THE RELATIONSHIP OF INFANT AND PARENT TEMPERAMENT TO THE PREDICTION OF CHILD ADJUSTMENT

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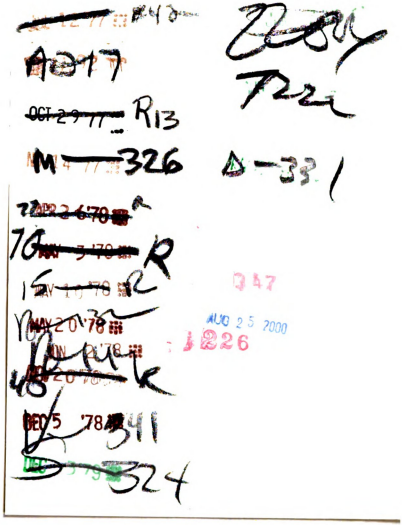

ABSTRACT

THE RELATIONSHIP OF INFANT AND PARENT TEMPERAMENT TO THE PREDICTION OF CHILD ADJUSTMENT

By

Allan H. Scholom

The present investigation was concerned with the role of temperament, both for infant and parent in predicting childhood adjustment at ages three and four. The broad issues underlying the research involved primary prevention on a pragmatic level, and the interaction of biological with environmental influences from a theoretical perspective. The study was designed in part to replicate the findings of the New York Longitundinal Study (Thomas et al., 1963, 1968), which demonstrated the relationship between infant temperament and childhood behavior disorders. The other objectives, new to this investigation, were the examination of parent temperament factors, as well as the interaction of infant and parent temperament in determining child adjustment.

In the earlier studies, a high risk infant temperament factor was identified which resulted in a significantly greater proportion of children developing behavior disorders. However since not all infants with this pattern of temperament developed problems, there must be an interaction between biological and socialization influences as expected. Parent temperament was the environmental influence to be studied herein.

In this context, three questions were to be examined: (1) the relationship between infant and parent temperament; (2) the effects of

infant and parent temperament on child adjustment; and (3) the relationship of similarity or dissimilarity of temperament between infant and parent to child adjustment. The latter question was aimed at identifying high risk family temperament styles on the basis of homogeneity of temperamental styles within a family.

The study sample consisted of 132 children and their parents from four local day care centers and nursery schools. Seventy-seven boys and 55 girls were all rated for adjustment by their teachers. This provided the primary dependent variable.

The independent measures of infant and parent temperament were gathered via questionnaires. The instrument utilized to assess infant temperament was the Carey Infant Temperament Survey. Parent temperament was assessed by the Thorndike Dimension of Temperament and the Stollak Temperament Survey. Each parent completed both adult instruments. The Carey was filled out jointly by both.

The first phase of data analysis involved a factor analysis of the infant and parent questionnaire scores in an effort to generate comparable child and adult factors. These factors could then be used in subsequent analyses. For infants, three factors were found. These were identified as Mood (approach, adaptability, mood, and threshold), Consistency (regularity, and persistence and attention span), and Energy Level (activity level, intensity, and distractability). The Mood factor was similar to the N.Y.L.S. high risk factor and therefore replicates one aspect of that work.

Out of the analyses of the parent temperament data, seven factors emerged for both mothers and fathers. Three factors were selected from these to use in subsequent analyses with the infant factors. The criteria for selection were : (1) internal conceptual consistency; (2) incorporating

comparable scales from both parent instruments; and (3) compatability with a parallel infant temperament factor. Thus there was a Mood, Energy, and Consistency factor for infant, mother, and father.

All of the subsequent analyses were done separately for infant girls and boys, as previous work has indicated the importance of sex differences. These analyses utilized factor scores generated from the factor analyses.

With regard to the relationship of infant and parent temperament (question 1), no clear overall patterns emerged among the intercorrelations of the factors. While there were some significant relationships found, discussion was focused primarily upon the importance of conceptual and methodological refinements in addressing this question.

To answer question 2 regarding the prediction of child adjustment from infant and parent temperament, a stepwise multiple regression analysis was performed. Results showed that the infant girls Mood factor, which is analogous to the N.Y.L.S. high risk factor, was by far the best predictor of adjustment. Mothers' Mood and fathers' Consistency also significantly predicted adjustment. For boys, the best predictor of adjustment was mothers' Mood followed by her Consistency, and fathers' Mood.

Discussion here centered around the importance of infant Mood for girls as replicating the N.Y.L.S. The lack of temperament effects for boys was interpreted in the light of socialization influences weighing more heavily in importance for boys at this age than for girls. Prior longitudinal research has shown that temperament effects emerge and submerge throughout the lifespan depending upon sex and developmental period.

Regarding parent temperament influences, the mothers' role stood out, particularly insofar as Mood was concerned. One father factor was significant for both boys and girls, demonstrating paternal influence even at this

early age. The overall importance of parent temperament as predictive of child adjustment was stressed.

The last question, regarding within-family similarity of temperament effects, involved several stages of data analysis. First, indices of within family homogeneity were generated which were then used in another multiple regression analysis to predict child adjustment. A significant relationship was found between heterogeneity of infant and mother temperament and child adjustment. That is, at least with the measures and analyses used, the more dissimilar the infant and mother, the better the child's adjustment.

This finding was interpreted as suggesting that temperamental variability within families provides a greater range of alternative behavior models for the child to emulate. Through this the child can more easily accept his own temperamental identity.

Methodological issues were discussed extensively. The importance of developing more sensitive instruments and methods of assessing temperament was stressed. The statistical technique used in generating the within family homogeneity of temperament data was seen as a promising strategy for measuring these variables. Special attention was devoted to the importance of the issue of rapport between subject and researcher, particularly in conducting field research.

THE RELATIONSHIP OF INFANT AND PARENT TEMPERAMENT TO THE PREDICTION OF CHILD ADJUSTMENT

By

Allan H. Scholen

A DISSERTATION

Submitted to
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DOCTOR OF PHILOSOPHY

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DEDICATION

I never thought I'd be doing this, but I want to dedicate this work to my parents, Max and Adele Scholom, with much love.

. . . Isn't life something?

ACKNOWLEDGEMENTS

Writing this feels like something close to making an acceptance speech for an Academy Award. The fact that so many people deserve mention makes me feel even more like the director of a movie. All of which goes to say that it is a joy to be writing this, to be finishing, and to be able to thank all the people who helped me with this dissertation.

Moreover I want to take this opportunity to say something about the people who, in important ways, shared my graduate years with me. I suppose the sadness I feel now about leaving is a measure of the impact these years have had on me.

One always runs the risk of sounding trite with these kinds of things. If, at times, this becomes the case here, it is a matter of not enough words to express many feelings about many people.

Let me start at the beginning of my work on this study. I'd like to express a very special thank you to Nancy Carlson, of the M.S.U. Institute for Child and Family Studies, who helped me through the data collection phase. Her warmth, humor and competence made this very difficult process much easier, and at times even fun.

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did so with care. And to all the families who participated, I offer my most sincere appreciation. They devoted much time and effort for very little in return.

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Analyzing the data was an agonizing process. Without Bob Wilson, of the M.S.U. Office of Research Consultation, and a friend, I shudder to think of doing it. He offers the highest quality technical skill, along with an ability and interest in helping one work through the frustration and despair that inevitably come up when dealing with numbers and machines. This is indeed a rare combination. Another friend, Jim Jullin, of the M.S.U. Programming Office, stepped in at a critical time and ehlped me to get through it.

I'd also like to thank Jane Rice who typed a difficult manuscript late into several nights.

About the members of my dissertation committee, I can say most respectfully that all their input into the project was of a most professional nature. Comments, suggestions and "requests" were meaningful, relevant, smart, and helpful.

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John McKinney was a comforting and intelligent influence during the early stages of the study.

Larry Messé, whose statistical wisdom is always incisive, made himself very available at critical times with suggestions and support.

Of Gary Stollak, he was with me at the beginning and is still here at the end. As a psychologist his concern for the "question" is of lasting impact for me. While I've gone through many changes in my years here, my relationship to Gary has always been alive. We watched the Knicks win the '73 NBA Championship and we struggled to find a dissertation question. Seeing his own changes over the years is a very real reminder that life indeed moves onward.

Of Bob Zucker, my Chairman, I think first of his respect for and dedication to his work and to those who work with him. His involvement both as a researcher and clinician has left me with much as to what one does as a psychologist and how one does it well. We've also shared a lot of personal things, which has made our relationship a rich one. Bob's faith in this work during a depressing period stands out to me as a message of self respect.

I'd also like to say something about three people who have given much to my years in the department. Developing as a person and a psychologist has been an experience one could write a book about (or make a movie). If I did, Bill Kell, Art Seagull, and Marsha Worby would occupy major roles. They were all clinical supervisors who care a lot. When I think back now, and in the years to come, Bill, Art, and Marsha will be there with feelings.

Finally and in many ways most importantly I want to say something about my friends. As I write now there are tears. I suppose this is as it should be for these are people I live my life with. Especially Barry Perlman, Greg Loftus and Carol Saturansky who have been so very much over the years. And of Virginia who helped make life more enjoyable during the often difficult course of this work.

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PROBLEMS AND PURPOSES

Primary Prevention and Contemporary Mental Health

To illustrate a (perhaps the) critical issue of contemporary mental health let us examine an old Cornish test of insanity.

> The test situation comprised a sink, a tap of running water, a bucket and a ladle. The bucket was placed under the tap of running water and the subject was asked to bail the water out of the bucket with the ladle. If the subject continued to bail without paying some attention to reducing or preventing the flow of water into the sink, he was judged to be mentally incompetent. Similarly any society that attempts to provide more and larger buckets to contain the problems of that society without simultaneously attempting to reduce the flow might be judged equally suspect (Bower, 1963, pp. 846-847).

In the last decade we have witnessed the infancy of a movement, however fragile, aimed at "reducing the flow." While many have sought to direct attention and effort to the area of primary prevention (Caplan, 1964; Cowen et al., 1967) numberous problems plague the field. The commitment of societal resources as manifested by the shortage of manpower (Reiff,1967), and inadequate economic support (in 1967-68 only 13% of all community mental health funding, Van Antwerp, 1971) are two interrelated limitations that exist on a practical level. However another aspect of the problem concerns the self defeating cycle of grand promise and paltry accomplishment (Eisenberg, 1962). At issue in this dilemma is the lack of assessment as to the efficacy of preventive programs (Caplan and Gruenbaum, 1970).

Perhaps more important are the limited boundaries of our understanding of the nature of life and growth (Murphy, 1960). Without

adequate knowledge programs aimed at the primary prevention of mental disorder rest on very shaky ground. This uncertainty may to a large extent account for the reluctance of mental health workers to enter into prevention oriented roles (i.e., program planning, consultation and evaluation, Van Antwerp, 1971; Foley and Gorman, 1973).

Thus, a primary objective of the present study was toward obtaining information with implications for utilization in primary prevention programs. Specifically the investigation was an extension of the New York Longitudinal Study of Infant Temperament (Thomas, et al., 1963, 1968). These authors demonstrated the relationship between infant temperament and development of childhood behavior disorders. It was found that particular constellations of temperamental dimensions present during infancy and relatively stable throughout early childhood predicted later disturbances. Clinical case study suggested that these constitutional differences may interact with parental behavior so as to diminish or compound the potential risk for those children whose temperament rendered them initially more susceptable to behavior disorders.

It was the purpose of the present study to extend this research by examining one potential aspect of parental behavior that may interact with the child temperamental variables resulting in various patterns of adjustment. It was expected that the "goodness of fit" or congruence of parent temperament to infant temperament would be an important dimension to the development of intrafamilial conflict leading to later difficulties. Such information could enable one to identify risk parent-child combinations based on temperamental incongruence

shortly after birth. These data might then be utilized to refer parents for relevant guidance, thereby decreasing high risk potential and promoting primary prevention.

Theoretical Implications

Issues relating to the effects of biology and environment have been with us since antiquity, with arguments for either position shifting with the vissicitudes of the historical period and place on the map. Since Pavlov and Freud, and particularly in the United States, the primary emphasis has been on environmental determinism (Allport, 1961). A point of strong similarity between both psychoanalytic and behavioristic ideology has been their emphasis (albeit unequal) upon environmental influences. Until recently there has been a dearth of systematic attention to constitutional characteristics as significant determinants of psychological individuality. Largely over the last few years there have been a number of studies relevant to the existence of individual differences among infants encompassing in scope biochemical orientations (Williams, 1956), perceptual (Witkin, 1962), psychodynamic (Fries and Wolf, 1953), and psychosocial (Gesell and Ames, 1937) orientations.

The New York workers, while recognizing the heredity-environment interaction, chose to investigate constitutional differences in an effort to fill some of the void in this domain. Therefore, the other major purpose of the present study was to expand upon the influences of individual temperament that were found to exist in infants by examining the interaction of such differences with parental temperament. The issues of degree of temperamental influences for both

parent and child and their relationship were under investigation in this regard, although not all of these issues could be addressed straightforwardly with the preconditions set upon study design.

THEORY AND RESEARCH

The Concept of Temperament

To begin let us first examine the concept of temperament in an effort to formulate some operational definition as well as criteria for inclusion of a particular attribute of personality as a temperamental quality.

Most fundamentally, temperament may be viewed as a general term referring to the how of behavior as opposed to the why or what (Thomas et al., 1968). When we speak of temperament we are talking about the behavioral style of an individual, the way in which he does things as contrasted to his motivation (why), or ability (what) for doing things. We might use words like form, manner, or process as descriptive of temperament attributes. Such attributes might include speed, energy, emotional reactivity (Cattell, 1950); tempo, mood, regularity (Thomas et al., 1968); and so on.

Allport (1961) defines temperament as "the characteristic phenomena of an individual's nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all peculiarities of fluctuation and intensity of mood, these being phenomena regarded as dependent on constitutional makeup and therefore largely hereditary in origin." (p. 34)

Buss et al. (1973) suggest three criteria as basic to the inclusion of a particular variable of personality as a temperamental characteristic: "(1) The personality dispositions should have an adaptive

value and therefore an evolutionary history. Any inherited tendency must have survived natural selection which means that it must have been useful in individual survival, breeding, and the rearing of the next generation... (2) The personality dispositions should be present early in the life and show some stability during childhood... The child's innate tendencies should presumably modify the impact of life experiences so that his native individuality shines through the overlay of learning experiences. Otherwise temperaments would contribute little or nothing to adult personality... (3) There should be evidence that the dispositions are inherited... Differences in temperaments have been clearly established in animals... The question is whether inherited tendencies are present in man." (p. 513). We shall now more closely examine these criteria in an effort to establish a case for their importance not only as valid criteria for defining an attribute as a temperament; but, more importantly to demonstrate the importance of those attributes that meet these criteria as significant determinants of personality.

Criterion I: Adaptive Value

Diamond (1957) makes a strong argument for the adaptive value of temperament beginning with animals and working up to humans. To illustrate the author points out the importance of the dog's willingness to form dependent attachments to man which has in large measure contributed to the survival of the species. Since dogs could not live in urban environments without man's help their existence is dependent upon human care. Thus, their loyal devotion to humans may be seen as extremely adaptive in endearing themselves to man. This attribute

also satisfies the criterion of presence at birth and stability over time (as all dog lovers will attest to), and heritability (different breeds of dogs are more or less friendly or ferocious - qualities which satisfy a broad range of human tastes and consequently are adaptive).

Evidence to support the notion that sociability is a natural behavioral disposition comes from the work of Stayton, Hogan and Ainsworth (1971). These authors found the earliest manifestation of infant obedience was a simple disposition to comply with maternal commands and prohibitions, independent of efforts to train or discipline the baby. This "disposition to comply" was interpreted by the authors as support for an ethological model of social development wherein man has evolved as a social species, with infants being genetically biased towards performing various social behaviors (i.e., compliance).

This has adaptive value in that a positive attachment between mother and infant is crucial for the survival of the species. Thus, sociability is a temperamental disposition one would expect to find in the majority of the species, a tendency Thomas et al. (1968) found to exist in their study. It should be noted here that one of the temperamental qualities that was more typical of those children that developed problems in the New York Longitudinal Study (N.Y.L.S.) was a tendency to withdraw from people, a finding consistant with the ethological explanation.

Criterion II: Presence at Birth and Stability Over Time

This issue bears particular importance to the present study since not only of concern here is the importance of temperament in parent-child relationships but also the assessment of the interacting effects of temperamental characteristics over time. The source of the current data is the N.Y.L.S., which has contributed much of what is known about the presense of temperamental qualities at birth and their stability over time (as previously reported from infancy through early childhood, Thomas et al., 1963, 1968). The N.Y.L.S. found that nine categories of temperament could be differentiated in early infancy which remain stable to varying degrees throughout the first five years of life (see Appendix A for descriptions).

The attributes were: activity level; regularity; approach or withdrawal; adatability; intensity of reaction; threshold or responsiveness; quality of mood; distractability; and attention span and persistence. Stability among the categories over the first two years of life varied from activity level (27.5%) to mood (92.5%) (figures are percents of subjects with interperiod stability, derived from two way AOV). While the temperamental continuities vary considerably over time, such continuities do exist. The N.Y.L.S. illustrates how difficult they are to demonstrate (Graham et al., 1973).

A study by Birns et al., (1969) provided a connecting link with the N.Y.L.S. insofar as infant temperament was assessed at two or three days of age, at one month, and again at three and four months (the N.Y.L.S. began at three months). The dimensions of temperament assessed were: irritability; soothability; activity level; alertness; vigor of response; sensitivity; tension; and maturity level. It was

found that irritability, sensitivity, tension, and soothability showed consistency from birth to four months suggesting that certain temperamental characteristics are evident in the earliest months of life and remain somewhat consistent during this period.

While some of the temperamental attributes had different names in the two studies, and consistency varied with the particular characteristics, the important issue is the demonstration that there are discernable differences between infants at birth, and that these differences have some degree of stability throughout infancy and early childhood. The lack of even stronger findings of temperamental stability may be to a large extent attributable to inadequate methodologies, as such research is itself in its infancy. (This problem is discussed further in the section on methodological issues.)

Other evidence relevant to the issue of the stability of temperament over time comes from the Berkeley (Jones et al., 1971) and Fels Longitudinal Studies (Kagan and Moss, 1962), neither of which focused primarily upon temperament issues. In the Berkeley studies it was found amidst the myriad vissisitudes and inconsistancies of the numerous variables studies, that emotionally expressive versus inhibited-reserved (a dimension closely resembling approach-withdraw in the N.Y.L.S.) behavior is a persistent variable over time for both sexes (Shaefer and Bayley, 1963; Bronson, 1971).

Bronson concludes that there are two major findings insofar as the continuity of personality as investigated in the Berkeley studies is concerned. "One is that a very long range continuity of development becomes apparent when the focus is on what has been termed here

'orientations', characteristic response tendencies often subsumed under the general term 'temperament'. The second is that the same orientation bears a different relation to adult functioning depending upon the developmental period in question, inter- and intrapersonal factors interacting with what the individual brings to the situation to produce different adult outcomes." (p. 395)

The essence of these conclusions is that there are relatively constant orientations or temperamental dispositions (genotypic tendencies), that manifest themselves in varying forms depending upon the developmental period and environmental situation an individual is passing through (phenotypic reactions). Once again we have evidence for the stability of temperament over time, but as before the data lies in the "suggestive" or "tentative" domain, lacking clarity.

Kagan and Moss (1962) present a similar type of conclusion, although passivity (which seems very close to the activity level dimension in the N.Y.L.S.) is the variable of interest for them. They found that early passivity (at age three) was linked to selective aspects of adolescent and adult personality. Passive boys became nonaggressive, socially inhibited, dependent and conforming during adolescence; and were dependent and had non-masculine interests as adults. Here we have what the authors conclude is at least in part a temperamental, constitutionally determined orientation (genotype) which later becomes manifest in several phenotypic ways.

Furthermore, sex differences regarding passivity are clear, with females passivity highly stable over the first 10 years of life. However passivity at age three for females had no clear adult derivatives. Such a finding suggests the importance of how differences in

sex role socialization interact with temperamental variables. In the case of passivity women are expected to be more passive and therefore adult derivatives may be distributed over a wide range of characteristic females sex role behaviors that do not stand out in contrast to the more atypical passive male behavior. The investigation of sex differences as they affect parent-child interaction was therefore of concern in the present study.

Criterion III: Heritability

Data demonstrating the genetic basis of temperamental dispositions was obtained in a study by Buss et al. (1973). The authors utilized a sample of dizygotic and monozygotic twins in assessing the heritability of four dimensions of temperament: (1) "emotionality," (which corresponds to intensity in the N.Y.L.S.); (2) "sociability" (approach-withdrawal); (3) "activity" (activity level); and (4) "impulsivity" (threshold). Findings demonstrated clear genetic as well as environmental influences affecting these temperamental attributes. Significant differences between types of twins provided evidence to support genetic differences while changes with age suggested environmental effects. The genetic component was stronger for boys than girls although present in both. Once again, the data suggest the importance of examining sex differences.

Other evidence supporting the heritability of temperament comes from Freedman and Keller (1963), and Scarr (1969) who found a genetic component in a social introversion-extroversion dimension (analogous to approach-withdrawal in the N.Y.L.S.)

To summarize briefly, the foregoing discussion has sought to

emphasize two themes. First, temperamental attributes have been shown to be present at birth, remain constant to varying degrees over time, have genetic components, and, that all these findings make sense theoretically, particularly when viewed from an evolutionary-ethological perspective. Even Freud (1937) asserted that "each individual ego is endowed from the beginning with its own dispositions and tendencies."

Secondly, what stands out from the research thus far presented is a sense of temperament as referring to "dispositions and tendencies", many of which are given different names by various researchers, but when taken together begin to reveal an emerging pattern clearly pointing toward the importance of individual differences in the unfolding of personality. In some sense we are returning to "natures" contribution to the development of personality. These influences understandably must be conceptualized in broad terms as dispositions or tendencies, but are nonetheless powerful in their impact, although difficult to demonstrate.

