a toddler. Without your unique contribution this study would be impossible.

To be part of this study please complete the four different questionnaires enclosed and return it to me in the self-addressed, stamped envelope. Your answers will be completely confidential.

This study is being supervised by Dr. Donna Habenicht, a child development specialist. If you have any questions please feel free to call me (471-9068) or Dr. Habenicht (471-3308). We will be happy to help you in any way we can.

Once again, thank you very much for your help and your participation.

Yours truly,

Nancy Carbonell
Doctoral Candidate
Andrews University

P. S. Your quick returns will be greatly appreciated!
Please send me the information about my child's temperament and the other parts of the study.

I would like to talk with you about the results.

Name _____________________________
Address _____________________________
_________________________ State __________Zip_____
Phone __________
Dear Mother:

This note concerns the packet that you received a month ago dealing with a study on the mothering experience of your three-year-old. A good percentage of mothers have already sent their completed forms in. We are all very excited about how this study is developing.

If you haven't filled out the questionnaires yet, could you please do so and send them to me as soon as possible? Your cooperation at this time is crucial for the completion of this study.

I cannot thank you enough for your help in this matter. Your time and effort is greatly appreciated. If you have any questions, please call me at (616) 471-9068.

Sincerely yours,

Nancy Carbonell

Nancy Carbonell
Doctoral Candidate
Andrews University
APPENDIX F

RAW DATA
Key to Raw Data

Row 1: 1-3 = ID
        4-14 = Demographics

Row 2: 1-3 = ID
        4 = Knowledge of Child Development Score
        5-17 = Scores on the Thirteen Parenting Stress Index Subscales

Row 3: 1-3 = ID
        4-9 = Scores on the Nine Temperament Traits
APPENDIX G

CORRELATIONAL MATRIX OF THE 23 VARIABLES
APPENDIX H

KNOWLEDGE OF CHILD DEVELOPMENT INVENTORY
KNOWLEDGE OF CHILD DEVELOPMENT INVENTORY

Directions: This is a test of knowledge of child development, from birth to age three. Read each question carefully. Circle the letter you believe best answers the question. There is only one correct answer for each question.

For Example:
O. When children first begin to talk they usually
   a) speak in complete sentences
   b) say simple words such as "Mama" or "Dada"
   c) say things such as, "I'm hungry. Give me a bottle"
   d) use adjectives, adverbs and propositions

EMOTIONAL DEVELOPMENT
1. It is important for the infant's emotional development that his mother
   a) teaches him not to be afraid of anything
   b) touches him, loves him and gives him attention
   c) teaches him right from wrong
   d) teaches him not to cry
2. Which of the following is basic in the infant's emotional development? The
   development of
   a) a sense of patience
   b) a sense of respect
   c) a sense of fear
   d) a sense of trust
3. What type of care causes a fearful, mistrustful child?
   a) spoiling the baby by always comforting or meeting the baby's needs
   b) insensitive, irregular care
   c) how the baby is cared for does not really matter since babies are born
      with a natural tendency to trust
   d) any care outside the home, no matter how good, causes a fearful, mis­
      trustful child
4. A close relationship between a mother and child is most related to
   a) the number of hours spent together
   b) the quality of the hours spent together
   c) how many children are in the family
   d) birth order, whether the child is oldest, middle, youngest or an only
      child
5. When a child becomes about two years old he has an important need to
   a) remain dependent on his mother to do everything for him
   b) learn to ride tricycles and color within lines
   c) become more independent and begin to do things for himself
   d) play games with a group of children
6. A two-year-old boy has begun to say "no" when he is asked to put his toys
   away. This response
   a) shows that he is spoiled
   b) is typical of a normal two-year-old's development toward independence
   c) shows that he has not been properly disciplined
   d) should be ignored
7. What might cause a child to feel worthless?
   a) allowing the child to follow his own interests
b) allowing the child to make choices for himself
c) using shame as a method to control the child
d) being firm, but kind when correcting the child

8. When a six-month-old baby cries whenever a stranger comes near, the mother should
   a) place the baby in the stranger's arms so that he overcomes his fears
   b) ask her doctor about the problem because this is not a normal reaction
   c) scold the baby since the child has to learn not to be afraid
   d) direct attention away from the baby until he gets used to the stranger

9. When a mother gives her baby new objects or toys, how would you expect the baby to respond?
   a) with no interest, because a baby only likes the familiar
   b) with confusion, because the baby can learn only one thing at a time
   c) with curiosity, because a baby enjoys exploring new things
   d) with fear, because it is a natural reaction

10. Shortly after the arrival of his baby sister, a three-year-old boy begins refusing to feed and dress himself. His parents can best deal with the boy by
    a) explaining to him that he is a big boy and should act like one
    b) not giving the child treats until he starts to do these things for himself again
    c) promising him a special treat if he feeds or dresses himself
    d) showing him more love and spending more time with him