Direction of Effect

Having discussed the evidence relevant to the role of constitutional variables in the development of personality, let us now turn to a corollary issue, that of direction of effect. Bell (1968) focused attention to the problem of child effects by reinterpreting socialization studies of parent-child interaction in terms of the child's influence on the parent. In a later paper Bell (1971) pointed out that the difficulty in identifying the operation of biological factors, let alone to experimentally manipulate their contribution, mitigated against the inclusion of the child effects on parents in socialization

studies even though their importance was recognized.

However, several reviewers have noted the extreme environmentalistic (parent effect) approach has been barren of results (Becker and Krug, 1965; Yarrow et al., 1968). Without taking biological and child effect influences into account one is essentially trying to understand human behavior neglecting the theory of evolution and its implications. Recently there has been renewed interest in ethological theories (Bowlby, 1969; Harper, 1971; Stayton et al., 1971); constitutional variables (Thomas et al., 1968; Graham, 1973); and child effects in socialization research.

Several authors have demonstrated the interacting influences of parent and infant characteristics. Bennett (1971) suggested that the "state" of the infant (alertness, activity level, visual behavior, and facial movements) served as cues allowing the caretaker to construct a fantasy about the infant's personality and respond accordingly. Beckwith (1971) while finding it extremely difficult to identify initiator and responder in infant-mother interaction, concluded that infants provided a wide range of potential behaviors to elicit maternal response, and that infants differed in their behavioral repetoire.

Clarke-Stewart (1973) demonstrated the reciprocal nature of the development mother-infant attachment over time (9-18 months). The more often the infant looked, smiled or vocalized to his mother, the more affectionate and attached to the child she became and the more responsive she was to his distress and demands. Clarke-Stewart concludes, on the basis of cross lag panel data analysis, that the behavior of the infant is more important in the attachment process during this period of early childhood. However she maintains that later in childhood

there seems to be a causal role reversal. In any case, strong support for the child's influences and reciprocal nature of parent-child interaction was clearly demonstrated.

Osofsky and O'Connell (1973) demonstrated child effects with five year old girls. When the children behaved in a dependent fashion in a task oriented situation both mothers and fathers interacted more and were more controlling. Thus a growing accumulation of evidence from diverse realms has demonstrated the influences of the child upon the parent both as a function of constitutional endowment (as in the infancy studies), and later in childhood as a consequence of one organism affecting and in turn being affected by another.

Effects of Infant Temperament

At this point let us review the findings of Thomas, Chess, and Birch (1963, 1968) upon whose work the present study is based.

The rationale for the N.Y.L.S. evolved from the following facts: "(1) the lack of simple relationship between environmental circumstances and their consequences; (2) individual differences in susceptibility to stress and pressure; and (3) differential responses to similar patterns of parental care." (Thomas et al., 1968, p. 6). To account for these facts the authors chose to examine the influence of infant temperament. Several constellations of the nine temperamental characteristics studied were identifiable in a number of children. The "easy" child is characterized by regularity in biological functions, positive approach to new stimuli, high adaptability to changes, and a preponderantly positive mood of mild or moderate intensity. The "difficult" child is typified by irregularity in biological functions,

predominently negative withdrawal responses to new stimuli, nonadaptability or slow adaptability to change, frequent negative mood, and predominantly intense reactions. There were approximately 15% of these infants in the N.Y.L.S. sample. The "slow to warm up" child is characterized by negative responses of mild intensity to new stimuli with slow adaptability after repeated contact.

Difficult and slow to warm up children comprised a disproportionately high share of the 46 children who were identified as showing behavior disorders. Also associated with incidence of behavior dysfunction were: excessive persistance; excessive distractibility; and a markedly high or low activity level. To illustrate the high risk potential of these constellations let us look at some data regarding the "difficult" children. They accounted for approximately 4% of the group without behavior problems (four cases), but 23% of the group with dysfunctions (eleven cases). While 59% of the total clinical sample had mild symptoms of initial psychiatric evaluation, only 20% of the difficult children were in the mild category.

A factor analysis of the data produced one factor characterized by nonadaptability, withdrawal responses, and predominently negative mood of high intensity (Factor A). This factor (which taken together with irregularity comprises the "difficult" infant constellation) statistically differentiates all clinical versus non-clinical cases at ages 3, 4, and 5 that developed throughout childhood. There were also significant differences found between clinical cases of early onset (before age 5) versus non clinical cases at ages 4 and 5. As the authors note, cases of early onset have been shown to be more closely associated with organismic variables than those that emerge

later in life. Thus the data strongly suggest the importance of temperamental variables in producing childhood behavior disorder.

However, Chess and Thomas (1972) note that through qualitative analyses of the clinical sample, "It was possible to trace the ontogenesis of the behavioral disturbance in terms of the interaction of temperament and environment... Some children with a temperamental structure closely similar to that of the clinical cases can be found in the normal functioning group... It appears that both behavioral normality and disturbance are the result of the interaction between the child with a given temperamental pattern and significant features of his developmental environment... We found that most stressful environmental demands are related to the child's temperamental characteristics. Thus, parental approaches that may intensify such stressful demands to the point of symptom formation in some children may not do so in others in different temperament." (p. 38)

It is in this area, regarding the particular "parental approaches" or personality characteristics or temperamental qualities that conflict or are complimentary ("poor or good fit") with the various child temperamental qualities, that the present study sought to elaborate on the original work. The major objectives were to distill out some of the combinations of parent temperament or personality style and infant temperament that tend to increase or decrease child adjustment.

Until recently the N.Y.L.S. provided not only the most comprehensive and compelling data relevant to the determination of high risk child temperament or personality style, but virtually the only information available. There has recently, however, been a study reported

in England by Graham, Rutter and George (1973) that supports the validity of the theoretical framework of the N.Y.L.S.

Graham and his co-workers set out to replicate the findings of the N.Y.L.S. on a different population of predominently working class families with at least one parent having some history of behavior disorder. Seven variables of temperament were rated based on interviews similar in design to those used in the N.Y.L.S. These were: mood; intensity of emotional expression; activity; regularity; malleability; fastidiousness; and approach-withdrawal. The correspondence to the N.Y.L.S. variables are obvious, except for fastidiousness, which was not assessed in the earlier work. The authors compared ratings over a one year period on children ranging in age from 3 to 7. Such children were likely to develop some problems given their parents history of dysfunction.

The main findings of the study relate to the comparison of temperamental attributes and judgements of behavioral disorder based on questionnaire data from teachers and parents. The authors found that low regularity was combined with low malleability (similar to adaptability in the N.Y.L.S.), and low fastidiousness as the main temperamental attribute predicting behavioral problems (these were called adverse temperamental characteristics, ATC). Furthermore, it was found that these ATC were linked with adverse family relationships (maternal criticism of child) as assessed through parent interviews in contributing to a higher incidence of behavior disorder. However the authors conclude, as did the New York workers, that ATC do not lead directly to behavior disorder but rather render the child more vulnerable to

the adverse effects of family discord and other "stress" factors. One such "stress" factor would seem to be the degree to which parent and child are congruent or incongruent ("good" or "poor" fit) with one another in their personality styles or temperament attributes.

An additional finding of the Graham study were the sex differences in temperament (data that the N.Y.L.S. did not report). Boys were significantly less fastidious and more intense, and on the average more active, less regular and malleable, and slightly more withdrawn toward new people than girls. Such differences are in general in the anticipated direction (except for withdrawal). What is provocative about such a finding is that these sex differences are assumed to have a constitutional component (if we accept them as temperamental attributes). Such biological predispositions must therefore be an important interacting factor with environmental sex role socialization influences (parents, peers, etc.).

Kagan and Moss (1962) conceived of sex role identification as a "governor" of personality development which illustrates the importance they placed on this process. In essence, the implication is that boys will be boys not merely because of how we react to them but in some measure because of how they are. Such sex differences are likely to be an important interacting factor with parent personality characteristics, as well as with the sex of the parent and thus were under examination in the present study.

To conclude this discussion of theory and research, let me summarize the last two sections. What I would like to emphasize from the review is the state of contemporary affairs with regard to

constitutional influences and particularly temperament. We are at a point where research is converging from: (1) longitudinal studies of temperament; and (2) investigations of the socialization process involving mother-infant and parent-child interaction that together make a strong case for both the existence of specific temperamental variables, and the importance of such biological or child effect influences. The issue now at hand is: what are the particular patterns of constitutional and environmental variables that interact in meaningful ways? For present purposes, the issue becomes: what are the combinations of parent and child temperamental qualities that result in higher or lower probabilities that children will develop more healthily?

ISSUES AND QUESTIONS

In the foregoing presentation several important issues were discussed with reference to the objectives of this study. In the broadest sense, on a conceptual and empirical level the problems under examination concern the interaction of various child temperamental qualities (as defined by the New York Longitudinal Study) with adult temperamental characteristics. The overriding question simply put becomes what constellation of child temperament variables together with what set of parent temperament variables tend to result in high versus low childhood adjustment?

On a more pragmatic level, the problem becomes one of utilizing such information in developing programs aimed at the primary prevention of behavior dysfunction. By identifying potential high risk parent-child combinations during early infancy and employing appropriate intervention strategies at this point, one increases the probabilities of success in lowering the incidence of later behavior dysfunction, as well as minimizing the extent of parent-child conflict in the "normal neurotic" population.

The specific research questions the present study dealt with in addressing the aforementioned issues may be conceptualized in categories which were intended to present a systematic picture of the different sets of data.

I. This set of questions concerns the relationship between infant temperament and parent temperament. If temperament is heritable as has been previously demonstrated (Buss et al., 1973), one would anticipate

a positive relationship between the temperament of the parents and the child. Thus it is expected that there will be some degree of similarity of temperament between parents and child.

For example, will high activity level parents tend to have highly active infants? Also at issue is the question of sex differences in parent contributions to infant temperament. Will one parent be more important than the other?

Furthermore, as a corollary to this, the comparability of child and adult temperament, as assessed by the instruments used in the present study will be determined. The Thorndike Dimensions of Temperament (TDOT) and the Carey Infant Temperament Survey (based on the N.Y.L.S. variables) are comparable on the basis of similarity of scale and item content; i.e. face validity. Will similar factors emerge from the two (i.e., from parents and children)? Will the TDOT correlate with the Stollak Temperament Scale (also based on the N.Y.L.S.)?

II. These questions concern the replicability of the N.Y.L.S. Will a similar constellation of infant temperamental variables emerge that result in higher degrees of maladjustment? Will there be a group of temperamental attributes analogous to factor A (nonadaptibility tendency to withdraw, and intense reactions of negative quality) in the N.Y.L.S. that constitute a high risk infant temperament style? Will any infant temperamental attributes emerge as predictive of later adjustment as was true in the N.Y.L.S.? In essence, here we are concerned with a main effect for infant temperament on child adjustment. Conversely, will any parent temperamental qualities predict childhood adjustment (i.e., a main effect for mother or father temperament)?

If so, which qualities are most important? The N.Y.L.S. data suggest that Mood qualities are most significant. Also, which parent has greater effect? One would anticipate here the mother would.

III. This set of questions was aimed at assessing the actual interaction of adult temperament or personality style with infant temperament qualities. This is the crucial issue of the present investigation. Thomas, et al., (1968) found several child variables individually and in combination relevant in differentiating those children who did and those who did not develop behavior disorders. The most prominent cluster of variables (Factor A) in this regard consisted of the temperamental attributes of: nonadaptability, tendency to withdraw from new stimuli, and predominently intense reactions of negative quality. Factor A in combination with an irregular temperamental style constituted what Thomas et al., (1968) called "difficult children." Infants with these qualities developed a higher incidence of disturbance than those infants who manifested these same attributes but in the opposite direction ("easy children").

However a significant percentage of the "difficult children" did not develop behavior disorders while some of the "easy children" did. The question then becomes what set of parent temperament or personality variables either increase or decrease the likelihood that a child will develop difficulties given a similar set of temperamental predispositions (high or low Factor A)? Is there a type or types of parent (insofar as temperament or personality style is concerned) that tend to increase the level of stress "difficult children" are subjected to because their own style conflicts with that of the child and is thereby

a "poor fit"? Conversely is there a parental trait or cluster of traits that tend to be congruent with the child's temperamental style which functions to decrease stress and is thereby a "good fit?"

The concept of "goodness of fit" as employed by Thomas et al., (1968) refers to the degree to which the child's own characteristics and style of behaving are consonant with those of his environment. Most importantly we are concerned with the "goodness of fit" between parent and infant. Obviously as Thomas et al., (1968) point out, dissonance can also arise in the child's peer group relationships and his school environment but these are not of concern to us here. The present study was restricted to parent-infant consonance or dissonance insofar as the temperamental and personality styles of each were concerned. How such a question was conceptualized may be illustrated in considering the relationship between a sociable parent or set of parents and a child who tends to withdraw from a new situation. One might expect this to be a "poor fit."

But also under consideration was the congruence of the parents themselves. One might be sociable while the other may be more restrained. How does this familial constellation rate on the "goodness of fit" dimension? Another example where prediction is even less clear on an intuitive or common sense basis concerns the variable of activity level. Do parents of high activity level complement a passive child by stimulating him or do they create stress by expecting too much from him? And vice versa? Such was the type of question to be considered under the rubric of "goodness of fit."

Methodological Issues and Assumptions

The present study was concerned with the relationship of parent and infant temperament. The assessment of infant temperament is detailed in the method section. The assessment of adult temperament requires some rationale at this point as a critical assumption was made in designing the study. Temperament or personality style, as assessed by the instruments employed in the present study, was assumed to be relatively stable over the period of 3-4 years since the children in the present study were infants. Ideally the adult temperament or personality style data should have been collected contemporaneously with child temperament data. This would have allowed for somewhat greater freedom and power in data analysis and interpretation. Problems of causation, direction of effect, and interaction could have been addressed more directly, and with greater confidence.

However, the assumption that temperament is relatively stable has some support in the research discussed, particularly when conceived of as an "orientation" or "characteristic response tendency" as discussed by Bronson (1971) in summarizing the stability of the personality variables in the Berkeley Longitudinal Studies. This is precisely how it was conceptualized in the N.Y.L.S. and the present investigation. It was also the rationale and conceptual theme guiding the authors of various instruments utilized to assess temperament. Guilford (1949), Thorndike (1964), and Cattell (1957) all conceived of their tests as measurements of relatively stable personality style attributes. Thus, it was not expected that the 3-4 year period between the birth of their child and the present would have significant effect on the temperament

of the parents.

One should also note that temperament is not intended to be an immutable characteristic, but rather, subject to the vissicitudes of life without being lost in them, exerting an ever present although sometimes not easily recognizable influence that varies in power with the particular developmental period and specific life situations a person is in. It is precisely this mutability that allows for interaction and reciprocal influence between parent and child, the elaboration of which is the purpose of the present investigation.

Another methodological issue that merits elaboration at this point concerns the comparability of the child temperamental attributes as assessed in the N.Y.L.S. with the characteristics assessed by the adult instruments used in the present study. While there is considerable face validity between the scales of the various tests and the N.Y.L.S. variables (see Table 1) one must consider the longitudinal nature of the original study, in that the temperamental attributes manifest themselves in different ways over time. Kagan and Moss (1962) conceive of the evolution of child personality variables into adult personality dimensions in terms of "derivatives," in that they need not be exactly the same to make comparisons but rather have some face validity as to their connectedness. In a similar vein, Gough (1968) stresses the significance of "psychological meaning... in personality testing, whether one is attending to individual scales, combinations, patterns, or even to predictive equations."

For the purpose of the present study the relationship of the two sets of temperament or personality style variables was judged comparable at a "derivative" or "psychologically meaningful" level.

METHOD

Subjects

The sample consisted of 132 three and four year old children; 77 males and 55 females, and their parents. The children were enrolled at four day care centers and nursery schools in the East Lansing Michigan area. Three of the centers are university affiliated while the fourth is nearby. The families were in large part involved with the university as faculty, graduate and undergraduate students. The remainder were from the East Lansing area, which is a high socio-economic and educationally advanced community. Thus the total sample may be homogeniously characterized as very well educated and middle to upper middle class. In this regard it was very similar to the N.Y.L.S. sample.

Initially 395 families were contacted. Of this number 292 initially agreed to participate. One hundred and seventy-two ultimately returned data. Upon recontact the others typically said they did not have time to complete the questionnaires. Of the 172 who mailed in data 40 had to be dropped from being used in the analyses. In approximately 70% of the cases this was because they were single parent families. The other 30% failed to complete some part of their data.

Instruments

Three questionnaires and one set of rating scales were utilized in the study. The Carey Infant Temperament Survey (C.I.T.S.) was used

to assess infant temperament. This is a forced choice instrument yielding scores on the nine dimensions of temperament found in the N.Y.L.S.

The C.I.T.S., developed in 1968, was standardized on a sample of 101 infants. The validity criteria included the degree to which the test scores compared with: (1) an interview with the mothers that was based upon the N.Y.L.S. techniques and scored by N.Y.L.S. raters; (2) the N.Y.L.S. sample scores; and (3) the mothers general impression of the babies. In general, the validity of the questionnaire was supported by all three criteria although several of the mothers tended to report less difficulty with some of the infants than the temperament scores would suggest. Test-retest reliability over a two week period proved high although no statistical results were reported.

The following is a description of the categories used to assess infant temperament.

1. Activity level

   The motor component present in a given child's functioning, and the diurnal proportion of active and inactive periods, plus protocol data on mobility during bathing, eating, playing, dressing, and handling, as well as information concerning the sleep-wake cycle, reaching, crawling, and walking, were used in scoring the category.

2. Regularity

   The predictability and/or the unpredictability in time of any function was analyzed in relation to the sleep-wake cycle,

hunger, feeding pattern, and elimination schedule.

3. Approach or withdrawal

The nature of the response to a new stimulus, be it a new food, new toy, or new person, provided information relevant to this category.

4. Adaptability

Responses to new or altered situations. One is not concerned with the nature of the initial responses, but with the frequency with which they were successfully modified in desired directions.

5. Intensity of reaction

The energy level of response, irrespective of its quality or direction.

6. Threshold of responsiveness

The intensity level of stimulation that was necessary to evoke a discernible response, irrespective of the specific form that the response might take or the sensory modality affected. The behaviors utilized were those concerning reactions to sensory stimuli, environmental objects, and social contacts.

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, the ongoing behavior.

9. Attention span and persistence

These two categories are related. Attention span is the length of time a particular activity is pursued by the child. Persistance refers to the continuation of an activity in the face of obstacles to the maintenance of the activity direction.

The Thorndike Dimensions of Temperament (T.D.O.T.) and the Stollak Temperament Scale (S.T.S.) were used to assess adult temperament. The S.T.S. is a newly developed, brief questionnaire based on the temperamental attributes established in the N.Y.L.S. The T.D.O.T. is a more lengthy protocol designed with a similar orientation toward temperament as defined by Thomas et al., (1963).

There is no validity or reliability data on the S.T.S. as yet. A first step in this direction is its comparability to the T.D.O.T. which has an extensive reliability and validation history.

Reliability scores for the T.D.O.T. were generated from a random sample of 1200 subjects from ages 16 to 22 equally divided by sex. Scale reliabilities ranged from .54 to .77. This compares favorably with other personality inventories, especially when considering the wide range of behavior sampled and the minimal repetition of items used to sample this behavior. Validation has involved comparing the T.D.O.T. with: (1) other instruments (the Guilford Zimmerman Temperament Survey); (2) self reports of temperamental behavior; and (3) pooled peer ratings. In all of the above the correlations were high. For example, Correlation with self reports ranged from .43 to .73.

Temperament was viewed as the how of behavior, the behavioral

style of the individual as opposed to the what (abilities and content), and why (motivation) of behavior. Two people may be doing the same thing, (for instance, getting dressed in the morning) perhaps even for the same reasons (I think we might find a considerable degree of agreement here) and yet differ in the way, manner, fashion they do it in (grabbing anything they can find in the closet and putting them on as quickly as possible, to carefully selecting clothes and dressing most meticulously). From this example there are obvious differences in activity level, intensity of energy invested, and of course, persistence. While even such an example may at first seem comparatively inconsequential, consider what the situation might be if a parent of the former disposition had a child of the latter. Might there not be some considerable room for conflict due to this difference in style?

Two methodological issues should be noted here. First, the use of questionnaire vs. observational data was of concern. Given the definition of temperament as a relatively stable personality style that is characteristic over a wide range of situations, it would require a thorough and sophisticated technique of observational sampling to assess the various patterns and changes in individual reactivity. Such procedures have not yet been developed. Even if there were, the economics and logistics of such designs would be enormous with dubious pay off. Questionnaires with all their shortcomings have been shown to at least tap important trends in the study of personality.

Eliasz (1972) in his review of methodological strategies to

assess temperament concludes that observational sampling is superior only if it can embrace a broad range of functions over a long period of time. Given these requirements, the assessment of temperament through questionnaire data can yield more accurate results than any method presently available.

The second issue concerns the validity of the tests with regard to: (1) measuring temperamental variables per se and (2) their correspondence to the variables studied in the N.Y.L.S. The following chart illustrates the correspondence of various scales on the T.D.O.T. to the N.Y.L.S. temperament variables. This correspondence was established on the basis of the face validity of the various scales, the items themselves, and their relationship to the N.Y.L.S. variables.

Insert Table 1 about here

Some scales resemble very closely the infant temperament scales, while others correspond less obviously. The degree to which they phenotypically correspond is one empirical question for the present study; i.e. will the same or similar temperament factors emerge in an investigation of adult personality style as were found for the child study? Dependent upon the answer to this question is the issue of the relationship of whatever variables these tests are measuring to the variables assessed by Thomas et al., (1968).

To assess child adjustment, Baumrind's (1967 a, b) five dimensions of competence were utilized. These include: self-control; self-reliance; approach-avoidance tendency; subjective mood; and

Table 1.--Correspondence of Infant and Parent Temperament Variables

	Thomas, Chess, Birch Infant Temperament Variables	Scales on Thorndike Dimensions of Temperament
1.	Activity Level	Active-Lethargic
2.	Regularity & Rhythmicity	Responsive-Casual
3.	Approach-Withdrawal	Sociable-Solitary Ascendent-Withdrawing
4.	Adaptability	Accepting-Critical Placid-Irritable
5.	Intensity	Active-Lethargic Placid-Irritable
6.	Sensory Threshold	Placid-Irritable
7.	Mood	Cheerful-Gloomy Placid-Irritable
8.	Distractability	Impulsive-Planful
9.	Attention Span	Reflective-Practical Responsible-Causal

peer affiliation (see Appendix G for descriptions of the scales). The administration and scoring of the rating scales were adapted to provide an efficient, direct method of obtaining a composite adjustment score for all the children in the various centers, including those who were not participating in the study. Baumrind (1967, 1968) delineates three discrete patterns of adjustment which were derived through using different combinations of the scales. For present purposes it was decided that since degrees of relationship was of utmost importance, a linear dimension of adjustment would be most useful. The scales were adapted to yield a single adjustment score for each child.

This was accomplished by assigning a numerical value to each scale rating. A high rating was worth 4; medium high, 3; medium low, 2; and low, 1. The scores were then summed to obtain an overall adjustment score.

Thus, it was possible for a child to have an adjustment score ranging from 5 to 20. In cases where there were two or three teachers rating a child, their scores were averaged. This was the case in three of the four day centers participating.

At this point we shall briefly summarize the design of the study. The independent variables are infant and parent temperament as assessed by the aforementioned instruments. The dependent variable is child adjustment as assessed by teacher ratings. These ratings are based upon child behavior in a day care center from ages three to four. The overall objective is to determine the relationship of the infant and parent temperament variables to childhood adjustment.

Procedures I: The Parents

The first step in data collection involved the parents of the children completing the temperament measures. Parents were first sent a letter of introduction to the study (see Appendix B). A follow up phone call was then made to establish some more personal contact with the families while in the process answering questions and providing additional procedural information. At this time personal feedback regarding the results of the study was offered as an incentive. Interested parents were then mailed questionnaires. A follow up phone call was made to those not returning data within a week.

The phone calls were made by undergraduate psychology majors working for a special projects course. They received approximately three hours of training with regard to establishing rapport, giving information, and soliciting cooperation. They were given guidelines to follow as to what kinds of information they could give, and how much. When questions arose they could not answer, they typically contacted the experimenter and called the family back. Thus, the procedure to obtain subjects was kept reasonably consistent from a methodological point of view.

Both parents filled out the T.D.O.T. and S.T.S. individually, while the C.I.T.S. was completed jointly.

A methodological issue should be noted here with regard to the C.I.T.S. The parents were instructed to answer the items based on the child as an infant (2-3 years in the past). With retrospective data such as these, one runs the risk of distortion due to faulty

memory and halo effects. One way of minimizing this was to have both parents fill the instrument out cooperatively, so that they might help one another fill in the gaps. An advantage with this procedure involves obtaining some consensual validation, that was not consistently ascertained even in the N.Y.L.S.

Furthermore since the C.I.T.S. described in detail the behaviors to be rated for the parents, and thus did not have to originate from them, it was anticipated that inaccuracy would be minimal.

Procedures II: The Teachers

Following the data collection process with the parents, the teachers of the children completed the rating scales on the children (see Appendix G for a copy of the forms used).

The teachers had approximately 15-40 children in their class and had known each child for a minimum of four months, during which time the children were in school for at least three hours a day. The teachers had known the large majority of the children for the entire school year, since the ratings were completed in the latter part of the term.

In three of the four day care centers and nursery schools participating there were two and sometimes three teachers per class. The ratings of these teachers were of course done independently and averaged to obtain a composite adjustment score.

The majority of teachers had much prior experience in making similar kinds of ratings. Most of the teachers were working on, or had received advanced degrees in Child and Family Science or Early

Childhood Education. Thus they were very sensitive to the kinds of personality characteristics and issues the scales were designed to assess. It was judged that these teachers would provide an accurate independent evaluation of child adjustment.

The teachers were asked to place every child in their class in one of the four categories (high, medium-high, medium-low, low) on each of the five scales (self control, self reliance, approach-avoidance tendency, subjective mood, and peer affiliation).

To insure that there would be an approximately normal distribution of children across the categories, the teachers were instructed to place a minimum of 10% and a maximum of 40% of the children in the class in each category. It was expected that teachers would have a difficult time "categorizing" their children, and that a type of halo effect might influence the ratings (in the direction of higher adjustment scores).

It was also felt that children from these day centers would probably be better adjusted on the whole than the general population given the educational and socioeconomic considerations, as well as the concern and involvement these parents demonstrated with their children. Furthermore, the quality and goals of the day centers themselves no doubt also would tend to influence positively the overall adjustment of the children. Thus the 10% and 40% minimums and maximums for each category were set so as to insure some dispersion of the ratings while still allowing the teachers considerable flexibility in their decision.

The rationale for rating all the children was to provide a basis upon which to determine if those who participated in the study

were similar to the entire population of the various centers. Since less than half of those enrolled became involved in the study it was important to know if this group was representative. One might expect even higher adjustment from those who participate as has been the case in prior research. By rating their entire class the teachers also had a broader basis from which to make comparative judgments.

RESULTS

Sample Characteristics

In studies where the return rate for voluntary participants is considerably less than 100%, one must be concerned about the representativeness of the sample. Since 44% of those originally contacted, and 59% of those initially agreeing to participate returned data it was possible that their was some potential bias in the sample. One is especially concerned about the sample being better adjusted.

Therefore, to determine if those participating in the study were comparable to the population of the day care centers and nursery schools from which they were drawn a t-test of the adjustment scores was done. There was no difference in adjustment between the total returning data ($\bar{x}$ = 14.73) and the total population (u = 14.75, $t < 1$; the potential range was from 5 to 20). After dropping subjects with incomplete data there was still no significant difference between the final sample ($\bar{x}$ = 14.67) and the total population (u = 14.75, $t < 1$). Thus it can be safely concluded that at least for this population of three and four year olds, the participating children are not significantly different insofar as their overall adjustment is concerned. In fact, they are virtually identical. A frequency distribution of the child adjustment scores is presented in Appendix H.

In the three day care centers where there were two or three teachers rating each child interrater reliability was determined by a Pearson correlation coefficient. The reliability coefficients for the three centers were: 0.70, 0.54, and 0.51. While these are

not high on the whole, the fact that they are quite global ratings which are somewhat subjective may account for this. It is felt that the balance achieved by having more than one teacher fill them out controls for the subjectivity issue to a degree.

The Selection of Infant and Parent Temperament Factors

Infant Temperament

To address question I regarding the comparability of the three instruments used to assess temperament, factor analyses (principal axes solutions with varimax rotations) were performed. The first involved the Carey Infant Temperament Scale (C.I.T.S.) and is presented in Table 2.

Insert Table 2 about here

Three factors emerged from this analysis. An asterick marks the variables which loaded highest on these factors in Table 2. We shall hereafter call factor (1) Mood, (2) Consistency, and (3) Energy Level, based upon the conceptual relationship between the variables on each factor. These were the only three factors that emerged.

With regard to factor (1), Mood, in descending order of variable loading, this dimension is defined by mood, approach, adaptability and threshold. The only temperamental attribute that does not seem conceptually consistent with the other characteristics is threshold. This refers to the amount of stimulation necessary to evoke a response and would seem conceptually to more appropriately fit in the Energy Level (3) factor. Otherwise adaptability, approach, and mood form a

Table 2.--Varimax Rotation Analysis for Infant Temperament Attributes (Carey Infant Temperament Scale)

	Rotated Factor Loadings			
	Factor 1 (Mood)	Factor 2 (Consistency)	Factor 3 (Energy)	Commonality
1 - Activity	-.041	-.141	.758*	.596
2 - Regularity	-.094	-.568*	-.378	.474
3 - Approach	-.871*	-.083	-.013	.766
4 - Adaptability	-.802*	-.027	-.285	.725
5 - Threshold	-.640*	.469	-.027	.647
6 - Intensity	.353	-.432	.586*	.655
7 - Mood	-.906*	.009	-.063	.826
8 - Distractability	-.126	-.123	-.584*	.372
9 - Persistence	.001	-.750*	.254	.626
High Load	-.906	-.750	.758	
Proportion of Variance	.308	.150	.173	
Cummulative P.V.	.309	.460	.632	

clear, discernable dimension which closely resembes the critical factor "A" found by Thomas et al. (1968) that best predicts behavior disorder.

A high score on this factor describes an infant with a predominently positive mood, who approaches people and objects, and is adaptable in his habits and reactions. This is a reasonably cohesive set of qualities as well as desireable. Thomas (et al., 1968) labeled these "easy" children. This factor "A" included intensity, an Energy Level factor here. Perhaps the threshold dimension herein is some parallel manifestation of an energy level type characteristic

Factor (2), Consistency, is defined by regularity and persistence of behavior (attention span). Regularity and persistence imply a constant rather than cyclical behavioral style. For example such a child would play with a crib toy for a period of time as opposed to a child who would go from one toy to another in an erratic fashion. Such a child would also be more regular in his personal habits; i.e. feeding, sleeping, and eliminating.

The Energy Level, factor (3), is positively defined by activity level and intensity of reactivity, and negatively loaded with distractability. The latter would seem to be more appropriate to the Consistency factor although the relationship of high activity and intensity with high distractability seems quite plausible and consistent. Thus on balance,the factors emerging seem reasonably consistent internally and conceptually distinct externally.

One should note that factor (1), Mood, is the most sharply differentiated of the three. This is understandable in terms of it

being the first factor of the three that emerged. It accounts for .309 of the variance, almost the combined total of the other two. Because of this factor (1) must be viewed as the most statistically meaningful of the factors. Furthermore by virtue of its analogous composition to factor "A" from the N.Y.L.S., it is also the most conceptually meaningful.

Factors (2) and (3) have variables which load highly on each other. For example intensity loaded highly (-.432) on factor (2), Consistency. On factor (3), Energy Level, we find regularity loading high (-.378). Thus the possibility of factor fusion, or lack of differentiation is stronger with these than with factor (1).

Parent Temperament

The next set of factor analyses involved the parent temperament instruments, the Thorndike Dimensions of Temperament (T.D.O.T.) and the Stollak Temperament Survey (S.T.S.). These were done separately for mothers and fathers. A summary of the mothers T.D.O.T. and S.T.S. scale scores are presented in Table 3 below.

Insert Table 3 about here

The three factors paralleling the infant temperament factors are shown here. (The complete factor analysis which includes seven factors may be found in Appendix K.) The factors are presented in the order they emerged in the analysis which indicate that they are the three most statistically meaningful. They are also the most theoretically important since they parallel the three infant factors with considerable conceptual consistency, incorporating similar

Table 3.--Varimax Rotation Analysis for Mother Temperament Attributes

		Rotated Factor Loadings		
		Factor 1 (Mood)	Factor 2 (Consistency)	Factor 3 (Energy)
S.T.S.	1 - Activity	-.053	.137	.755*
	2 - Regularity	-.091	.673*	-.269
	3 - Approach	-.340	.092	-.094
	4 - Adaptability	-.623*	.291	-.071
	5 - Threshold	-.059	-.167	.099
	6 - Intensity	-.057	-.077	.374
	7 - Mood	-.725*	-.055	.174
	8 - Distractability	-.025	-.147	.010
	9 - Persistence	-.376	.377	.105
T.D.O.T.	10 - Sociable	-.121	-.130	.092
	11 - Ascendent	-.092	-.257	.217
	12 - Cheerful	-.610*	.104	-.130
	13 - Placid	-.711*	.079	-.284
	14 - Accepting	-.128	.024	-.040
	15 - M - F	-.031	-.195	.067
	16 - Reflective	-.079	-.265	-.199
	17 - Impulsive	-.115	-.739*	-.159
	18 - Active	.202	.140	.784*
	19 - Responsible	.074	.792*	.276
	High Load	-.725	.792	.784
	Proportion of Variance	.114	.112	.093
	Cummulative P.V.	.114	.227	.320

variables across both adult instruments.

Factor (1) is defined by mood and adaptability from the S.T.S., and cheerfulness and placidity on the T.D.O.T. This factor (1) was called the Mood factor for mothers (also factor 1 on the C.I.T.S.). The fact that it is parallel to the infant mood factor and the N.Y.L.S. factor "A" makes it the most important from a theoretical viewpoint.

We may say about this factor: (1) that it is inclusive of variables that make sense together, (2) that cut across both instruments, and (3) are parallel to an infant temperament factor. It is these three criteria that shall be used in selecting comparable infant, mother, and father factors to be used in all subsequent analyses.

Factor (2) is defined by responsibility and planfulness (i.e., a negative loading on impulsivity), from the T.D.O.T. and regularity from the S.T.S. They all vary in a consistent direction and taken together imply the same constant versus cyclical behavioral style as was the case for infants. The factor is defined quite similarly by the same kinds of attributes that characterize the Consistency factor on the C.I.T.S. and is named the same way. It too meets the three criteria set above.

The third factor that most closely approximates the infant dimensions and cuts across both adult temperament instruments in a theoretically consistent fashion is factor (3) above. It is defined solely by activity level, both on the T.D.O.T. and S.T.S. Both activity measures vary in the same direction, as expected. While the attribute of intensity is not included, as it was on the C.I.T.S.

factor, there is no other conceptually clear T.D.O.T. variable that one might expect to load on this factor.

One should note that ideally were the S.T.S. and T.D.O.T. yielding the identical factors found with infants, only three instead of seven factors would have emerged. Given that we have two different instruments with 19 variables as opposed to only nine infant variables we might expect more factors. Furthermore one would expect that adult temperament is more differentiated than an infant's and thereby more factors would emerge. To illustrate one of the variables on the T.D.O.T. is "accepting," which is not clearly a dimension of temperament. It defines a factor by itself as we might anticipate.

Having found and selected three mother temperament variables to compare with those of the infants we now turn to the fathers. The T.D.O.T. and S.T.S. for fathers is presented below for Table 4.

Insert Table 4 about here

For fathers there was only one factor that met the three criteria of: (1) being conceptually consistent; (2) incorporating variables from both the S.T.S. and T.D.O.T.; and (3) paralleling a child temperament factor. This was factor (2) of the analysis, which is an Energy Level factor. It consists of activity level on both the S.T.S. and T.D.O.T., as well as intensity on the S.T.S. and ascendance and sociability on the T.D.O.T. Intensity is clearly a consistent addition beyond the analogous factor for mothers. Ascendance and sociability are not quite so conceptually close but their scale descriptions include strong elements of assertion and extroversion

Table 4.--Varimax Rotation Analysis for Father Temperament Attributes

		Rotated Factor Loadings		
		Factor 1 (Mood)	Factor 2 (Energy)	Factor 3 (Consistency)
S.T.S.	1 - Activity	.065	.793*	.006
	2 - Regularity	.781	.039	.261
	3 - Approach	-.806*	.142	.065
	4 - Adaptability	-.689*	-.002	-.258
	5 - Threshold	.041	-.238	-.013
	6 - Intensity	.017	.619*	-.038
	7 - Mood	-.704*	-.150	.045
	8 - Distractability	-.075	.046	-.155
	9 - Persistence	-.108	-.110	.174
T.D.O.T.	10 - Sociable	-.301	.454*	-.047
	11 - Ascendent	-.307	.506*	-.211
	12 - Cheerful	-.199	-.077	-.167
	13 - Placid	.094	-.288	-.106
	14 - Accepting	-.145	.021	-.024
	15 - M - F	-.096	.068	.001
	16 - Reflective	.091	-.156	-.360
	17 - Impulsive	-.047	.157	-.769*
	18 - Active	-.015	.600*	.407
	19 - Responsible	.005	.172	.843*
	High Load	-.806	.793	.843
	Proportion of Variance	.101	.112	.099
	Cummulative P.V.	.101	.213	.312

which involve high levels of activity and energy. Thus on balance the factor makes sense as an Energy Level factor. It is clearly more comprehensive than its parallel for mothers.

Other than this, there was one factor that resembled the Mood factor in infants. Factor (1) is defined by three Mood variables from the S.T.S., approach, adaptability, and mood. This closely parallels the critical factor "A" in the N.Y.L.S. In contrast, the T.D.O.T. Mood variables, cheerfulness and placidigy, load on separate factors.

Given that adaptability and mood, and cheerfulness and placidity loaded on one factor for mothers, one wonders about the effects of sex differences for these scales. Specifically, fathers must be perceiving these kinds of qualities somewhat different. In any case, while meeting only two of the three criteria, this factor was judged most useful for later analyses, since it incorporated the three critical S.T.S. Mood variables.

A Consistency factor for fathers is most closely defined by factor (3) above. Both responsibility and planfulness from the T.D.O.T. load on it, as they do with mothers. While these two attributes imply a consistent personality style, they do not incorporate any similar attributes from the S.T.S., i.e. regularity or persistence. Since regularity loads on this factor for mothers it would seem that sex differences are coming into place here. It appears that fathers perceive this attribute differently. For present purposes this factor was chosen as the most compatible with mother and infant Consistency factors due to the bariables that loaded from the T.D.O.T., although

it only meets two of the three above criteria.

Once again as with the mothers there are four other factors with an assortment of variables, none of which fall into the three looked for dimensions. (See Appendix L for complete factor analyses.) The possible reasons for this are the same as mentioned for the mothers: difference in composition of the scales both between and within tests; and difficulties in measuring infants and adults along the same personality dimensions. With regard to mother-father variability the problem of differentially perceiving the meanings of the items seems a probable cause in accounting for this. For example what is activity for a male may be perceived as sociability for a female, since sociability loaded on the Energy Level factor for fathers.

From the foregoing discussion of the factor analyses it is justifiable to conclude that: (1) there is some relationship between the instruments utilized to assess adult temperament with some scales and factors bearing closer statistical and conceptual resemblance than others; (2) there are three (Mood, Consistency, Energy)conceptually consistent and defineable factors for infant temperament which have parallels in both mother and father temperament factors; and (3) there is some dissimilarity between the mother and father dimensions, that seem to be a function of male-female differences. The factors are summarized in Table 5 below.

Insert Table 5 about here

The Relationship of Infant to Parent Temperament

To address this question and subsequent ones, only the factor scores of the dimensions discussed above were utilized. This was done

Table 5.--Summary of Factors with Defining Variables Used to Conduct Data Analyses

Factor	Variables		
	Infant	Mother	Father
(1) Mood	Adaptability Approach Mood Threshold	Adaptability S.T.S. Mood S.T.S. Cheerful T.D.O.T. Placid T.D.O.T. (Factor 1 on Table 2)	Adaptability S.T.S. Approach S.T.S. Mood S.T.S. (Factor 1 on Table 3)
(2) Energy	Activity Intensity Distractability	Activity S.T.S. Active T.D.O.T. (Factor 3 on Table 2)	Activity S.T.S. Intensity S.T.S. Active T.D.O.T. Ascendent T.D.O.T. Sociable T.D.O.T. (Factor 2 on Table 3)
(3) Consistency	Regularity Persistence	Regularity S.T.S. Responsible T.D.O.T. Planful T.D.O.T. (Factor 2 on Table 2)	Responsible T.D.O.T. Planful T.D.O.T. (Factor 3 on Table 3)

partly in the service of data reduction, allowing for a set of manageable analyses of an initially massive amount of data and variables. More important, this was done so that conceptually similar dimensions might be compared. Previously, we had nine infant and 19 mother and father variables with considerable conceptual overlap. We now have three factors, all of which have greater conceptual consistency across subjects, as well as greater statistical compatibility. The price we pay for this is a loss in precision as we move farther away from raw data.

To answer the question of the relationship of infant to parent temperament the next step involves generating standardized factor scores for infants and parents on each of the Mood, Energy, and Consistency factors. These scores were then intercorrelated. The correlations are presented in Tables 6a and 6b below.

Insert Tables 6a and 6b about here

The correlations between the comparable infant, mother, and father factors are underlined. That is, the correlation of infant Mood and mother Mood is marked. Only these correlations will be discussed, since we are interested in the relationships between comparable factors and variables for family members.

For girls, the only significant finding here was a positive relationship ($r = .24$, $p < .10$) between the Energy Level of the mother and the infant. Thus it may be concluded that the present data show no <u>strong</u> similarity between infant and parent temperament for girls. This is not surprising considering that the study was not

Table 6a.--Pearson Correlation Coefficients Between Infant Girls Mother and Father Temperament Factors and Adjustment

1	Adjustment									
2	Infant Mood	.42***								
3	Infant Consistency	.04	.17							
4	Infant Energy	.14	.20	-.03						
5	Mother Mood	.28***	.18	.06	.15					
6	Mother Consistency	-.01	-.15	.12	-.23*	.10				
7	Mother Energy	-.12	.07	.20	.24*	.06	-.20			
8	Father Mood	-.01	.17	.06	-.30**	.09	.16	.06		
9	Father Consistency	.24*	.01	-.03	.13	.11	.03	-.10	-.04	
10	Father Energy	-.05	-.02	.11	-.19	.12	.19	.03	.13	.12
		Adjust-ment	Infant IMood	Infant Consistency	Infant Energy	Mother Mood	Mother Consistency	Mother Energy	Father Mood	Father Consistency

(n = 55)

* $p < .10$
** $p < .05$
*** $p < .01$

Table 6b.--Pearson Correlation Coefficients Between Infant Boys Mother and Father Temperament Factors and Adjustment

1	Adjustment									
2	Infant Mood	.00								
3	Infant Consistency	-.01	-.15							
4	Infant Energy	.07	-.28***	.01						
5	Mother Mood	.23**	.26**	.15	-.07					
6	Mother Consistency	.14	.15	-.08	-.15	-.09				
7	Mother Energy	.13	-.05	.04	-.05	.18	.19			
8	Father Mood	-.15	.06	.11	.02	.02	.24**	.06		
9	Father Consistency	.00	.04	.04	-.19	.16	.09	.21	.01	
10	Father Energy	.12	.18	-.07	-.21*	.14	.09	-.10	-.06	-.05
		Adjust-ment	Infant Mood	Infant Consistency	Infant Energy	Mother Mood	Mother Consistency	Mother Energy	Father Mood	Father Consistency

(n = 77)

* p < .10
** p < .05
*** p < .02

designed to directly answer this question.