11. The keynote phrase of the two-year-old is
    a) "look at me"
    b) "will you do this for me?"
    c) "me do"
    d) "leave me alone"

12. Cuddling and touching an infant
    a) is not very important in the first four weeks
    b) is not very important after the first four weeks
    c) is very important during the first four weeks and after
    d) often will spoil the child

13. If the child is to grow to be a happy, well-adjusted adult, he must
    a) be protected from all unpleasant emotions
    b) learn to cope with unpleasant emotions
    c) learn to cope with his emotions
    d) experience only pleasant emotions

14. The ability to respond emotionally
    a) does not appear until the baby recognizes strangers
    b) appears in the newborn infant
    c) is the result of learning
    d) is the result of conditioning

COGNITIVE DEVELOPMENT

15. What are typical behaviors of a newborn baby?
    a) rolls over from his back to his stomach
    b) keeps his eyes shut because he cannot see
    c) gets up on his hands and knees
    d) watches things move and seeks the source of food

16. What can family members do to help the young baby's development?
    a) protect the child by keeping him in his crib
b) it is not necessary to do much of anything because the child will not learn until much later
c) firmly correct the child each time he does something wrong
d) talk to, change position, provide toys, cuddle, and play with the baby

17. Which of the following is true of early childhood experience?
   a) only educational toys should be bought for young children
   b) children need to explore and examine all kinds of things
   c) it does not really matter what they do because young children are too young to learn
   d) children should be kept in their cribs so they don't get hurt

18. When the mother plays the game of peek-a-boo with her baby, it most helps the baby to
   a) understand that his mother will come back after she leaves
   b) see better
   c) learn to close his eyes
   d) improve his fine motor control

19. What should a parent do when the baby begins to crawl?
   a) the child should be allowed to play with any objects of interest
   b) the child should be kept in his crib so he does not mess things up
   c) the child should be spanked when he gets into things so that he learns not to bother household items
   d) breakable and valuable things should be removed but interesting things should be left out for the child to play with

20. What can family members do to help a young child's development?
   a) allow the child to choose activities that interest him
   b) always choose the child's activities for him
   c) control the child's activities so that he doesn't become too independent
   d) family members need not do anything because the child is born either bright or dull

21. When a child is interested in something, the mother should
   a) tell the child to discuss it with his father when he arrives home
   b) pretend to listen to the child while going on with the important household work
   c) attempt to understand the child and seriously listen to his thoughts
   d) ignore the child so he learns not to interrupt her with his ideas

22. What advice should a mother be given to help her improve her child's language?
   a) restrict the child so that he does not hear improper language
   b) correct the child every time he says something wrong
   c) talk to the child and listen to the child
   d) have the child repeat sentences after her

23. How does the idea that "children should be seen and not heard," relate to language development?
   a) it is correct because this is a teaching passed down through the generations
   b) it is wrong because children should be listened to and talked to
   c) it is correct because children do not need to be listened to and talked to
   d) it does not really matter because children talk to each other.

24. A child's first sentences include a great many
   a) nouns
   b) verbs
c) adverbs
d) prepositions

25. Differences in the language development of young children are mainly due to
   a) differences in desire to speak
   b) differences in motor development
   c) opportunities for learning
   d) the child's level of physical development

26. The young child who chooses the plate of four cookies over a plate of two cookies is showing
   a) his ability to understand similarities
   b) his ability to understand differences
   c) his ability to understand numbers
   d) his ability to count

27. The first thing a child learns are usually
   a) tied to stories from books
   b) tied to dreams
   c) tied to concrete things
   d) tied to abstract things

28. Of all the things shown to young infants, which of the following does he find the most interesting?
   a) a bull's eye
   b) an oval target with dots
   c) stripes
   d) a human face

PHYSICAL DEVELOPMENT

29. Newborn babies do not
   a) smile
   b) reach for objects
   c) make stepping movements
   d) thumb-suck

30. How great are differences among newborn babies?
   a) no differences at all, all newborn babies are the same
   b) slight differences in heart rate, level of arousal, depth of sleep, hand mouth contact
   c) large differences in heart rate, level of arousal, depth of sleep, hand mouth contact
   d) no two newborn babies are alike in any way

31. The introduction of solid foods before three months in most babies
   a) is safe if limited to potato and gravy
   b) may place strain upon the baby's kidneys
   c) is much better for the baby than breast milk
   d) is not related to being overweight later in life

32. What does a baby learn to do first?
   a) hit a mobile
   b) control his head
   c) roll over
   d) pull himself up

33. Is it important for a young child to get plenty of restful sleep?
   a) yes, it can make up for missed meals
   b) not really, however a sleeping child means relief for the mother
34. About how many hours does an infant sleep in a twenty-four hour period?
   a) 5
   b) 8
   c) 17
   d) 23