For boys, only two significant relationships were found. There was a significant positive relationship found between mother and infant Mood ($r = .26$, $p < .05$). There was also a negative relationship found between Energy Level for boys and fathers ($r = -.21$, $p < .1$). Overall from these data it appears there is no strong case for similarity of temperaments with families, although some significant relationships were found.

The intercorrelations of the three temperament factors for boys and girls can also be compared when looking at Tables 6a and b. Of interest was a significant difference found between the correlation of Mood and Energy Level for boys and girls ($z = 2.7$, $p < .05$). For girls, Mood and Energy were positively related, while for boys this relationship was negative. This finding will be addressed more thoroughly in the discussion.

The Relationship of Infant and Parent Temperament to Child Adjustment

To assess this relationship, the factor scores for Mood, Energy, and Consistency for infants, mothers, and fathers were then correlated with adjustment at age three and four. Furthermore a stepwise multiple regression equation was generated to determine which of the nine factors best predict adjustment. The significant correlations and regression equation are presented in Table 7a for girls, and 7b for boys.

Insert Tables 7a and 7b about here

For girls, the best predictor of adjustment was infant Mood, a finding which is consistent with the N.Y.L.S. results. The Mood

Table 7a.--Multiple Regression Equation and Significant Pearson Correlations for Temperament Factors in Predicting Adjustment for Girls

Multiple Correlation Coefficients

r	r^2
.51	.26

	Beta Weights	Std. Errors of Betas	F of Betas	Significane Level
Infant Mood	.38	.12	9.80	.003
Father Consistency	.21	.12	3.05	.09
Mother Mood	.19	.12	2.26	.14

Significant Pearson Correlation Coefficients

	r	
Infant Mood	.42	$p < .01$
Mother Mood	.28	$p < .05$
Father Consistency	.24	$p < .10$

Table 7b.--Multiple Regression Equation and Significant Pearson Correlations for Temperament Factors in Predicting Adjustment for Boys

Multiple Correlation Coefficients

r	r^2
.35	.12

	Beta Weights	Std. Errors of Betas	F of Betas	Significance Level
Mother Mood	.26	.11	5.40	.02
Mother Consistency	.21	.11	3.80	.06
Father Mood	-.21	.11	3.52	.07

Significant Pearson Correlation Coefficients

	r	
Mother Mood	.23	$p < .05$

factor here most closely resembles the high risk factor "A" in the N.Y.L.S. The Mood of the mother and Consistency of the father also predict, although with considerably less significance.

For boys, the best predictor was the Mood of the mother followed by her consistency. This supports our own initial expectation that mothers would play a greater role although it seems more so here for boys. The fathers' mood also predicts, although in a negative direction. These findings will be dealt with more completely in the discussion.

It is important to note that no infant factors predict here, a finding which suggests some male-female differences with regard to the effects of temperament.

Family Homogeneity and Adjustment

To answer the question regarding the "goodness of fit" between parent and child temperament several steps were taken. To begin an operational definition of congruence or similarity of temperament within families was established. Congruence herein is defined as the relationship of one family members temperamental attributes to another's, as determined by their order of importance relative to other attributes. That is, we rank ordered temperamental attributes for each family member which were then compared with those of other family members from a correlational perspective. This technique is in contrast to a comparison of mean differences, as in an analysis of variance framework.

To illustrate using the three factors, the measure of the congruence of temperament between these factors for mother and father

will be the ranked order of importance (based upon factor scores generated from the original scale scores). Thus if two persons differ greatly in absolute terms (magnitude), but if their temperament factor order is similar they will be defined as temperamentally congruent. More specifically, if Mood is highest followed by Energy and Consistency for mother, and if the order is the same for father they will be scored as congruent or homogeneous, even though their absolute scores may be far apart. If, accordingly, the order for father were Energy, Consistency, Mood, the two would be less similar. Were it Consistency, Energy, Mood it would be quite dissimilar. Thus the relative order of importance of these attributes is being compared.

This definition was chosen because it enables one to generate indices of similarity within each family which can be tested against some criterion. For present purposes the criterion was child adjustment. Let us now examine the actual steps taken and decisions made to get to this point.

Based upon the factor analyses previously presented it was decided to utilize the three infant temperament factors along with the corresponding mother and father factors as the attributes of temperament to be compared. This decision was based upon a conceptual rather than statistical rationale although empirical similarity between the factors was also important. Three meaningful infant temperament factors were found, one of which bore close resemblance to the original high risk factor "A" found by Thomas et al., (1968). Three comparable mother and father factors were then selected as previously described.

The next step was to generate standardized factor scores for the above. These scores were then used as a basis from which to generate coefficient alpha. This was the statistic chosen to compute homogeneity within families. It is a measure of the degree of relationship (homogeneity) between several variables. In this regard it resembles a multiple correlation coefficient. The advantage of coefficient Alpha is that it generates the homogeneity or similarity between all variables, rather than the relationship of one variable to several others, as is the case with a multiple r. Essentially the approach involved transposing the matrix whereby the family members became the items and factor score became the observations. The model is illustrated in Table 8.

Insert Table 8 about here

At this point a problem developed. The combination of large item variance (factors within a family member), plus small total test variance (combinations of factors across family members), resulted in coefficient alphas that were out of the range the formula was supposed to yield (large negative numbers were generated).

To correct for this the factor scores were rank ordered to minimize item variance and thereby gain some statistical stability. When the alpha coefficients were still turning out to be too largely negative, a transformation was done to restrict the low alphas to -1.00 for cases where extremely negative values would occur, and -0.50 for values between -3.0 and zero. This was done so as to preserve the increments of variability without distorting too greatly

Table 8.--Model for Generating Coefficient Alpha for Homogeneity Analysis Within Families

	Infant	Mother	Father	M + I	F + I	M + F	M + F + I
Factor 1	*						
Factor 2							
Factor 3							
	"Item" (Person) Variance	→	→	Total "Test" (Family) Variance	→	→	→
				Alpha	→	→	→

*Note - Cell entries are ranks or summed ranks

the range of potential alpha scores. Thus a range of +1.0 to -1.0 for the alpha scores could be obtained. (See Appendix O for a more complete rationale and description of this transformation.)

At this point the alpha scores of homogeneity or congruence within families was computed. This was done for mother and infant; father and infant; mother and father; and mother, father, and infant. They were then intercorrelated with adjustment, and a stepwise multiple regression analysis was performed. A scatter plot was also done to verify the relative normality of the distribution so that a Pearson correlation coefficient could be used.

The regression equation and significant correlations for girls are presented in Table 9a, and for boys in 9b.

Insert Tables 9a and 9b about here

For girls, the best predictor of adjustment was the similarity of mother and infant temperament. This was in a negative direction, and at a low level on significance, which may in part be due to the smaller sample size for girls (n = 55 vs. N = 77 for boys). This trend implies that the more dissimilar the temperament between mother and infant, the better will be the girl's adjustment.

For boys, a somewhat similar pattern emerged. While the <u>dissimilarity</u> between mother and infant temperament was again the best predictor of positive adjustment some differences come into play here. The <u>dissimilarity</u> between father and son also predict positive adjustment, as does the <u>similarity</u> between mother and father temperament. These data suggest then that adjustment for boys is best

Table 9a.--Multiple Regression Equation for Predicting Girls Adjustment from Homogeneity of Family Temperament

(n = 55)

Multiple Correlation Coefficients

r	r^2
.21	.04

	Beta Weights	Std. Errors of Betas	F of Betas	Significance Level
Mother-Infant	-.24	.13	2.39	.13

Table 9b.--Multiple Regression Equation for Predicting Boys Adjustment from Homogeneity of Family Temperament

(n = 77)

Multiple Correlation Coefficients

$\frac{r}{.32}$ $\frac{r^2}{.10}$

	Beta Weights	Std. Errors of Betas	F of Betas	Significance Level
Father-Infant	-.22	.11	3.82	.05
Mother-Infant	-.21	.11	3.41	.07
Mother-Father	.16	.11	2.10	.15

when they are dissimilar to both parents and when their temperaments are similar.

It should be noted that none of the above simple correlations are statistically significant. There is a similar pattern for both boys and girls in that their temperamental similarity to mothers correlate negatively with adjustment. The regression equations account for only 4% of the variance for girls and 10% for boys. On the other hand when combining boys and girls this relationship between mother-infant dissimilarity and adjustment is significant ($r = -.20$, $p < .05$). (See Appendix P for these data.) Furthermore the fact that one of the possible four simple correlations with adjustment (mother-infant, father-infant, mother-father, mother-father-infant) was significant is above chance (one in 20 at the .05 level), and therefore merits consideration.

We should also add that while the significance levels are low, these data may be conservative estimates of the extent of the relationship. After all, the data were rank ordered to conform to the requirement of the alpha coefficient equation. The loss of the effects of magnitude therein, as well as the limited potential for variation stemming from the use of only those factors (which in the present data analysis model essentially means an N of 3), may restrict the estimate of the extent of the relationship. This of course is speculation at this point. Only more refined analysis can establish it.

DISCUSSION

The Emergence of Temperament Factors

The emergence of the three temperament factors of Mood, Consistency, and Energy Level is clearly with the mainstream of prior research and theory (Thomas et al., 1968; Birns et al., 1969; Buss et al., 1973; and Graham et al., 1973). While these various researchers have used different variables, or at least names, to study temperamental issues, all have demonstrated temperamental differences and/or effects in early childhood.

When particular attributes of temperament are considered, the present study finds support for the work of Thomas et al., (1968). There and here the first factor was found most predictive of later childhood behavior disorder and adjustment, respectively. The Mood factor here is defined primarily by approach, adaptability, and mood, in addition to threshold. Thomas et al., (1968) found that these first three as well as intensity define factor "A". In both studies this first factor was the most conceptually clear and statistically stable one.

In factoring his data, Thomas (1975) did not find any other factors held up well. In the present study, we found an Energy Level factor and a Consistency factor, on a theoretical and empirical basis, both for infants and adults.

The Consistency factor is somewhat new as a temperament attribute. A dimension defined by a constant versus cyclical style of behaving seems well within the boundaries of temperament. The person who is slow and steady (or fast and steady), versus the labile

up and down type defines this category (the tortoise and hare). The findings relating to this factor and the other factors will be discussed later.

We were also able to find corollaries of the infant factors in adults. The implication here is that adult temperament evolves along the same dimensions of infant and child temperament. This is consistent with an essential criterion of temperament; that is, similar temperamental attributes should be present throughout an individual's life. The present data support similar findings in the literature. Both the Berkeley (Jones et al., 1971) and Fels (Kagan and Moss, 1962) longitudinal studies found important continuities to exist with personality over decades.

Bronson (1971) placed these continuities under the rubric if temperament. Emotionally expressive versus inhibited-reserved was the most significant dimension she found. The approach-withdraw dimension in the present study, which is included on the Mood factor, is clearly a parallel to this. The existence of this factor both for infants and parents across generations herein indirectly supports the notion of temperament as continuous over time. As such it is consistent with an essential criterion of temperament: that of being present at birth and stable over time (Buss et al., 1973).

The Relationship Between Infant and Parent Temperament

To be considered an attribute of temperament, a personality characteristic must have some genetic basis (see Buss et al., 1973). While the present study was not designed to address this question, some limited evidence was found lending indirect support to the

hypothesis of the heritability of the factors investigated here. Specifically, for Mood there was a significant relationship between mothers and sons and a relationship approaching significance for fathers and daughters. There was a significant relationship between mothers and daughters on the Energy factor. This relationship for Energy was in the opposite (negative) direction for fathers and sons, and fathers and daughters. There was no relationship of any kind for Consistency, nor was there any between mother and father factors.

Insofar as the present investigation is concerned, we can only point out that the Mood and Energy Level dimensions showed relationships which suggest future effort to establish genetic links. The results are consistent with Buss et al., (1973), who used both Mood and Energy Level variables in demonstrating the heritability of temperament.

We should note an important distinction here between genetic and biological influences. By genetic, we are referring to hereditary relationship of temperament from parent to child. By biological or constitutional, we may include prenatal influences of both a physical (hormonal influences, diet, etc.), and psychological nature (external stress, internal conflict, etc., see Stott, 1973). Biological forces are inclusive of these prenatal factors as well as genetic influences. Thus, the influence of heredity is one of several potential biological variables that contribute to an infant's initial temperamental endowment. It may be that these other prenatal influences are responsible for the lack of high levels of

statistical significance, and clear patterns of relationships between infant and parent temperament.

Before concluding this section, we shall elaborate on a previously noted finding of interest in the data. The relationship between Mood, Energy Level, and Consistency for boys was negative, while it was positive for girls. It would appear that for boys, a positive mood level is associated with a low energy level, and more inconsistent or vascillating behavior patterns. With girls, the more positive the mood the higher the activity level and more regular the behavioral style.

While we might expect that positive mood in boys would be related to cyclical behavior patterns, we would also expect that their energy level would be high. One interpretation of this finding is that there is some upper limit on optimal energy expenditure for boys. Beyond this level it becomes an indication of problems. In the case of hyperactivity, where most reported diagnoses are for boys, we find energy level that has gone to an extreme. Our data suggest that hyperactivity may also be predictive of a low negative mood level. This in turn is related to withdrawal, non-adaptability, and easy arousal. On balance, the factorial structure we found suggests that some aspect of the symptom selection of hyperactivity may be constitutionally determined, as manifested through temperamental attributes.

With regard to the relationship of Mood to Energy Level and Consistency for girls, the data tend to refute the notion that the passive, or at least low key female is happy or has positive mood. Our findings suggest that while girls perhaps conform more

temperamentally to the expectation of Consistency or even temperedness as associated with Mood, they have some biologically influenced need to be more active and energetic than previous social norms would have allowed for. Witness the rapid increase in women participation in athletics since the values ascribed to such behavior have changed with the Women's Liberation Movement. Moreover, the trend toward a more active, aggressive personality style is one of the recent changes in sex role behavior for women. Our data suggest that some of the basis for this is biologically influenced, and expressed through temperamental attributes.

The Prediction of Child Adjustment from Infant and Parent Temperament

The clearest study finding concerns the prediction of adjustment by the Mood factor in girls. This is a direct replication of the N.Y.L.S. Whereas fathers' Consistency and to a lesser extent the mother's Mood also relate to adjustment, the infant girls' Mood factor was the single best predictor and accounted for almost as much variance as the other two combined. At least insofar as girls are concerned, their Mood qualities (approach, adaptability, mood, threshold) as infants are the most influencial element in later adjustment.

Until recently, much of the thrust of psychological research has been in the direction of demonstrating that environmental effects are foremost in influencing personality development and adjustment. Beginning in early infancy, socialization influences have been rigorously studied, and their effects have been shown. However,

biological forces have been conspicuously ignored until recently (Thomas et al., 1963). Presumably the effects of such constitutional dispositions would be more pronounced in early life (infancy), and decrease in importance as socialization experiences accumulate over time.

Our data demonstrate the importance of infant temperament at age three and four. We have no way of establishing how such temperament influences are evolving in importance over time since the design of this study was essentially cross sectional. Nor can we contrast the significance of temperament to the range of socialization influences a child develops through, since the only environmental effect under study here was the temperament of the parents.

Nevertheless we did find that for girls, even at age three and four, their temperament in infancy was the most important determinant of adjustment. The Mood factor was more significant than the environmental influence of their parents' temperament. The data clearly and significantly support the direction of research originated by the N.Y.L.S. as to the importance of constitutional endowments in influencing personality development.

For boys, this was not the case. There were no temperament factors found to be predictive of adjustment. The disparity here, while obviously suggestive of strong sex differences, bears further examination in light of some of the other study findings.

What predicted adjustment best for boys was the Mood and Consistency of the mother, and Mood of the father (although the latter was in an unexpected opposite direction). In contrast to the girls, only the mother's Mood correlated as well with adjustment as any of

the three factors found predictive of girls' adjustment. Overall the three factors for boys accounted for less than half the variance accounted for by the three factors predicting girls' adjustment. All of this suggests the importance of other influences operating on boys in determining adjustment.

Following this line of inquiry, we find that the magnitude of the correlations between the various parent temperament factors and adjustment are approximately the same for girls and boys. We may then say that the relative impact of both mother and father's temperament on girls and boys is quite similar.

On this basis, one possible conclusion is that socialization effects are operating more strongly for the boys than for girls, at least insofar as their overall adjustment at age three and four is concerned. Stated differently, socialization influences up through this age period may be more compatible with girls' temperament than boys'. Where temperament, and especially Mood, are very important for girls, we must assume that other forces, which we would expect are aspects of the socialization process, are accounting for the adjustment of the boys sampled herein.

Taking this train of thought one step further we might speculate as to some commonly held expectations regarding the socialization process. One such belief concerns the notion that somehow girls are more "socialized" than boys; that is, they are taught to conform more or subjugate their feelings and instincts to more rigidly circumscribed patterns of behavior than are boys. Girls don't play baseball . . . girls don't curse . . . and most definitely, girls

don't horse around in the mud and wind up with patches on their dungerees (or to be midwestern, jeans). On the other hand, boys don't cry, at least "tough" boys don't, and boys don't talk about their feelings except where the expression of anger is concerned. To express fear or affection is much more difficult, and until recently, much less acceptible.

Kagan (1974) has summarized the literature in this area in terms of the concept of sex role behavior. Girls have greater freedom in trying out male roles than boys do in experimenting with typically female roles. For example, it is more socially acceptable for a girl to climb trees or be athletic than it is for a boy to play with dolls. Thus, girls, in essence, get to act out a greater number and variety of roles, with more diverse opportunity for affective and behavioral expression, than do boys.

Through such role playing, girls have greater opportunity to express a wider range of their various temperamental attributes. They can be more affectionate in their social encounters than boys. This is a direct vehicle through which their positive mood temperamental dispositions may be expressed. Boys do not have as many sex role appropriate channels to express Mood attributes. While a higher energy level may be more acceptable for boys, girls do have a wide range of opportunities to be active, albeit not quite so intensely as boys do in athletic activities.

When we consider under the rubric of "socialization" the easy expression of a wide range of affect and behavior, we then see how boys are indeed influenced toward limiting the range of some of their instinctual or temperamental urges. Thus, while a boy's Energy Level

qualities may be channeled into baseball, his Mood attributes do not have the same potential sources of expression. Since Mood is a crucial element of temperament herein, we may understand some of the forces mitigating against its showing up as relating to adjustment.

Another possible explanation of the sex differences in the data comes from the literature on developmental stages. Kagan and Moss (1962) and Bronson (1971) emphasize the emergence and submergence of various behavioral patterns during particular developmental periods. Kagan has called this the "sleeper" effect. It refers to relationships found at particular age periods along variables correlating with similar, derivative variables later in life, but not throughout life.

To illustrate, Kagan found a significant positive relationship between passivity for boys from age zero to three to be a better predictor of a dependent, non-aggressive style in adulthood (presumably adult derivatives of passivity), than later assessments of childhood passivity. He explained this in terms of social pressures forcing the boys' passivity to be disguised during the school years since such behavior would meet disapproval. Kagan emphasized the sex linked nature of this "sleeper" phenomena, and moreover the issue of sex role identification as being critical "in directing the selective adoption and maintenance of several behavior domains."

While Kagan did not study temperament per se, might not temperamental attributes also be selectively expressed in accordance with sex role appropriate behavior? Furthermore, might behavior expressive of temperament vary with developmental period or age in its outward expression, as in the "sleeper" effect? If this is so, the effects

of temperament might also vary in their consequences for other behavior depending upon developmental stage. In this study, the consequences of temperamental effects were child adjustment at age three to four. Thus, it may be that the importance of the various infant temperamental attributes for boys have been submerged insofar as their relationship to adjustment at this age is concerned. A relationship may show up later on in childhood, adolescence, or perhaps even in adulthood. In any case, the importance of assessing temperament over time and relating it to other personality and behavioral characteristics at the same time seems indicated so as to carefully investigate this source of variation.

To conclude this discussion, it seems hard to imagine that the effect of the temperament factor of Mood, across all ages, could be so different for boys and girls. While Graham et al., (1973) found boy-girl differences in their study of temperament and behavior disorder, they concerned different temperamental attributes being important for each sex. The boy-girl differences were in quantity and kind, not all or none. Thomas (1975) did not look into these differences and is considering reexamining his own data for possible sex and age specific differences. The issue is far from closed, and has important theoretical as well as pragmatic implications for understanding the development of personality.

In turning to the role of parent temperament in predicting child adjustment we find the mother's Mood as most important and most predictive of adjustment for both sexes. This confirms our initial expectation and is certainly not surprising, especially so early on in life when the involvement of the mother is so great.

The emergence of Consistency also as predictive but in a cross sex fashion is also of interest. The data suggests that for boys it is important for the mother to be consistent, and for girls the consistency of the father is most influential. An overriding issue here appears to be the importance of having at least one parent whose style of behaving is regular and perhaps more appropriately in this case, predictable.

While the data are suggestive of these particular patterns, I think the important issue and finding herein concerns the overall evidence supporting the importance of parent temperament as relating to the adjustment of the child. We do find clear although not powerful relationships that most certainly merit further consideration.

The issue of direction of effect is in evidence here at least from a speculative point of view. We have determined both the role of infant and parent temperament in contributing to the adjustment of the child. But what of the adjustment of the parents as affected by the child? Surely a "difficult" child (as defined in the N.Y.L.S.) could place a serious strain on the parents, which might create an interactive spiral leading to increased pressures on both parents and child. This could result in not only poor child adjustment but marital discord as well.

The implications for psychotherapy here are most important. The issues and personality attributes coming into play here are not under the same kinds of control as other potential sources of conflict and thereby not subject to the "easy" change or modification. It seems easier to learn to communicate more clearly in ones social

relationships than to "slow down" the pace at which one lives. The issue here is how much can we realistically expect to alter temperamental dispositions that are so basic, in that they have biological derivations. The first step here would seem to be awareness on the part of therapists, teachers, and parents that such forces are operating both in children and adults.

We must also keep in mind here that these are differences in behavioral style we are discussing, and as such have deep roots and yet most often more subtle and variable outward manifestations. The present study was designed only to tap broad kinds of trends, if present, and to suggest future directions. The present data underscore the importance of temperament effects as a fertile area for further investigation.

Family Homogeneity and Child Adjustment

The next subject of discussion concerns the measures of similarity or homogeneity of temperament between infant, mother, and father. The marginally significant finding in this area was that child adjustment, both for girls and boys, varied positively with the dissimilarity between mother and infant temperament. That this held up significantly both for boys and girls ($p < .05$ for total sample) amidst all the sex differences found in the study suggests that the finding merits consideration despite the low level of overall variability accounted for ($r = .20$; 4% of the variance accounted for).

One interpretive, but speculative possibility, concerns the importance of recognizing differences within a family. It may be

that in healthy families divergences are perceived accurately and accepted, whereas in other families differences are perceived as threatening, and therefore not recognized.

The literature on schizophrenigenic families support this explanation (see Bell and Vogel, 1968). The problem of symbiotic attachments between mother and child is a well documented characteristic of the schizophrenic family style. The inability to perceive and accept differences among family members is clearly a pathological symptom. The lack of separation or differentiation among schizophrenic family members is an argument for the importance of perceiving and accepting differences whether temperamental or otherwise.

Another possibility is that it is of some importance for there to be temperamental differences within a family. This would offer a wider range of alternative models from which the child could identify and thereby validate his own behavior. To illustrate let me use a case from the N.Y.L.S. (Thomas, 1975). It involved parents of very similar temperamental styles. They were both outgoing, energetic types whose child was more low key and "slow to warm up." The parents inadvertently placed pressures on the child to do the kinds of things and be the type of child that was more in keeping with their own style. The child was unable to meet these expectations and conflicts developed which resulted in some symptomalogy in the child.

Treatment for this family involved primarily some counseling for the parents directed towards making them more aware of their

child's temperamental make-up, which was not amenable to the kinds of demands they were placing upon her. The problems eventually cleared up as the parents became more tolerant of the child's temperamental style.

This is the issue the present findings bear relationship to. Had either of the parents been more temperamentally similar to the child, they would more likely have been able to understand the child's manner of behaving and not expected anything too different from her. But given that neither could identify with her, their capacity to understand and respond sensitively to her was most limited. In essence here, the how of behavior or temperament became the why for the development of intrafamiliar conflict. What form the conflicts took is unimportant in the face of the issue of goodness of fit between parent and child temperament raised here.

Once again while the example is clear, the data only indirectly suggest such an interpretation. Let us now look at a few questions raised by the data.

What specific temperamental dispositions are most important in the matching of parent and child? This was obscured when summing across factors to create indices of homogeneity between family members. Nor can we address the issue of magnitude and degree of similarity and dissimilarity in relating to goodness of fit. It may be that Mood is more important than Energy Level, but this may be compounded by the question of how much disparity between the degree of a child's Energy Level and his parents constitutes a good or bad fit. Or, how much difference between family members determines dissimilarity?

It may also be that the overall patterning of temperamental attributes is most important. Divergences therein may account as in the present study for some of the variance. More than likely, it would appear that all three, (1) the particular kinds of temperamental attributes, (2) their magnitude or intensity, and (3) the patterning or relationship among them, interact in yielding the best goodness of fit equation.

But returning to the present data as to homogeneity or similarity of temperament within a family, perhaps they can best be summarized by saying some directions are suggested and many questions are raised. Some of the ways these questions can be addressed more directly in the future will be discussed next.

Methodological Issues and Future Directions

While there are several significant findings, throughout the study, the lack of high levels of significance (especially in the data on similarity of temperament data with families); and some unexpected findings (particularly the lack of temperamental effects for boys) merits comment relating to problems in: (1) design; (2) sample; (3) instruments; and (4) analysis. To reach any meaningful evaluation of this research these issues must be addressed with the expectation that the lessons learned can then lead to more meaningful future work.

Design

The potential problem areas in the design of the work concern: (1) the retrospective nature of the infant temperament data; and

(2) the potential introduction of error by using solely parental reports of infant behavior without the addition of observational reliability checks of such reports.

With regard to the first point, it seems that to gather the most meaningful parent report data on infant temperament, child behavior, and the like, one should collect the data as close to the actual time period during which the behavior occurs. The possibility that halo effects and other selective perceptions and distortions, as well as the influences of present child temperament, may affect parental recollection of past behavior is clearly a source of potential error.

In this regard, Yarrow et al., (1968) found that the perception of past child behavior tends to be distorted in the direction of making it more congruent with present perceptions of behavior. That is, mothers tended to view their children's past behavior as more congruent with their present behavior than it really was. There is no way of determining how this problem might have affected the present data since there was no current measure of child temperament. Nevertheless the possibility of retrospective distortion is a real one.

There seems no way of making a cross sectional study conform to a longitudinal type of design. If one wants to study the effects of temperament for infants and parents from birth or shortly afterward it would seem that a longitudinal design is in order. Short of that the present study could have used present child temperament (instead of retrospective reports of infant temperament), along with present parent temperament to predict present child adjustment. This would allow for a cross sectional design and clearly make findings with

regard to present relationships more meaningful. However it would say little or nothing about the unfolding of parent-child temperamental influences over time, an important consideration here.

The other possible source of design error here, regarding the use of parental reports of child temperament, can be attended to by utilizing independent observers to validate the parent judgments, as was done in the N.Y.L.S. It should be noted that this was done only for infant temperament and not during early childhood in the N.Y.L.S. Since the behavioral manifestations of temperament change throughout childhood and later life one should ideally make periodic observations throughout these years with different age appropriate criteria as guidelines.

I still believe that parental reports, while more comprehensive in an interview than a questionnaire, are the best source of data regarding temperamental issues. The varying, often subtle and wide ranging behavioral manifestations of temperament can be best derived from those who have the extended contact necessary to make accurate assessments of this. In early life only parents meet this criterion. Insofar as future work utilizing questionnaire data is concerned it would appear necessary to validate the instrument extensively, before using it in the study of relationships of temperament to other variables. This issue will be discussed in the "Instruments" section.

Sample

The next difficulty that may contribute to the lack of power in some of the findings and the uncertain interpretability of others, concerns the homogeneity of the sample used. Given their backgrounds,

it seems probably that all of the children used in the study were better adjusted on the average than the general population. Teachers reported difficulty in differentiating the children along the five dimensions of adjustment used. Had not the teachers been instructed to place a minimum number of children in each of the four high to low categories, it is quite possible that a very large percent of the children would be rated in the top two categories for each dimension of adjustment. It therefore seems reasonable to be very cautious about the generalizability of this population. Furthermore, the overall lack of differentiation in adjustment scores may have contributed to the limited range of the findings.

To correct for this in the future one would want to have first of all a more heterogeneous sample. This might involve some breakdowns as to socioeconomic status and educational level which could then be examined as well.

Another possible improvement for future work involves some checks on the reliability of the teachers' ratings. While I still believe that the teachers are the best independent source of information regarding a child's behavior outside the family, they too develop attachments as well as animosities toward their children and are therefore subject to misperceptions and distortions in their reporting. Here again some independent observers could usefully validate the reliability of the teacher ratings. It should be noted that all of the aforementioned checks and safeguards were well beyond the resources of the present investigation.

Instruments

At present there is no instrument to assess infant temperament that has established reliability and an extensive validation history. The C.I.T.S. used here was recently developed by a pediatrician; it has undergone little of the rigorous examination one would ideally want before placing confidence in it. Still it did differentiate among the infants with some replicability with the N.Y.L.S. data. In fact, the present study serves to extend the validity of the C.I.T.S. as an instrument.

As far as face validity is concerned, the instrument does get at the crucial behavioral manifestations of infant temperament. It is specific and concrete which helps control for distortions of judgment by whomever is filling it out.

However, some of the scales have many more items than others (5 vs. 16). Some of the items are based upon prior items which causes problems in scoring and is questionnable from the standpoint of the independent contribution of each item. Finally, the category scores are high, variable, and low, which do not allow for much differentiation. Thomas et al. (1963) emphasized this point regarding the N.Y.L.S. scoring system. In order to assess the relative magnitude of the effects of the variables under question one needs more room for within item variability. A five or seven point scale would seem more appropriate with specific descriptions of each point on the scale so as to minimize scoring biases.

Insofar as the adult measures are concerned the S.T.S. showed itself to be the start of a promising instrument. Some of its scales

correlated quite well with the widely validated T.D.O.T. scales that were initially thought to be comparable on the basis of face validity criteria. It also has the strength of using the same variable names as the N.Y.L.S. The intention in designing it was to create an instrument that approximates in adulthood the counterpart of what exists in infancy. This was a critical problem in the present study, given that the behavioral manifestations of temperament vary considerably from childhood to adulthood. One has to be very concerned about the comparability of the instruments used to assess each.

In the present study, considerable effort was made to establish similar temperamental attributes for parents and children. This was why factor scores were used as a basis for conducting the analyses. The factors incorporated the best of both adult instruments in trying to make them comparable to the child factors.

However this was also a source of error in the data, in that the factors varied in comparability across infants and parents. The father Mood factor incorporated only scales from the S.T.S. since the T.D.O.T. Mood scales, which loaded well with the S.T.S. scales for mothers, were spread out on other factors for fathers. This is the kind of problem one encounters in comparing data from different instruments.

The best solution for present purposes would appear to be the elaboration of the S.T.S. to at least five to ten items per scale. Then, of course, extensive validation work is required. The present study is a first validation for it through its comparability to the T.D.O.T. Some of the scales compared quite well, particularly

activity level.

We should note that the T.D.O.T. was a good instrument to measure the kinds of variables it set out to. However, even slight differences in scale content and orientation from that of the N.Y.L.S. variables can and did cause enormous problems in judging compatibility of actual content, and consequently in interpreting findings. For example, for fathers the Mood scales on the T.D.O.T., "cheerful" and "placid," did not load with the S.T.S. Mood scales. The problems are twofold: which has more validity; and why did this happen. Before we achieve some real clarity in this area though, answers to these questions must be found.

Analyses

Some very sophisticated analyses were done with the present data that were based on decisions that were, a priori, thought to have some potential of yielding the most meaningful information. Looking back at the study, particularly the homogeneity statistics, there now appear some limitations to the approach taken.

First of all, one loses content when collapsing across variables or factors to create the indices of homogeneity among family members. All that could be said, even if the findings emerged more strongly, is that the overall patterning of temperament bore a relationship to the child's adjustment. The specific temperamental variables or factors could not have been evaluated independently. Thus, if Mood is the most important factor, and these and the N.Y.L.S. data suggest it is, it was relegated to equal statistical importance with the other factors herein. Furthermore, the relative magnitude of each factor in

contributing to the overall homogeneity indices were lost when it was necessary to rank order them. Thus, each factor not only a priori became equally as important to the other in entering into the homogeneity indices, but also equally as important in determining their final outcome, regardless of how important their real degree of magnitude was in actual behavior. Finally, with only three subjects (factors), the instability of such an analysis is cause for some concern.

At present there are future plans to reexamine the data in what may prove to be more productive ways. One approach will be to examine each factor score across all family members in a multivariate analysis of variance approach. The families would be divided according to the child's adjustment scores into high, medium, and low groups and then tested to determine if they differed on any of the factors used. The interaction scores the MANOVA yields could address the question of similarity of temperament, but only for each factor individually.

Given the aforementioned concern regarding the homogeneity or lack of meaningful distribution of adjustment scores, it might make more sense to use only extreme high and low groups of families so as to get at whatever differences exist in a more demonstrable fashion.

Of course, there are no guarantees any more meaningful results would ensue. Furthermore, given all the problems mentioned in this section one must be very careful in interpretation. Yet some aspects of the data analyses, particularly the correlations of the factor scores with adjustment, did yield several significant findings. So there is some possibility of ascertaining other trends, more clearly

and significantly.

For future research, the idea of generating indices of homogeneity within a family can be a most useful one. Had there been more factors, or variables, or items, through the utilization of compatible instruments such a technique might have been more effective both statistically and heuristically. Such an analysis combined with a multivariate approach to shed light on content issues seems a most comprehensive combination.

Before concluding this section I would like to discuss a research project that flows out of the present work. The goal would be to understand more clearly what a high risk family is. Whereas the N.Y.L.S. defined a high risk infant, the next step is to determine a high risk family.

A study directed toward this end would involve, first, assessing infant temperament with both questionnaire and interview approaches. We would then assess a wide variety of parent variables that might include measures of: temperament; ego strength; marital communication style; child rearing attitudes; behavior dysfunction; etc. Some information regarding the prenatal period would also be useful. Our outcome or dependent measure would be the behavioral study of family interaction. That is, parents and infants would be observed in a playroom and at home. Questions would concern: (1) the effect of high risk infants on parents - we would expect that they would elicit more negative responses; (2) the differences between parents adversely effected in this way and those that are not by these "difficult" infants; and (3) the differences in reactions of parents to "easy" low

risk children - we would want to know what types of parents behave more insensitively and unresponsively and the effects of this on their infants. We could go on generating hypotheses. However the crucial element here is the observation of family interaction in infancy which one may then relate to numerous infant and parent variables. We could see the consequences of these variables clearly. Ideally we could follow the families over time to determine later consequences. In this way we may then be able to go back to our original infant and parent variables to distill out those that predict present and past problems most accurately. We will then have added enormously to what we can say about high risk families.

On Doing Field Research

A major part of this study involved the collection of data from the field. The methodological issues involved in field research have been discussed at length. What I would like to touch upon herein concerns the role of personal issues, or rapport.

The study involved a wide range of people: undergraduates who assisted in data collection and scoring; administrators and teachers of the day care centers; the families; statistical consultants; and of course one's faculty committee. Particularly with regard to those actually involved in providing data, the issue of rapport is critically important. If one does not answer every question, listen and respond to every request, and in general provide as much information as possible without biasing the data, one runs the risk of collecting distorted, inaccurate data, if he gets them at all. Alexander Thomas (1974) has stressed this point most emphatically in discussing the

relationship he has had with his longitudinal sample of twenty years. One must develop a positive personal relationship with those involved or their level of cooperation will not be as honest nor as complete. If it is not, the data will be suspect to the most damning, although not methodologically defined, criticism of all--meaninglessness.

In the present study, the parents could have completed the questionnaire in a half hearted way, had they not been adequately prepared through personal contact with the researchers. The teachers could have done dimilarly. Or possibly, out of anger if they were forced or tactlessly asked to do their ratings by their supervisors, they could have carelessly or without any thought provided their information.

We made every effort to meet both parent and teacher concerns as to time involved, confidentiality, and anything else short of altering the essential features of the study. While all of the parents were contacted personally (and I cannot emphasize how much the personal aspects of the phone contact were stressed), and many of the teachers were as well (the others being informed through their supervisors who were working directly with the author), there was a case where a teacher out of anger at the way her supervisor had asked her to fill out the ratings did not return them until one month after they were due. This did not come about until the author was able to directly talk with her to work through her feelings.

Had she angrily handed in carelessly completed data one hesitates to think of the ramifications. Whatever the degree of sampling, or statistical error one has to live with in doing research, I strongly

believe is dwarfed in comparison to the error introduced by subjects and others involved who are anything less than 100% cooperative.

The 100% cooperative criterion is established simply and exclusively by the researcher being sensitive and responsive to the needs of those working with and for him. While one cannot always meet participants' wishes, one can always try and usually make some compromise to show good faith and thereby maintain a high level of involvement and cooperation. It is the author's experience that people will usually be willing to go along with research demands if the experimenter makes some effort to "meet" them. Without such effort it is hard for me to conceive how one could trust his data.

Conclusions and Implications

Long ago (on page one) the issue of primary prevention, as well as the questions relating to the effects of biology in interaction with environment were discussed as the pragmatic and theoretical purposes of this work. While we begin with great expectations, in the final analysis a sense of reason and perspective must prevail as to the worth and meaning of ones work.

From the present data we must be content with laying some groundwork from which to build even though there is no clearly visible structure at which to gaze. Be that as it may, let us review these issues in light of the present data.

From a theoretical point of view, with regard to heredity and environment, the present data demonstrate the importance of constitutional endowments in influencing the evolution of personality. While such effects were found strongly in evidence for girls, this was not

the case for boys. As it seems most improbable that biological forces, as expressed through temperament, are pronounced for one sex and nonexistent for the other, we are left with an important question.

The answer seems to lie in the emergence and submergence of such temperamental influences during different developmental periods. At ages three and four they emerge, or at least are clearly in evidence for girls. For boys, socialization effects appear more profound at this age. Or perhaps it is more accurate to say that the socialization influences operating through this developmental period are more incompatible or inhibiting to boys' temperament than girls'.

These data clearly suggest the necessity of both conceptual and methodological refinements in approaching this issue. One must look closely at developmental stages with more precise instrumentation and with more circumscribed focus.

Insofar as the content of temperament is concerned, the importance of the dimension of mood seems most worthy of more rigorous investigation. Both in the N.Y.L.S. and the present study, the attributes defining this category, approach-withdrawal, adaptability and mood, seems without question, of overriding importance in the study of temperament.

Methodologically, the data from this study point toward research concerning the assessment of such temperament attributes with great precision at birth and over time. Only then will we be able to study the evolution of these biological forces through the life span. Furthermore, sex differences must be carefully examined.

While the complete picture of what attributes and patterns of individual and family temperament are most significant in determining a high risk family temperament style is by no means clear, we have established some definite direction for future work. The attributes of Mood both for infant and parent are of utmost importance. The overall patterning of temperamental attributes as investigated through our homogeneity analyses suggest the importance of having some variety or heterogeneity within a family.

To be more definitive in this domain, if heterogeneity is a critical factor, it would seem of utmost importance to look at whole families with all their members involved. The effects of homogeneity or similarity of temperament within families could then be more comprehensively and rigorously studied. The data might then determine that a high risk family would consist of a high risk child as defined in the N.Y.L.S., coupled with a set of parents who were temperamentally similar. A lower risk then might be a family in which all the members have quite similar temperaments. This family may not have a "difficult" or high risk child but by virtue of their own homogeneity be a mild risk factor.

While much work is yet to be done before we can make such statements, the implications of being able to say with confidence that such taxomonies do predict child adjustment are profound.

The issue would then become the identification of such families, perhaps by using the same or similar instruments as those used in the research projects definitively demonstrating these findings. The next step, and it is a far shorter one than the previous ones, is to develop programs to intervene with such high risk families.

Most of the children in the clinical sample in the N.Y.L.S. have

significantly improved or recovered (Thomas, 1975). This was in large part a result of early referral and detection, which led to parent guidance as an intervention strategy. This is a most profound illustration of primary prevention in operation, and a paradigm for what could happen at even earlier ages before the development of behavior disorders of other problems of a less severe nature.

At the present we can state with some confidence what a high risk infant is like from the perspective of temperament. Before we can move with certainty toward early detection and intervention for high risk families we must be able to say that the directions suggested by such work as the present have come to clear conclusions.

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APPENDICES

APPENDIX A

DESCRIPTION OF INFANT TEMPERAMENT VARIABLES

From: Stella Chess, Alexander Thomas and Herbert G. Birch. Your Child is a Person, and Thomas, Chess, and Birch. Temperament and Behavior Disorders in Children.

Individual Characteristics of Children's Behavior

1. Activity level

Some babies were from early infancy onward much more active than others. Even in the period toward the end of feeding, when most babies were quiet and sleepy, they moved their arms, lifted their heads, kicked, or--if they were on their backs--moved their whole bodies till the covers were off. This went on right to the moment their eyes shut. Even when asleep they frequently moved from spot to spot in the crib. Their mothers could never turn away for a moment if these infants were on the bathinet, for fear they would squirm off. Diapering them was a problem because they twisted and turned so much.

In contrast, the quiet babies tended to lie where they were placed and moved both little and slowly. Sometimes they were almost as still when awake as when asleep. Often only their eyes moved.

In brief, this category describes the level, tempo, and frequency with which a motor component is present in the child's functioning. Some examples of representative behaviors that were scored as high activity are: "He moves a great deal in his sleep"; "I can't leave him on the bed or couch because he always wriggles off"; "He kicks and splashed so in the bath that I always have to mop up the floor afterward"; "Dressing him becomes a battle, he squirms so"; "He runs around so, that whenever we come in from the park I'm exhausted"; "He crawls all over the house"; and "Whenever I try to feed him he grabs for the spoon." Examples of low activity behaviors are: "In the bath he lies quietly and doesn't kick"; "In the morning he's still in the same place he was when he fell asleep. I don't think he moves at all during the night"; and "He can turn over, but he doesn't much."

2. Regularity and rhythmicity

We found that babies differed in the regularity of their biological functioning. Some seemed to have been born with built-in alarm clocks. By the second or third week they were hungry at regular times. Their mothers could plan the day's activities around the babies' predictable nap and feeding times. Their bowel movements were also regular.

Other babies were quite different. There was no telling when they would be hungry, how hungry they would be, or when they would be hungry next. Their naps might be short one day and long the next.

This category thus was based upon the degree of rhythmicity or regularity of repetitive biological functions. Information concerning rest and activity, sleeping and waking, eating and appetite, and bowel and bladder function is studied.

A child's sleep-wake cycle was considered to be regular if he fell asleep at approximately the same time each night and awoke at approximately the same time each morning. The child's functioning was considered to be irregular if there was a marked difference in the time of retiring and arising from day to day.