35. Does poor nutrition affect the young child?
   a) no, it really does not affect the child very much
   b) yes, but it can be made up later in life
   c) maybe, it depends on the child
   d) yes, it affects his growth and makes it easier for him to become ill

36. When a two-year-old child pushes off his wet pants
   a) it indicates that the child is stubborn because he won't keep his wet pants on
   b) it is a sign that he is becoming aware of when he wets, and will soon be ready to learn to use the toilet
   c) it is a sign that the child is too lazy to use the toilet
   d) none of the above, a two-year-old should have already been toilet trained

37. If parents of a young child slap his left hand when he uses it rather than his right hand, this
   a) will make sure the child is right handed when he gets older
   b) will make no difference
   c) might cause the child to be nervous about which hand to use
   d) might cause the child to learn left from right, early in his development

38. If a two-year-old child tries to push a spoon handle into the electrical outlet, the mother should
   a) let the baby push the spoon into the outlet so that he will get an electric shock
   b) push the spoon into the outlet herself so that the baby will see what happens
   c) explain to the child in great detail the dangers of electricity
   d) stop the child immediately because he may be seriously injured

39. Why is supervision important for young children?
   a) to correct misbehavior
   b) to involve the mother in the child's activities
   c) to prevent accidents
   d) to keep the child busy with planned activities

40. The meal most enjoyed by young children is
   a) breakfast
   b) lunch
   c) afternoon snack
   d) dinner

41. What is the most frequent cause of death for young children in the United States?
   a) pneumonia
   b) accidents
   c) cancer
   d) measles

42. The Moro Reflex is
a) a strong grasp on anything placed in an infant’s hand
b) the infant’s lifting of his legs as if walking
c) a laughing response to being tickled
d) an infant’s response to a loud noise

SOCIAL DEVELOPMENT

43. If a two-month-old child smiles at everyone, even strangers, the mother should
   a) keep the child away from strangers
   b) be concerned that the child is too trusting
   c) realize this is normal and in time the child will recognize strangers
   d) tell the child in a firm tone not to smile at strangers

44. When the baby fingers his genitals, the mother should
   a) scold him
   b) slap his hand
   c) permit the child to explore his body
   d) encourage the baby by fondling his genitals

45. Why might temper outbursts increase as a baby approaches two years of age?
   a) because he is becoming more dependent on others
   b) because he has a great need to do things for himself
   c) because the child is spoiled and used to getting his own way
   d) has nothing to do with age. it is just the way the baby is

46. The young child needs
   a) harsh rules
   b) rules that are clear and firm
   c) no rules
   d) rules that change often

47. If two boys, both two years old, seem to push and hit when they play together, their mothers should
   a) never allow them to play together
   b) before play begins threaten them with punishment if they push and hit
   c) realize that this is normal behavior for two-year-olds
   d) be concerned that the boys are overly aggressive

48. If two girls, both two years old, play side by side rather than with each other, their mother should
   a) be concerned that something is the matter with the girls
   b) tell the girls to play together
   c) have an older girl join the girls to show them how to play with each other
   d) realize that this type of play is normal for their age

49. When a three-year-old child misbehaves his mother should
   a) compare his behavior with others
   b) spank and remove the child from the situation
   c) firmly, but calmly remind him of the rules and if he then continues, remove the child from the situation
   d) shame him and remove the child from the situation

50. In dealing with anger in their toddlers, parents can best help their children to develop self-control by
   a) giving choices within firm limits
   b) giving plenty of opportunities for expressing anger
c) ignoring angry outbursts
d) punishing lightly but consistently after each outburst

51. The following statement is true
   a) the sooner toilet training is begun the less time it will take
   b) punishment and scolding shorten the time needed to complete toilet
       training
   c) when toilet training is begun is not important
   d) children toilet trained after the age of 20 months tend to learn quickly

52. Parallel play means that
   a) the children are not aware of each other's presence
   b) the children play the same activity side by side, but independently
   c) the children play together cooperatively
   d) the child plays alone

53. Cooperation
   a) appears in children's play by the time they are two years of age
   b) is best developed by strict child-training methods
   c) is uncommon in young children because they are too self-centered to
      cooperate with others
   d) is uncommon in many young children because their parents do too
      much for them

54. Aggression in young children is
   a) always provoked by others
   b) often unprovoked by others
   c) always in the form of physical attacks on others
   d) usually in the form of verbal attacks

55. Early social experiences are
   a) more important in the home than outside the home
   b) more important outside the home than in the home
   c) limited to the mother
   d) more important with peers

56. Conformity to group expectations
   a) is unimportant
   b) is best achieved by strict child training
   c) is necessary for the socialization of the child
   d) is best achieved by waiting until the child is older than four years of
      age
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