Information concerning the rest and activity periods of the child was derived from napping behavior. The child was scored as regular if he napped for the same length of time each day, and irregular if no discernible time pattern of function was established.

Eating and appetite behavior was scored as regular if the child demanded or accepted food readily at the same time each day and consumed approximately the same amount of food on corresponding diurnal occasions. The child was scored as irregular if his intake fluctuated widely on different days, or if he tended to eat at times which differed widely from day to day.

Bowel function was scored as regular if the number and time of evacuations were relatively constant from day to day, and irregular if the number and time were not readily predictable.

In all of these areas, behavior was considered variable if there was evidence that the child had established a pattern of functioning, but that there was some deviation from this pattern on occasion. This designation stands in contrast to a score of irregular which denoted the failure to establish even a partial pattern.

3. Approach or withdrawal as a characteristic response to a new situation

Young babies have new experiences every day. There is the first bath, the first taste of orange juice, the first solid food. New people are constantly coming into their lives. They go out in the carriage for the first time. A bonnet is put on. They get a first injection. They go into a playpen for the first time.

The category of approach-withdrawal characterizes the child's initial reaction to any new stimulus pattern, be it food, people, places, toys, or procedures. Some babies had no trouble with these new experiences. For example, in the first bath they took to the water like ducks. Others, however, did not splash and kick, or coo and play with their mothers; they screamed when put into the bath for the

first time. They spat out many new foods at first, cried at a stranger, and reacted negatively to strange places.

This category thus describes the child's initial reaction to any new stimulus, be it food, people, places, toys, or procedures. A few examples of initial approach responses are: "He always smiles at a stranger"; "He loves new toys and he plays with one so much he often breaks it the first thing." Withdrawal responses are illustrated by: "When I gave him his orange juice the first time he made a face. He didn't cry but he didn't suck it as eagerly as he does milk"; "Whenever he sees a stranger he cries"; "When we went to the doctor's for the first time he started to cry in the waiting room and didn't stop until we got home again"; and "It takes him a long time to warm up to a new toy. He pushes it away and plays with something more familiar."

4. Adaptability to change in routine

Babies' routines are constantly shifting. When they begin solid foods, the number of meals gradually declines. In the first days they are almost constantly sleeping or dozing, but then their naps become less frequent.

In considering a child's adaptability we are concerned with the step-by-step development of responses to new situations or altered routines. In contrast to approach-withdrawal, we are not concerned with the initial response, but with the ease or difficulty with which this response can be modified in socially desirable ways.

Some babies shifted easily and quickly with a changing schedule. They could readily learn to eat a little earlier or later and go to bed at a different hour. In general, they changed their behavior to fit in with the pattern the mother wanted to set. With others a change in routine brought fussing and crying or screaming and kicking. Only with difficulty and much repetition were mothers successful in shaping the child's behavior. On occasion these babies did not adapt at all. Instead, it was the mother who frequently adjusted to the child's pattern rather than continue the unsuccessful struggle to impose her preferences.

When considering adaptability, one is of necessity concerned with the sequential course of responses a child makes to new or altered situations. In contrast to the previous category, it is not with the initial response that one is concerned. Rather, emphasis is on the ease or difficulty with which the initial pattern of response can be modified in the direction desired by the parents or others. Examples of adaptive behavior may be found in the following excerpts from parental interviews: "He used to spit out cereal whenever I gave it to him, but now he takes it fairly well, although still not as well as fruit"; "Now when we go to the doctor's he doesn't start to cry till we undress him, and he even stops then if he can hold a toy"; "At first he used to hold himself perfectly stiff in the bath,

but now he kicks a little and pats the water with his hand"; and Every day for a week he'd go over to this stuffed lion someone gave him and say, 'I don't like it,' but today he started playing with it and now you'd think it was his best friend."

Nonadaptive behavior can be illustrated by the following examples: "During the summer she used to nap in her carriage outside, and now that it's cold I've tried to put her in the crib, but she screams so I have to take her out and wheel her up and down the hall before she falls asleep"; "Every time he sees the scissors he starts to scream and pull his hand away, so now I cut his nails when he's sleeping"; "Whenever I put his snowsuit and hat on he screams and struggles, and he doesn't stop crying till we're outside"; and "He doesn't like eggs and makes a face and turns his head away no matter how I cook them."

5. Level of sensory threshold

Some mothers felt that they were fortunate because they could have a houseful of visitors without worrying at all about awakening the baby. Babies with a high "sensory threshold," as it is called, did not startle at loud noises; bright lights didn't bother them. Whether clothes were smooth or rough, wool or cotton, hot or cold, made little difference. They were not particularly discriminating about food. Their mothers could easily disguise something the baby didn't like by adding it to something "good." They did not react to being wet or soiled.

At the other extreme were babies who cried the moment they soiled. There were sensitive ones who, even in the first weeks, woke up when a light was turned on in the room or a door latch clicked. Some literally shuddered at even a whiff of a disliked food. A slight sound would attract their attention, and their eyes would move toward it. One mother could always tell when her husband was home, because her six-month-old could hear his footsteps in the hall outside the apartment and would start to coo and kick.

Response to pain varied. One baby could bang his head hard against the crib bars without a whimper. For another a slight bump would bring howls of discomfort.

This category thus refers to the level of extrinsic stimulation that is necessary to evoke a discernible response. The explicit form of response that occurs is irrelevant and may be of any quality, e.g., approaching or withdrawing, intense or mild. What is fundamental is the intensity of stimulus that has to be applied before a response of any kind can be elicited. The behaviors utilized were those concerning responses to sensory stimuli, environmental objects, and social contacts. We are also interested in the magnitude of difference between stimuli that must obtain before the child shows evidences of discrimination.

Examples of the types of descriptions that were scored in this category are the following: "You can shine a bright light in his eyes and he doesn't even blink, but if a door closes he startles and looks up." This would be scored as high threshold for visual and low threshold for auditory stimuli. "I can never tell if he's wet except by feeling him, but if he has a bowel movement he fusses and is cranky until I change him." The statement indicates high threshold with respect to wetness, but low threshold to the tactile complex associated with a bowel movement. "He loves fruit, but if I put even a little cereal in with it he won't eat it at all." This was scored as a low threshold response because it demonstrated the ability to discriminate small taste or textural differences. "He doesn't pay any attention to new people; he doesn't cry, but he doesn't respond to them, either." This is an example of a high threshold in the area of social relations, as contrasted with "He laughs and smiles at a stranger, and starts to cry if they don't play with him," a response scored as low threshold. "He always cries when he sees a man wearing a hat even if it's his father" is illustrative of effective discrimination to presence of a specific item of clothing and was scored as a low threshold response. "He makes himself at home anywhere, and runs around a strange house as if it were his," was scored as high threshold, while "He notices any little change. When we got new curtains for his room he spent a whole day crawling over to the window and pulling on them," received a low threshold score.

6. Positive or negative mood

Mothers' reports contained descriptions of the children's moods. Here are some excerpts from one report: "Susie cried when she woke up. She cried after she was put down. She cried when the door banged. She whimpered until she fell asleep." Clearly, these all describe negative mood. Another report might be interspersed with bits like these, characteristic of positive mood: "She smiles before she gets her bottle. She gurgles when she's being undressed for her bath. She splashes and coos in the water. She babbles and hums when she wakes up." We called positive everything from gentle cooing to loud gurgles, from smiles to giggles. We labeled negative everything from gentle fussing or crying to sobbing in great gasps.

When a child gave no sign that he was either for or against what was happening, we scored his reaction as neutral. For example, a mother took her baby out of his playpen, put on his snowsuit, and put him in his carriage. He just let it happen, neither gurgling nor smiling, not frowning or crying. We judged each baby's mood by whether positive or negative reactions were preponderant.

This category thus describes the amount of pleasant, joyful, friendly behavior as contrasted with unpleasant, crying, unfriendly behavior. Consequently, statements which indicated crying and unfriendly behavior were scored as negative mood, as in the following: "Whenever we put him to bed he cries for about five or ten minutes before falling asleep"; "He cries at almost every stranger, and those

that he doesn't cry at he hits"; "I've tried to teach him not to knock down little girls and sit on them in the playground, so now he knocks them down and doesn't sit on them"; and "Every time he sees food he doesn't like he starts to fuss and whine until I take it off the table." Examples of positive mood statements are: "Whenever he sees me begin to warm his bottle he begins to smile and coo"; "He loves to look out of the window. He jumps up and down and laughs"; "He always smiles at a stranger"; and "If he's not laughing and smiling I know he's getting sick."

7. Intensity of response

One baby let his mother know he was hungry with a loud, piercing cry. Another baby cried softly. These two examples show the range of intensity of the children's reactions. Both children are crying, but one is doing so with a considerably greater expenditure of energy than the other. When a behavior is characterized by a high level of energy expenditure, it is judged as intense. When the energy expenditure is low, the response is considered mild. One baby may open his mouth for a second spoonful of food he likes without any other movements. This is a response of mild intensity. On another occasion he might open his mouth, turn toward the dish, and strain actively toward the spoon with his whole body. Such a response is one of high intensity. The child of preponderantly low intensity smiles gently, but his more vigorous companion chortles, gurgles, and kicks when he is happy.

The intensity of response does not relate to whether the child is showing positive or negative mood. It refers to the energy expressed in his behavior, irrespective of its direction. A negative response may be as intense or as mild as a positive one. Scorable items for this category were provided by descriptions of behavior occurring in relation to external stimuli, to preelimination straining, to hunger, to repletion, to new foods, to attempts to control, to restraint, to diapering and dressing, to the bath, and to play and social contacts.

Examples of intense reactions are the following: "He cries loud and long whenever the sun shines in his eyes"; "Whenever she hears music she begins to laugh loudly and to jump up and down in time to it"; "When he is hungry he starts to cry, and this builds up to a scream, and we can't distract him by holding or playing with him"; "When she is full she spits the food out of her mouth and knocks the spoon away"; "The first time we gave him cereal he spit it out and started to cry"; "If we tell him 'no' he starts to cry"; "Dressing is such a problem, he wriggles around so, and when I hold him so that he can't move, he screams"; and "She loves her bath so, that as soon as she hears the water running she tries to climb into the tub even if she's still fully dressed."

Examples of mild responses are: "He squints at a bright light but doesn't cry"; "To a loud noise he jumps and startles a little, but he doesn't cry"; "If he's hungry, he starts to whimper a bit, but if

you play with him he won't really cry"; "When she's had enough she turns her head away, and I know that it is time to stop"; "If he does not like a new food he just holds it in his mouth without swallowing and then lets it drool out"; "When we tell her 'no' she looks and smiles and then goes right on doing what she wants"; "Now it's a pleasure to dress him, he stands up when you tell him to, and holds still when he has to"; and "When other children take a toy away from him, he plays with something else; he doesn't try to get it back or cry."

8. Distractibility

Some babies seemed able to concentrate better than others. The way they took their bottles is a good illustration. The nondistractible child would usually drink until he was full, no matter what was going on around him. The ringing of the telephone bell would cause only the most momentary pause in sucking. He would ignore passers-by or even active efforts to win his attention. The distractible infant, crying when hungry or hurt, could be diverted with a rattle or by being picked up or talked to. The nondistractible one continued to bellow until he tasted milk. No amount of juggling, cooing, or stroking would alter his direction of behavior.

This category thus refers to the effectiveness of extraneous environmental stimuli in interfering with, or in altering the direction of, the ongoing behavior. If the course of a child who is crawling toward an electric light plug can be altered by presenting him with a toy truck, he would be considered distractible. If such efforts to alter his behavior are unsuccessful, he would be considered nondistractible. A child who is crying because he is hungry but stops when he is picked up, is distractible, as opposed to the child who continues to cry until he is fed.

9. Persistence and attention span

It may sound strange to talk about persistence in a newborn baby, but this quality can be seen even in very young infants. We observed great variation in the ability of different babies to continue an activity in the face of difficulties or to resume it after interruption. Some children sucked very persistently at the nipple with small holes, even if little milk was coming through. Others gave up quickly. The persistent one tried for only a few minutes. If he objected to having his face washed, the persistent baby kept pulling his face away. The nonpersistent baby gave in after a brief struggle.

The child with a long span of attention gazed at his cradle gym intently for half an hour. The same baby, a year later, would stick with one toy for quite a long period. A baby with a short attention span, on the other hand, would focus only briefly on any activity or aspect of the environment. At a year and a half he might flit from toy to toy, spending very little time with any one of them.

This category thus includes two subcategories which are related. By attention span is meant the length of time a particular activity is pursued. For example, if a two-year-old child engaged in water play poured water from one cup to another for half an hour, he would be scored as possessing a long attention span. If he engaged in this play activity for five minutes, his attention span would be considered short. The attention span can be measured with regard to self-initiated activities, such as the above example of water play, as well as to the child's participation in planned activities, such as listening to a story or listening to music. By persistence, we mean the child's maintaining of an activity in the face of obstacles to its continuation. Obstacles may be external. In the case of our child pouring water, if his mother comes along and says "no" and he continues to do it, he would be considered persistent. The obstacles may be much more directly related to the child's abilities. For example, the child who continually attempts to stand up although he always falls down would be scored as persistent, as would the child who continues to struggle with a toy he can't make perform properly without asking for help. The category, therefore, is an omnibus one which includes selectivity, persistence and, at a later age level, frustration tolerance.

The child's preponderant pattern of functioning in these nine categories may be called his temperament. There is nothing mysterious about temperament. It merely represents a statement of the basic style which characterizes a person's behavior. Some students of behavior have divided psychological functioning into three parts which they call the what, the why, and the how. The what refers to the content of behavior, including intelligence, skills, aptitudes, and talents. The why relates to motivation, or the reasons for behaving in a given way. The how refers to temperament--the manner in which the what and the why are expressed.

During infancy, information about temperament has to be obtained primarily from the child's behavior in the routines of daily functions: sleeping, feeding, dressing, eliminating, bathing, moving about. When children grow to be toddlers and then go to nursery school, their lives become more complex. Our ways of gathering information about them must expand with their horizons. Therefore, as the children grew older, we extended our inquiries to include the gathering of information on how the children behaved when they met strangers, played with new toys, were sick, were left alone, went to the hospital, moved from one house to another, drank from a cup, went to a playground, rode a tricycle, got a pet, stayed with sitters, were toilet trained, learned to read, or went to stores, restaurants, hotels, or a circus.

To make our knowledge as valid and as representative as possible, we picked situations in the child's life that were typical for his age. For example, to find out how active a child was (very quiet, moderately quiet, active, restless, hyperactive), we might ask a mother how her two-month-old baby moved in the bath, or how he moved when diapered. We would ask the mother of a three-month old baby to

tell us how much he pumped his legs, what attempts he made to turn over. When the child was two years old, we asked how many times he fell off his chair during a meal, how he played in the park, or how he acted during his first haircut. When the child was five, we found out how he used a tricycle. Did he run or walk when he saw something he wanted? What were his favorite games? How vigorously did he play at them? How much did he climb on furniture? How many times did he get lost when taken to a large store because of running around?

If we wanted to discover how intensely a child reacted at two months and to identify his mood, we got a description of his bath. Did he scream, howl, stiffen, turn red? Did he sob? Did he whimper? Did he startle but make no noise? Did he smile or laugh? Did he take it in stride, deadpan? Later, we asked questions about the degree of enthusiasm or distaste for new foods. When he was two, we found out how he expressed pleasure or displeasure when given a new toy (ranging from quiet acceptance to effusive hugs, kisses, and thanks, or--on the negative side--from noncommittal rejection to loud expressions of displeasure).

We investigated his play behavior at five. Did he play without much fighting or laughter or talk? Did he complain loudly when displeased? Did he shout with glee? When older, did he cry when he struck out at baseball? Did he look disappointed but say nothing? Did he remain apparently unruffled? Did he shout, "You're a cheater," or quietly turn away?

APPENDIX B

INTRODUCTORY LETTER TO PARENTS

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY EAST LANSING, MICHIGAN 48824

OLDS HALL

Dear Parents:

We are presently doing a research project here at Michigan State University in cooperation with the Psychology Department and the Institute for Family and Child Studies. The purpose of the project is the study of temperament and its role in the development of personality. By temperament we are referring to the how of behavior; the manner in which a person acts or expresses himself. This is different from the why (reasons or motivations) or what (abilities and aptitudes) of behavior.

In this research we are interested in understanding more about how the temperament of both parents and children effect one another. For example some babies are more active than others. This is a biological difference present at birth. Their energy level is higher. They do more of everything which can have important effects on how you as parents and other people respond to them. Your own level of activity may fit well with your child's or it may differ. This can also have an important effect on how you and your child relate to one another. We can all think of activities we like to do with other people but differ in the way we like to do them. Sometimes this may work out for the best as we may fit well with one another; or at times there may be a personality clash leading to some type of conflict. In other words just as with adult relationships, parent-child relationships are a two-way street.

The results of the present study will provide us with information that may be of significant use in helping parents to understand: (1) the unique temperamental characteristics of their own children as well as themselves; (2) how a child's temperament may fit or clash with his parent's temperament leading to a smoother or rougher relationship for both; and (3) how parents may manage these temperamental differences more effectively.

We would greatly appreciate your participation in this project. This will involve completing three questionnaires. One is about your child's temperament and two ask about your own. It should take you about one hour to complete all of them. Your child will not be involved in any way.

While regretably we cannot offer you any compensation for your taking part in the project we will be providing you with a written explanation of the findings of the study.

All of the information you provide for us is completely confidential. All names will be kept separately from the questionnaire. When the project is complete the name sheets will be destroyed.

We will be calling you within the next few days to answer any questions you might have regarding the project and provide further information as to the exact procedure.

Furthermore, should you have any questions or comments, at any time concerning any aspect of the study please do not hesitate to contact me (Allan Scholom) at the M.S.U. Psychology Department (355-9564).

I'd like to thank you in advance for your cooperation and look forward to talking with you.

Sincerely yours,

Allan Scholom, M.A.
Clinical Psychologist

Robert Zucker, Ph.D.
Clinical Psychologist

Gary Stollak, Ph.D.
Clinical Psychologist

APPENDIX C

CAREY INFANT TEMPERAMENT SURVEY

SEX OF CHILD _____

NUMBER_____

The purpose of the enclosed questionnaire is to determine the general pattern of your baby's reaction to his or her environment by getting specific information about many areas of functioning. You will also be asked some questions about that environment and about your general impressions of the baby.

You are asked to recall as best you can what your child was like as an infant (about 6 months to 1 year old). While the details of the period understandably may be difficult to remember, your overall recollections will be most useful information for us, as this may be seen as a cumulative impression based upon your total experience with your child throughout infancy. And of course by completing the questionnaire jointly you may be able to help one another recollect what your child was like.

Let me emphasize though that your first reactions or remembrances are probably the most accurate and for purposes of the present study all we need.

The temperament questionnaire itself consists of 70 statements about the baby, each with 3 choices. Please circle the letter "a," "b," or "c" before the choice that best describes the baby. There are no good and bad or right and wrong answers, only descriptions of what your baby was like.

Survey of temperamental characteristics

Sleep

1. (a) Generally goes to sleep at about same time (within half an hour) night and naps.
   (b) Partly the same times, partly not.
   (c) No regular pattern at all. Times vary 1-2 hours or more.

2. (a) Generally wakes up at about same time, night and naps.
   (b) Partly the same times, partly not.
   (c) No regular pattern at all. Times vary 1-2 hours or more.

3. (a) Generally happy (smiling, etc.) on waking up and going to sleep.
   (b) Variable mood at these times.
   (c) Generally fussy on waking up and going to sleep.

4. (a) Moves about crib much (such as from one end to other) during sleep.
   (b) Moves a little (a few inches).
   (c) Lies fairly still. Usually in same position when awakens.

5. With change in time, place or state of health:
   (a) Adjusts easily and sleeps fairly well within 1-2 days.
   (b) Variable pattern.
   (c) Bothered considerably. Takes at least 3 days to readjust sleeping routine.

Feeding

6. (a) Generally takes milk at about same time. Not over 1 hour variation.
   (b) Sometimes same, sometimes different times.
   (c) Hungry times quite unpredictable.

7. (a) Generally takes about same amount of milk, not over 2 oz. difference.
   (b) Sometimes same, sometimes different times.
   (c) Amounts taken quite unpredictable.

8. (a) Easily distracted from milk feedings by noises, changes in place or routine.
   (b) Sometimes distracted, sometimes not.
   (c) Usually goes right on sucking in spite of distractions.

9. (a) Easily adjusts to parents' efforts to change feeding schedule within 1-2 tries.
   (b) Slowly (after several tries) or variable.
   (c) Adjusts not at all to such changes after several tries.

10. (a) If hungry and wants milk, will keep refusing substitutes (solids, water, pacifier) for many minutes.
    (b) Intermediate or variable.
    (c) Gives up within a few minutes and takes what is offered.

11. (a) With interruptions of milk or solid feedings, as for burping, is generally happy, smiles.
    (b) Variable response.
    (c) Generally cries with these interruptions.

12. (a) Always notices (and reacts to) change in temperature or type of milk or substitution of juice or water.
    (b) Variable
    (c) Rarely seems to notice (and react to) such changes.

13. (a) Suck generally vigorous.
    (b) Intermediate.
    (c) Suck generally mild and intermittent.

14. (a) Activity during feedings--constant squirming, kicking, etc.
    (b) Some motion: Intermediate.
    (c) Lies quietly throughout.

15. (a) Always cries loudly when hungry.
    (b) Cries somewhat but only occasionally hard or for many minutes.
    (c) Usually just whimpers when hungry, but doesn't cry loudly.

16. (a) Hunger cry usually stopped for at least a minute by picking up, pacifier, putting on bib, etc.
    (b) Sometimes can be distracted when hungry.
    (c) Nothing stops hunger cry.

17. (a) After feeding baby smiles and laughs.
    (b) Content but not usually happy (smiles, etc.) or fussy.
    (c) Fussy and wants to be left alone.

18. (a) When full, clamps mouth closed, spits out food or milk, bats at spoon, etc.
    (b) Variable.
    (c) Just turns head away or lets food drool out of mouth.

19. (a) Initial reaction to new foods (solids, juices, vitamins) acceptance. Swallows them promptly without fussing.
    (b) Variable response.
    (c) Usually rejects new foods. Makes face, spits out, etc.

20. (a) Initial reaction to new foods pleasant (smiles, etc.), whether accepts or not.
    (b) Variable or intermediate.
    (c) Response unpleasant (cries, etc.), whether accepts or not.

21. (a) This response is dramatic whether accepting (smacks lips, laughs, squeals) or not (cries).
    (b) Variable.
    (c) This response mild whether accepting or not. Just smiles, makes face or nothing.

22. (a) After several feedings of any new food, accepts it.
    (b) Accepts some, not others.
    (c) Continues to reject most new foods after several tries.

23. (a) With changes in amounts, kinds, taming of solids, does not seem to mind.
    (b) Variable response. Sometimes accepts, sometimes not.
    (c) Does not accept these changes readily.

24. (a) Easily notices and reacts to differences in taste and consistency.
    (b) Variable.
    (c) Seems seldom to notice or react to these differences.

25. (a) If does not get type of solid food desired, keeps crying till get it.
    (b) Variable.
    (c) May fuss briefly but soon gives up and takes what offered.

Soiling and Wetting

26. (a) When having bowel movement, generally cries.
    (b) Sometimes cries.
    (c) Rarely cries though may get red in face. Generally happy (smiles, etc.)

27. (a) Bowel movements generally at same time of day (usually within 1 hour of same time).
    (b) Sometimes at same time, sometimes not.
    (c) No real pattern. Usually not same time.

28. (a) Generally indicated somehow that is soiled with b.m.
    (b) Sometimes indicates.
    (c) Seldom or never indicates.

29. (a) Usually fusses when diaper soiled with b.m.
    (b) Sometimes fusses.
    (c) Usually does not fuss.

30. (a) Generally indicates somehow that is wet (no b.m.)
    (b) Sometimes indicates.
    (c) Seldom or never indicates.

31. (a) Usually fusses when diaper wet (no b.m.)
    (b) Sometimes fusses.
    (c) Usually does not fuss.

32. (a) When fussing about diaper, does so loudly. A real cry.
    (b) Variable.
    (c) Usually just a little whimpering.

33. (a) If fussing about diaper, can easily be distracted for at least a few minutes by being picked up, etc.
    (b) Variable.
    (c) Nothing distracts baby from fussing.

Diapering and dressing

34. (a) Squirms and kicks much at these times.
    (b) Moves some.
    (c) Generally lies still during these procedures.

35. (a) Generally pleasant (smiles, etc.) during diapering and dressing.
    (b) Varied.
    (c) Generally fussy during these times.

36. (a) These feelings usually intense: vigorous laughing or crying.
    (b) Varied.
    (c) Mildly expressed usually. Little smiling or fussing.

Bathing

37. (a) Usual reaction to bath--smiles or laughs.
    (b) Variable or neutral.
    (c) Usually cries or fusses.

38. (a) Like or dislike of bath in intense. Excited.
    (b) Variable or intermediate.
    (c) Like or dislike is mild. Not very excited.

39. (a) Kicks, splashes and wiggles throughout.
    (b) Intermediate--moves moderate amount.
    (c) Lies quietly or moves little.

40. (a) Reaction to very first tub (or basin) bath. Seemed to accept it right away.
    (b) At first protested against bath.

41. (a) If protested at first, accepted it after 2 or 3 times.
    (b) Sometimes accepted, sometimes not.
    (c) Continued to object even after two weeks.

42. (a) If bath by different person or in different place, readily accepts change first or second time.
    (b) May or may not accept.
    (c) Objects consistently to such changes.

Procedures - nail cutting, hair brushing, washing face and hair, medicines

43. (a) Initial reaction to any new procedure--generally acceptance.
    (b) Variable.
    (c) Generally objects; fusses or cries.

44. (a) If initial objection, accepts after 2 or 3 times.
    (b) Variable acceptance. Sometimes does, sometimes does not.
    (c) Continues to object even after several times.

45. (a) Generally pleasant during procedures once established--smiles, etc.
    (b) Neutral or variable.
    (c) Generally fussy or crying during procedures.

46. (a) If fussy with procedures, easily distracted by game, toy, singing, etc.--and stops fussing.
    (b) Variable response to distractions.
    (c) Not distracted. Goes on fussing.

Visits to doctor

47. (a) With physical exam, when well, generally friendly and smiles.
    (b) Both smiles and fusses: variable.
    (c) Fusses most of the time.

48. (a) With shots cries loudly for several minutes or more.
    (b) Variable.
    (c) Cry over in less than a minute.

49. (a) When crying from shot, easily distracted by milk, pacifier, etc.
    (b) Sometimes distracted, sometimes not.
    (c) Goes right on crying no matter what is done.

Response to illness

50. (a) With any kind of illness much crying and fussing.
    (b) Variable.
    (c) Not much crying with illnesses. Just whimpering sometimes. Generally his usual self.

Sensory - reactions to sounds, light, touch

51. (a) Reacts little or not at all to unusual loud sound or bright light.
    (b) Intermediate or variable.
    (c) Reacts to almost any change in sound or light.

52. (a) This reaction to light or sound is intense--startles or cries loudly.
    (b) Intermediate--sometimes does, sometimes not.
    (c) Mild reaction--little or no crying.

53. (a) On repeated exposure to these same lights or sounds, does not react so much any more.
    (b) Variable.
    (c) No change from initial negative reaction.

54. (a) If already crying about something else, light or sound makes crying stop briefly at least.
    (b) Variable response.
    (c) Makes no difference.

Responses to people

55. (a) Definitely notices and reacts to differences in people: age, sex, glasses, hats, other physical differences.
    (b) Variable reaction to differences.
    (c) Similar reactions to most people unless strangers.

56. (a) Initial reaction to approach by strangers positive, friendly (smiles, etc.).
    (b) Variable reaction.
    (c) Initial rejection or withdrawal.

57. (a) This initial reaction to strangers is intense: crying or laughing.
    (b) Variable.
    (c) Mild--frown or smile.

58. (a) General reaction to familiar people is friendly--smiles, laughs.
    (b) Variable reaction.
    (c) Generally glum or unfriendly. Little smiling.

59. (a) This reaction to familiar people is intense--crying or laughing.
    (b) Variable.
    (c) Mild--frown or smile.

Reaction to new places and situations

60. (a) Initial reaction acceptance--tolerates or enjoys them within a few minutes.
    (b) Variable.
    (c) Initial reaction rejection--does not tolerate or enjoy them within a few minutes.

61. (a) After continued exposure (several minutes) accepts these changes easily.
    (b) Variable.
    (c) Even after continued exposure, accepts changes poorly.

Play

62. (a) In crib or play pen can amuse self for half hour or more looking at mobile, hands, etc.
    (b) Amuses self for variable length of time.
    (c) Indicates need for attention or new occupation after several minutes.

63. (a) Takes new toy right away and plays with it.
    (b) Variable.
    (c) Rejects new toy when first presented.

64. (a) If rejects at first, after short while (several minutes) accepts new toy.
    (b) Variable.
    (c) Adjusts slowly to new toy.

65. (a) Play activity involves much movement--kicking, waving arms, etc. Much exploring.
    (b) Intermediate.
    (c) Generally lies quietly while playing. Explores little.

66. (a) If reaching for toy out of reach, keeps trying at it for 2 minutes or more.
    (b) Variable.
    (c) Stops trying in less than 1/2 minute.

67. (a) When given a toy, plays with it for many minutes.
    (b) Variable.
    (c) Plays with one toy for only short time (only 1-2 minutes).

68. (a) When playing with one toy, easily distracted by another.
    (b) Variable.
    (c) Not easily distracted by another toy.

69. (a) Play usually accompanied by laughing, smiling, etc.
    (b) Variable or intermediate.
    (c) Generally fussy during play.

70. (a) Play is intense: much activity, vocalization or laughing.
    (b) Variable or intermediate.
    (c) Plays quietly and calmly.

CAREY SCORING SHEET

Number _____

Sex of Child _____

Age _____

SCALE	ITEMS	TOTAL SCORE (a = 1, b = 2, c = 3)
1. Activity	4 - 13 - 14 - 34 - 39	
2. Rhythmicity	1 - 2 - 6 - 7 - 27	
3. Approach	19 - 40(1) - 43 - 56 - 60 - 63	
4. Adaptibility	5 - 9 - 22 - 23 - 35 - 41 - 42 - 44 - 47 - 53 - 61 - 64	
5. Threshold	12* - 24* - 28* - 30* - 42 - 51 - 55+	
6. Intensity	15 - 18 - 21 - 26 - 32 - 36 - 38 - 48 - 52 - 57 - 59 - 70	
7. Mood	3 - 11 - 17 - 20 - 26* - 29(2) - 31(2) - 35 - 37 - 45 - 47 - 50* - 56 - 58 - 60 - 69	
8. Distractibility	8 - 16 - 33 - 46 - 49 - 54 - 68	
9. Persistence	10 - 25 - 62 - 66 - 67	

(1) Do Not Score "b" (2) Do Not Score "c" * Reverse "a" and "c" c = 1 a = 3

APPENDIX D

STOLLAK TEMPERAMENT SURVEY

MOTHER_____ FATHER_____

NUMBER_____

The following pages contain descriptions of different aspects of a person's temperament. Some students of behavior have divided psychological functioning into three parts which they call the what, the why, and the how. The what refers to the content of behavior, including intelligence, skills, aptitude, and talents. The why relates to motivation, or the reasons for behaving in a given way. The how refers to temperament--the manner in which the what and the why are expressed.

A person does not necessarily have a "good" or "bad" temperament but we all do differ along the dimensions described on the following pages.

After reading the brief description of each dimension please circle the number from one (1) to five (5) that best represents your judgment of your general or typical expression for each characteristic. Numbers one (1) and five (5) are the high and low points for the characteristic, while two (2), three (3), and four (4) represent the middle range.

ACTIVITY LEVEL

Some of us are more active in our movements than others. This dimension refers to the level, tempo and frequency of your motor and muscular movements and activities. Especially relevant to consider are your muscular movements during eating, sleeping, sitting, walking, etc.

1	2	3	4	5
I consider myself a generally inactive or minimally active person.				I am generally a very active person.

REGULARITY AND RHYTHMICITY

We all differ in the regularity of our biological functions. Some of us are hungry at the same time every day. Some of us like to go to sleep at approximately the same time every night and wake up at approximately the same time every morning. This dimension refers to the degree of rhythmicity or regularity of repetitive biological functions. Especially relevant are the regularity of your rest and muscular activities, your sleeping and waking schedule, your eating time and appetite, your bowel and bladder functions.

1	2	3	4	5
My biological functions are generally very regular.				My biological functions are generally very irregular.

APPROACH OR WITHDRAWAL AS A CHARACTERISTIC RESPONSE TO A NEW SITUATION

We all encounter new experiences every day. This dimension of approach-withdrawal characterizes your initial reactions to any new stimulus be it food, people, tasks, procedures, etc.

1	2	3	4	5
I generally approach and very much enjoy encountering new stimuli.				I generally withdraw from and do not enjoy my initial encounters with new stimuli.

ADAPTABILITY TO CHANGE ROUTINE

Some of us are more adaptable than others; shifting easily and quickly with a changing schedule. In considering adaptability we are concerned with the step-by-step development of responses to new situations or altered routines. In contrast to approach-withdrawal, we are interested in the ease or difficulty with which this response can be modified in desirable ways.

1	2	3	4	5
I am generally very adaptable and respond easily and comfortably to changes in routine.				I generally do not adapt well and strongly resist changes in routine.

LEVEL OF SENSORY THRESHOLD

This dimension refers to the level of visual (light), auditory (sound) or tactile (touch, bangs and bumps) stimulation necessary to evoke a response in you. The explicit form of response that occurs is irrelevant and may be of any quality, e.g., approach or withdrawal, intense of mild (see next dimension).

1	2	3	4	5
Very high levels of stimulation are generally necessary before I respond.				I generally respond quickly to even very low levels of stimulation.

INTENSITY OF RESPONSE

This dimension refers to the <u>energy</u> expressed in your behavior irrespective of its direction. A negative response may be as intense or mild as a positive one. We are concerned with the <u>energy expended</u> in your response to stimulation and not your positive or negative mood or reaction to stimulation (see next dimension).

1	2	3	4	5
My response to stimulation is generally very intense, active, and vigorous.				My response to stimulation is generally mild and lacking in intensity and vigor.

POSITIVE OR NEGATIVE MOOD

We all differ in our general moods. This dimension concerns your typical reaction to daily stimulation along the positive to negative dimension.

1	2	3	4	5
I am generally in a positive mood. I generally enjoy my daily activities and enjoy being stimulated.				I am generally in a negative mood, do not generally enjoy my daily activities and do not generally enjoy being stimulated.

DISTRACTABILITY

Some of us are able to concentrate better than others. This dimension refers to the effectiveness of extraneous environmental stimuli (be they lights, sounds, noises, conversation, etc.) in interfering with or in altering the direction of your ongoing behavior.

1	2	3	4	5
I am generally very distractable. Even low levels of extraneous stimulation interfere with and are capable of changing my behavior.				I am generally non-distractable. Only high levels of extraneous stimulation interfere with my concentration and my ongoing behavior.

PERSISTANCE AND ATTENTION SPAN

We all vary in our ability to continue an activity in the face of difficulties or resume it after interruption. This dimension includes two subcategories which are related. By attention span is meant the length of time a particular activity is pursued. By persistance we mean the maintaining of an activity in the face of obstacles to its continuation. This dimension, therefore, includes selectivity, persistance, and frustration tolerance.

1	2	3	4	5
I generally have a long attention span, a high tolerance for frustration and generally have little difficulty in persisting when faced by difficulties and obstacles.				I generally have a short attention span, a low frustration tolerance, and do not generally persist when faced by difficulties and obstacles.

APPENDIX E

THORNDIKE DIMENSIONS OF TEMPERAMENT

Directions

This inventory is designed to evaluate the relative strength of several normal aspects of temperament. If you follow the directions given, a meaningful pattern of scores which describe you can be obtained. You are to select the statements in each group of items that best describe you.

The statements appear in "Sets" of 10 items. Read through the statements in each set quickly. Then go back and choose the three (3) statements that are most like you, the ones that describe you best. For these three statements, blacken the answer space marked L (like) beside the number of the statement. Next choose the three (3) statements that are most unlike you, or most different from you. For these three statements, blacken the answer space marked D (different) beside the number of the statement.

A sample set is given below. In the example, the person has marked statements 6, 8, and 10 as the three which are most like him, and he has marked statements 3, 4, and 7 as the three most different from him (or least like him).

Be careful to mark your responses in the proper spaces on the answer sheet--beside the number of the statement you have chosen. Read carefully and answer thoughtfully, but don't spend too much time on any one set of items. Give your first reactions as to what is like you and different from you.

Begin with Set A. As soon as you finish Set A, go on to Set B, and so on. There is no fixed time limit on this inventory, but work steadily and make your choices as quickly as you can. (Note that on the answer sheet Set B is below Set A, Set D is below Set C, and so on.)

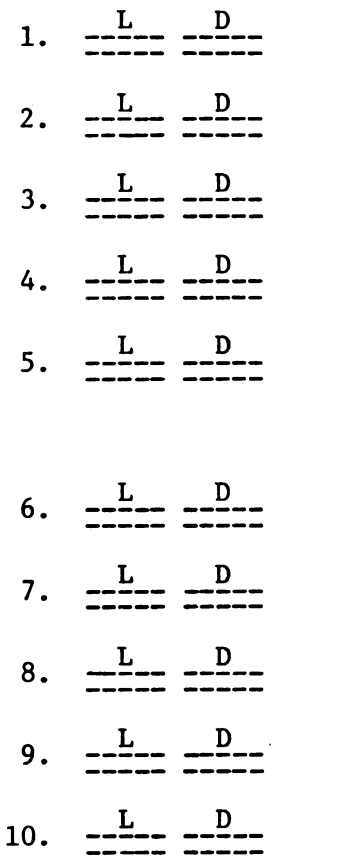
Please be sure to mark exactly three statements as most like you and exactly three as most different from you for each of the sets of statements.

DO NOT WRITE IN THIS BOOKLET

SAMPLE SET

1. The program you watch most regularly on television is a news broadcast.
2. You are likely to keep people waiting for you.
3. Nothing seems to work out quite right for you.
4. You often seem to be given the "dirty" job to do.
5. You would rather read a history book than a novel.
6. You are usually "on the go."
7. You tend to "blow up" in an emergency.
8. You look forward to the years ahead.
9. You usually plan things well in advance.
10. You generally find other people enjoyable.

SAMPLE OF ANSWER SHEET



Set A

1. You make friends easily.
2. You believe that most people mean well.
3. You are interested in different ideas about the nature of truth, beauty, and the like.
4. You are usually on the go all day long.
5. You are cheerful most of the time.
6. You usually argue a point when you think you are right.
7. You are considered an even-tempered person.
8. You can always be relied upon fully.
9. You don't mind getting your hands greasy or grimy.
10. You enjoy frequent changes of scene.

Set B

1. You believe that there are some things that man can never know or understand.
2. You like to do things on the spur of the moment.
3. You usually express your opinion even if you disagree with most of the group.
4. It is important for you to have clean, neat surroundings.
5. You go out of your way not to offend others.
6. You would usually rather go to a party than watch television.
7. You are always on the lookout for ways to improve your mind.
8. You usually feel you have done the right thing.
9. You believe a good many politicians are just a little crooked.
10. You usually feel full of pep and vigor.

Set C

1. You enjoy analyzing the motives for your actions.
2. You like to be where lots of things are going on all the time.
3. It takes a lot to get you down.
4. If you lost your wallet you would expect the finder to return it.
5. You like to have a lot to do.
6. You enjoy "roughing it."
7. You live each day as it comes along.
8. You hate to make yourself conspicuous.
9. You seldom nurse a grudge.
10. You rarely forget to do anything you are supposed to do.

Set D

1. You don't like to display your feelings in public.
2. You don't mind having noisy children about you.
3. You are a very efficient person.
4. You enjoy working with tools.
5. You are an impulsive person.
6. You have always found storekeepers to be honest and reliable.
7. You like to keep busy when you have leisure time.
8. You find it easy to relax.
9. You hate to eat a meal all alone.
10. You are always looking for the real reason back of people's actions.

Set E

1. You would usually rather go to a movie than to a serious lecture.
2. You tend to take things more personally than do most people.
3. You find faith more important than logic in human affairs.
4. You get more done in a day than most people.
5. You enjoy almost any kind of party.
6. You often leave things to the last minute.
7. Whenever you can you try to avoid an argument.
8. You would know where to find the distributor on a car.
9. You seldom do anything without thinking it out ahead of time.
10. In a pinch, you can bluff your way through.

Set F

1. You plan what you are going to say before you speak.
2. You have trouble buckling down to work.
3. You would feel perfectly comfortable holding a loaded gun.
4. If you hurry to catch a bus and just miss it, that really "burns you up."
5. You are not particularly bothered if someone pushes in front of you.
6. You would enjoy spending an afternoon in an art museum.
7. You often find yourself getting tense or anxious.
8. You feel that the top men in business are out to make every cent they can.
9. You get out of bed in the morning ready to go.
10. You belong to several clubs or social groups.

Set G

1. You sometimes just like to sit and do nothing.
2. You feel most people will "chisel" a little bit if they aren't watched.
3. You rarely care to be alone.
4. You worry a good deal.
5. When you watch television, you prefer something light and entertaining.
6. You wouldn't particularly mind handling a mouse or snake.
7. You find it hard to "let yourself go."
8. You are often in a rush because you have left things to the last minute.
9. You like to gamble a little occasionally.
10. From time to time you "blow up."

Set H

1. Nothing much seems to bother you.
2. You are a follower rather than a leader.
3. When you go shopping you usually buy only what you started out to get.
4. You have a tendency to "let things slide."
5. Off-color stories sometimes embarrass you.
6. You worry a good deal about what you are going to say to people.
7. You wouldn't mind living by yourself.
8. You feel that most union officials are primarily interested in the welfare of the union members.
9. You enjoy television programs in which men in public life are interviewed about national problems.
10. You live at a relaxed and easy pace.

Set I

1. You sometimes feel depressed for no good reason.
2. The happenings in your own town mean more to you than international events.
3. People sometimes have to tell you to slow down.
4. You are something of a "lone wolf."
5. You find most people are concerned only with themselves.
6. You are no good at trying to bargain with someone.
7. You would enjoy learning more about flower arranging.
8. You almost never get into a dispute.
9. You wish you could stick to a job better.
10. You follow a plan for saving money regularly.

Set J

1. You are a somewhat disorganized person.
2. You have to work to control your temper.
3. When driving, you are likely to give a hitchhiker a lift if you have space.
4. You would rather watch most sports than play them.
5. You live for today and let tomorrow take care of itself.
6. It takes you quite a while to get started on something.
7. You feel that it is rare for a person to try to cheat on his income tax return.
8. You are often the one that makes a party "go."
9. You often seem to say the wrong thing.
10. You are more interested in <u>what</u> people do than in <u>why</u> they do it.

Set K

1. You are rather likely to take out your annoyances on others.
2. You would never camp out if you could help it.
3. You are likely to forget things you are supposed to do.
4. You are likely to buy things you don't need and can't really afford.
5. You hesitate to ask strangers for directions or information.
6. You feel that most people who have climbed to success have done it by pushing others down.
7. You feel most foreign governments are not to be trusted.
8. You seldom hurry when you walk.
9. Many of your problems seem to have no good solution.
10. You prefer to work mostly with ideas or things rather than with people.

Set L

1. You set yourself too fast a pace.
2. You don't depend very much on the company of others.
3. You haven't much patience with theorizing.
4. You feel congressmen are more interested in themselves than in the good of the country.
5. When something goes wrong your whole day is usually spoiled.
6. You like to speak before an audience.
7. You do not soon forget a slight.
8. You would dislike work in which you got dirty.
9. You almost never walk across the street when the traffic light is red.
10. You are more likely to jump to a conclusion than to figure a problem out step by step.

Set M

1. You frequently buy things on impulse.
2. When your train is delayed or your bus gets stuck in traffic, you begin to do a "slow burn."
3. You like to have authority and "run the show."
4. You feel competent to make minor repairs on your car.
5. You tend to keep putting things off.
6. You would rather go to a movie or theater than to a party.
7. You are easily upset by criticism.
8. You have found that most people are out for what they can get.
9. You find the study of ancient civilizations pretty dull.
10. You like to take a nap during the day.

Set N

1. Having people around sometimes gets on your nerves.
2. You feel that the arts don't get enough recognition in the world of today.
3. You feel that most people will cheat on a test if they think they can get away with it.
4. You can't easily forget about your troubles.
5. You like to take your time on a job.
6. You make your plans well in advance.
7. You use your time to best advantage.
8. In a meeting or discussion you seldom speak unless called on.
9. You have never wanted to keep a diary.
10. You usually don't mind having to wait for someone.

Set O

1. When a group has to do something or decide something, you often take the lead.
2. You often find yourself daydreaming when you should be working.
3. In a job you prefer security to variety.
4. When a person does something stupid, you sometimes "chew him out."
5. You are very sensitive to disagreeable smells.
6. You find it hard to forget unpleasant things you have seen or read about.
7. You would expect an honor system to work well in most colleges.
8. You go out of your way to make new friends.
9. You have usually finished examinations with time to spare.
10. You feel our schools and colleges don't give enough emphasis to intellectual development.

Set P

1. You have found most automobile drivers courteous and considerate.
2. You take most things too seriously.
3. You enjoy spending an evening by yourself.
4. You finish a task before most people would.
5. You like to read such things as history and philosophy.
6. You rarely get so angry that it shows.
7. You find it easy to stick to a plan or budget in spending your money.
8. You often feel uncomfortable talking to an "important" person.
9. When you have something to do, you usually get going on it right away.
10. You enjoy shopping for clothes, even if you don't really expect to buy anything.

Set Q

1. You believe that everything can be accounted for logically and rationally.
2. There are some people you just can't stand.
3. You try not to attract attention to yourself.
4. You often wish you could organize your time better.
5. You plan carefully for anything that you are going to do.
6. You would like to find out more about the origins of the world.
7. You find it easy to shake off the "blues."
8. You have found that a good many people will do just as little work as they can get away with.
9. You have rather a small number of close friends.
10. You naturally do things at a rapid rate.

Set R

1. You like to listen to classical music.
2. You like to take your time at anything you do.
3. You do not easily forget a social blunder you have made.
4. You have found that one has to be a little thick-skinned to get on in the world.
5. You sometimes feel you just have to get away from people for a while.
6. You can't stand to let your work pile up.
7. You enjoy supervising the work of others.
8. It generally takes a lot to get you ruffled.
9. You prefer activities that just happen to those planned in advance.
10. You don't like to hear people swear or use "four-letter words."

Set S

1. The parties you like best are the ones "cooked up" at the last minute.
2. You work very hard at anything you do.
3. Tears sometimes come to your eyes in a sad movie or play.
4. You would rather take orders than give them.
5. You usually stay calm even when things go wrong.
6. You like to work fast.
7. You like to belong to clubs and organized groups.
8. You usually get over any upset quickly.
9. You think of a college education as primarily an opportunity for intellectual growth.
10. You have found that you can trust people.

Set T

1. You find the idea of communicating with civilizations in other parts of the universe very exciting.
2. You believe people are basically honest.
3. You pretty much take life in your stride.
4. You almost always have a good time at a party.
5. You like to keep busy.
6. You would enjoy a hunting or fishing trip.
7. You are considered an easy-going person.
8. You would enjoy starting off on a trip around the world at a week's notice.
9. You would prefer a job where you know just what was expected of you.
10. You finish any job that you start.

END

APPENDIX F

DESCRIPTION OF T.D.O.T. SCALES

Dimension	Abbreviation	Positive End	Negative End
1. Sociable	(Soc)	Sociable Likes to be with other people, to do things in groups, to go to parties, to be in the middle of things.	Solitary Likes to be by himself, to do things by himself, to read or engage in other kinds of solitary activities.
2. Ascendant	(Asc)	Ascendant Likes to be in the center of the stage, to speak in public, to "sell" things or ideas, to meet important people; tends to stand up for his rights or his point of view.	Withdrawing Tends to avoid personal conflict, to dislike being in the public eye, to avoid taking the initiative in relation to others, to accept being imposed upon.
3. Cheerful	(Che)	Cheerful, Objective Seems to feel generally well and happy; satisfied with his relations with others, accepted by others, at peace with the world.	Gloomy, Sensitive Often seems to feel moody, depressed, at odds with himself; sensitive to the criticism of others; prone to worry and anxiety.
4. Placid	(Pla)	Placid Even-tempered, easygoing, not easily ruffled or annoyed.	Irritable Short-tempered, annoyed or irked by a good many things, inclined to "blow his top."

5.	Accepting	(Acc)	Accepting Tends to think the best of people, to accept them at face value, to expect altruism to prevail.	Critical Tends to question people's motives, expecting self-interest, conscious of the need for each to look out for himself.
6.	Tough-Minded	(T-M)	Tough-Minded (Masculine) Tolerant of dirt, bugs, and profanity; enjoys sports, roughing it, and the out-of-doors; uninterested in clothes or personal appearance; rational rather than intuitive.	Tender-Minded (Feminine) Sensitive to dirt, both physical and verbal; concerned with personal appearance; aesthetic interests; intuitive rather than rational.
7.	Reflective	(Ref)	Reflective Interested in ideas, in abstractions, in discussion and speculation, in knowing for its own sake.	Practical Interested in doing and in using knowledge for practical ends, impatient with speculation and theorizing.
8.	Impulsive	(Imp)	Impulsive Carefree, happy-go-lucky, ready to do things at a moment's notice.	Planful Careful to plan life out in advance, systematic, orderly, foresighted.
9.	Active	(Act)	Active Full of energy, on the go, quick to get things done, able to get a lot done.	Lethargic Slow, easily tired, less productive than others; likes to move at a leisurely pace.
10.	Responsible	(Res)	Responsible Dependable, reliable, certain to complete tasks on time, even a little compulsive.	Casual Often late with commitments, rushes to meet deadlines, has difficulty getting things done, unpredictable.

APPENDIX G

TEACHER RATING FORMS INCLUDING
CATEGORY DESCRIPTIONS

Teacher Rating Scales

NAME_____

CENTER_____

NAME OF OTHER TEACHER FILLING OUT RATINGS
FOR SAME CHILDREN_____

Instructions - We are interested in your own assessment of each child in your class along the dimensions described on the following page. Place each child in one of the four categories (high, medium high, medium low, low) on each of the five scales (self control, approach-avoidance, self reliance, subjective mood, peer affiliation). There should be at least 10% (approximately) and no more than 40% (approximately) of the children in any category.

For example if you are rating a total of 30 children, there should be at least 3 children (10%) and not more than 12 children (40%) in each category. Do this for each of the five scales. We have found that it is useful to place those children who fall on the end points (high and low) of the scales first. Then go on to fill out the middle ranges (medium high, medium low).

Thank you for your cooperation. Should you have any questions please do not hesitate to contact me (Allan Scholom - 355-9564).

Teachers' Rating Scales

Instructions: The following is a list of five scales; i.e., self-control, approach-avoidance tendency, self-reliance, subjective mood, and peer affiliation; your task is to rate each child on each dimension, as being either high, medium-high, medium-low, or low, based on which category describes the behaviors he exhibits most frequently in your classroom, on a daily basis. The endpoints of the rating scales are behaviorally described below, e.g., high vs. low. However, each dimension is to be regarded as a continuum consisting of the two endpoints, with midpoints of medijm-high, and medium-low. Please bear in mind that all children display most of these behaviors, some of the time. The ratings should portray what you observe as the child's "typical behavior" in the classroom. Thank you.

Scale I - Self-Control

High
Obeys school rules that conflict with his wishes, needs, and actions, possesses ability to sustain a work effort; reasonable attention span; capacity to wait his turn in play with other children or in use of washroom facilities or at snacktime or lunch; ability to restrain those expressions of excitement or anger that would be disruptive or destructive to his peer group; absence of explosive emotional expression or swings between rigid vs. lax control over impulses.

Low
This child typically becomes passive, or sullen when confronted with a frustrating situation, and his performance deteriorates; breaks school rules which conflict with his needs, wishes, and actions; limited concentration and attention span; disrupts other children who are working or playing; cannot wait his turn, will act out aggressibly or may "explode" given the slightest bit of frustration; his degree of self-control varies greatly between "sulking" and acting out of aggressive impulses.

Scale II - Approach-Avoidance Tendency

High
This child is usually wide awake, fairly active, curious, alert, easily excited to active participation in a group; is emotionally expressive, particularly of positive emotions (e.g., joy, delight, happiness), is assertive, resists domination by other children; will use reason and persuasion to get what he wants from teachers and peers; manifests a sense of self-assuredness, i.e., "I can do that"; likes to explore novel objects and situations.

Low
This child appears apathetic, slow-moving; is emotionally bland, giving little clue as to the extent of pleasure he derives from his activities; only makes feeble attempts to get what he wants and is easily put off, submitting to the demands of other children; hesitant about expressing his needs, wishes, etc., and is evasive when asked what he wants; shy around other children, hesitates to join a group; will withdraw from novel objects and situations; manifests an "I can't do that" attitude; maintains close physical contact with teacher.

Scale III - Self-Reliance

High
Easily separates from parents when arriving at school or day care center; seeks help from teacher when faced by difficult task, but can and prefers to work or play independently; pleasure expressed in learning how to master new tasks; leadership interest and ability; interest expressed in making decisions and choices which affect him; displays commitment to his own activities, and will not stop out of need for companionship when engrossed in something.

Low
Difficulty in separating from parents when arriving at school or day care center, may cry, whine, or get angry; dependent on teacher and/or on other children in play and work activities, afraid to be alone, avoids learning situations, gives up easily when encountering frustration; is overly concerned with "winning and losing" in playing games, and would rather compete against other children vs. enjoy his own performance; "follower vs. leader" in interactions with peers.

Scale IV - Subjective Mood (Buoyant vs. Dsyphoric)

High
This child usually manifests feelings of pleasure, spontaneity, zest, happiness, etc.' "good-natured"; excited and involved in school activities; contented, secure.

Low
This child appears anxious, hostile, punitive, fearful, bored, low involvement in school activities; irritable towards peers, and teachers.

Scale V - Peer Affiliation

High
This child expresses affection and trust towards peers; cooperates with peers in group activities; initiates play with other children; expresses sympathy towards other children; e.g., will help another child who is hurt, or might offer one of his toys to a child who is distressed;

discourages wrongdoing of other kids, and dissociates himself from others' wrongdoing; hits other children only in self-defense"; his behavior shows consideration of possible harmful consequences of his actions, on others.

Low

This child mistrusts other children, expects to be treated by them in a hostile manner; is mainly aggressive towards other children, without concern for possible harmful consequences of his behavior; prefers to play alone, usually teases or ridicules another child who is hurt or crying; incites or supports wrongdoing by other children; "Tattles" on other children; frequently hits smaller/weaker children; is bossy and tries to dominate other children; frequently knocks over or destroys work/play activities of other children; aggression towards other children is often unprovoked.

Scale I - Self-Control

	High	Medium High	Medium Low	Low
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Scale II - Approach-Avoidance Tendency

	High	Medium High	Medium Low	Low
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Scale III - Self-Reliance

	High	Medium High	Medium Low	Low
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Scale IV - Subjective Mood

	High	Medium High	Medium Low	Low
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Scale V - Peer Affiliation

	High	Medium High	Medium Low	Low
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

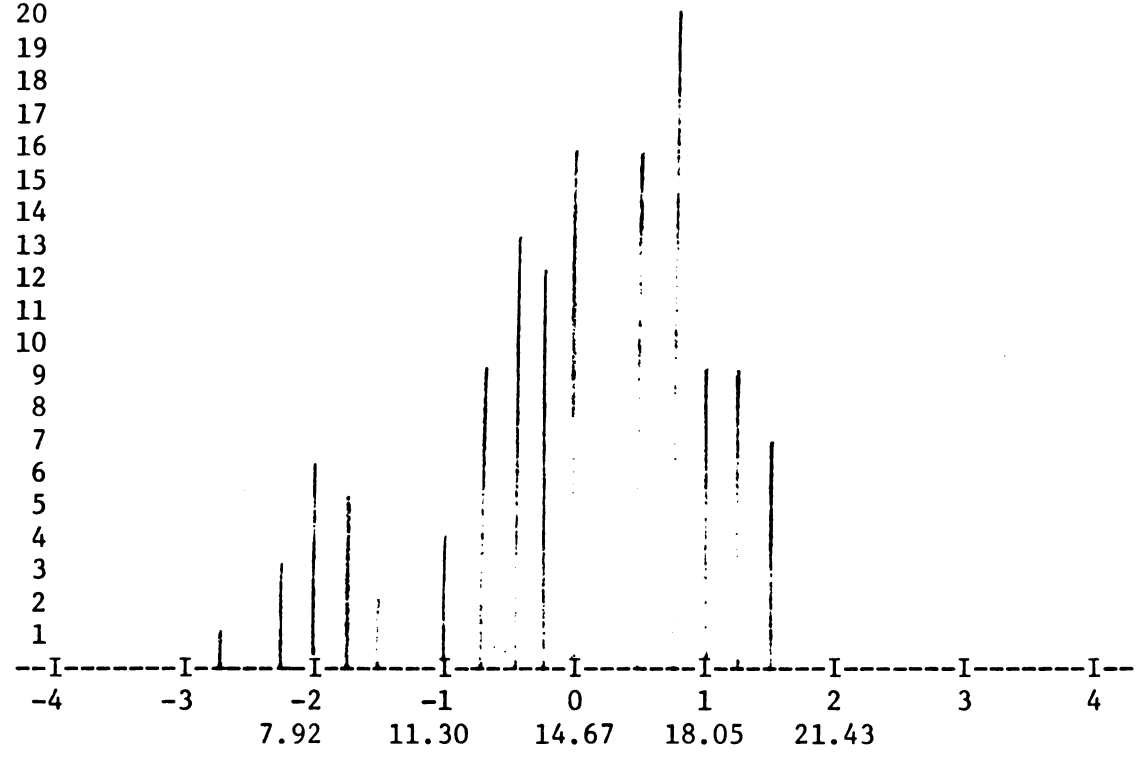
APPENDIX H

FREQUENCY DISTRIBUTION OF TEACHER RATIONS OF CHILD ADJUSTMENT

N = 132.00
Mean = 14.67
Std. Dev. = 3.38
Variance = 11.42
Coef. of Var. = 23.03
Skewness = -.63
Kurtosis = -.15

Lower Quartile = 12.94
Median = 15.04
Upper Quartile = 17.06

Range = 5.00 to 20.00



APPENDIX I

PEARSON CORRELATION COEFFICIENTS BETWEEN SCALES ON STOLLAK TEMPERAMENT SURVEY AND THORNDIKE DIMENSIONS OF TEMPERAMENT FOR MOTHERS

		Activity	Regularity	Approach	Adaptibility	Threshold	Intensity
S.T.S.	1 - Activity						
	2 - Regularity	.24					
	3 - Approach	.00	.08				
	4 - Adaptibility	-.08	-.17	.34			
	5 - Threshold	-.10	-.14	.09	.03		
	6 - Intensity	.30	.08	.13	-.01	-.26	
	7 - Mood	.06	-.00	.16	.32	.03	.11
	8 - Distractibility	.02	-.07	-.11	-.04	-.16	.03
	9 - Persistance	.08	.11	.18	.29	-.05	.05
T.D.O.T.	10 - Sociable	.11	.09	.22	.10	.26	.16
	11 - Ascendent	-.00	-.17	.30	.23	.02	.17
	12 - Cheerful	-.11	-.00	.34	.22	.09	-.07
	13 - Placid	-.12	.11	.12	.25	.07	-.14
	14 - Accepting	.01	.06	0.05	.07	-.01	.06
	15 - M - F	-.13	-.19	.02	.15	.04	-.02
	16 - Reflective	-.21	-.17	.04	.14	.05	-.08
	17 - Impulsive	-.22	.71	.06	.18	.10	.00
	18 - Active	.43	-.02	-.01	-.19	.12	.22
	19 - Responsible	.20	.34	.01	-.26	-.09	.03

Mood	Distractibility	Persistance	Sociable	Ascendent	Cheerful	Placid	Accepting	M - F	Reflective	Impulsive	Active
-.14											
.21	-.27										
.21	-.15	-.13									
.18	-.20	.15	.13								
.38	-.27	.21	.18	.18							
.36	-.02	.16	.01	-.10	.42						
.01	-.14	.23	.09	.04	.22	.22					
-.12	.08	.11	-.19	.20	-.03	-.12	-.17				
-.05	-.04	.12	-.27	.13	-.13	-.03	-.11	.23			
-.04	-.03	-.26	.03	.14	-.10	-.04	-.17	.15	.24		
-.01	-.09	.03	.03	.17	-.09	-.27	-.05	.05	-.09	-.04	
.02	-.12	.14	-.02	-.14	-.01	-.03	.08	-.21	-.29	-.55	.33

APPENDIX J

PEARSON CORRELATION COEFFICIENTS BETWEEN SCALES ON STOLLAK TEMPERAMENT SURVEY AND THORNDIKE DIMENSIONS OF TEMPERAMENT FOR FATHERS

		Activity	Regularity	Approach	Adaptibility	Threshold	Intensity
S.T.S.	1 - Activity						
	2 - Regularity	.04					
	3 - Approach	.07	.04				
	4 - Adaptibility	.01	-.28	.33			
	5 - Threshold	-.22	-.05	-.10	.15		
	6 - Intensity	.41	.04	.04	-.01	-.26	
	7 - Mood	-.05	.23	.41	.37	-.03	.04
	8 - Distractibility	.08	.05	.05	-.06	-.23	.14
	9 - Persistance	-.10	.11	.06	.08	.01	-.05
T.D.O.T.	10 - Sociable	.21	-.10	.21	.34	.06	.13
	11 - Ascendent	.15	.01	.32	.16	-.04	.13
	12 - Cheerful	-.13	.03	.19	.23	.08	-.18
	13 - Placid	-.16	.11	-.09	.10	.13	-.26
	14 - Accepting	-.05	.12	.00	.03	.09	.08
	15 - M - F	.09	.02	.10	-.00	-.14	-.03
	16 - Reflective	-.06	.54	.02	-.11	.05	-.06
	17 - Impulsive	.11	-.25	.03	.25	.02	.07
	18 - Active	.49	.09	.15	-.04	.00	.19
	19 - Responsible	.11	.16	.09	-.19	-.07	.03

Mood	Distractibility	Persistance	Sociable	Ascendent	Cheerful	Placid	Accepting	M - F	Reflective	Impulsive	Active
-.01											
.15	-.29										
.03	.02	-.10									
.06	-.04	.06	.29								
.24	-.25	.27	.08	.27							
.17	-.09	.14	.06	-.16	.53						
.26	.09	-.09	.12	.12	.11	.05					
.11	.06	.08	-.09	.08	.17	.09	-.07				
.11	.05	-.06	-.23	-.00	-.16	-.18	-.02	-.15			
-.01	.05	-.15	.10	.11	-.04	.00	-.15	-.20	.10		
-.04	-.03	-.01	.12	.11	-.10	-.17	-.12	.16	.17	-.11	
-.01	-.20	.18	.06	.03	.01	.02	-.05	-.02	-.30	-.54	.34

APPENDIX K

VARIMAX ROTATION ANALYSIS FOR MOTHER TEMPERAMENT ATTRIBUTES-ROTATED FACTOR LOADINGS

		Factor 1 (Mood)	Factor 2 (Consistancy)	Factor 3 (Energy)
S.T.S.	1 - Activity	-.053	.137	.755*
	2 - Regularity	-.091	.673*	-.269
	3 - Approach	-.340	.092	-.094
	4 - Adaptibility	-.623*	.291	-.071
	5 - Threshold	-.059	-.167	.099
	6 - Intensity	-.057	-.077	.374
	7 - Mood	-.725*	-.005	.174
	8 - Distractibility	-.025	-.147	.010
	9 - Persistance	-.376	.337	.105
T.D.O.T.	10 - Sociable	-.121	-.130	.092
	11 - Ascendent	-.092	-.257	.217
	12 - Cheerful	-.610*	.104	-.130
	13 - Placid	-.711*	.079	-.284
	14 - Accepting	-.128	.024	-.040
	15 - M - F	-.031	-.195	.067
	16 - Reflective	-.079	-.265	-.199
	17 - Impulsive	-.115	-.739*	-.159
	18 - Active	.202	.140	.784*
	19 - Responsible	.074	.792*	.276
	HI. Load	-.725	.792	.784
	Proportion of Variance	.114	.112	.093
	Cum. P.V.	.114	.227	.320

Factor 4	Factor 5	Factor 6	Factor 7	Cumm.
-.155	-.216	.092	-.002	.669
-.230	-.193	-.171	.048	.654
-.029	-.108	-.674*	.248	.661
.212	-.101	-.237	.024	.591
-.113	.806*	-.088	.011	.711
-.188	-.646*	-.289	-.070	.689
-.132	.003	-.117	.030	.588
-.009	-.348	.518*	.467	.630
.482*	-.080	-.219	-.382	.698
-.693*	.140	-.399	.005	.699
.185	-.049	-.640*	-.118	.583
-.122	.196	-.281	-.206	.574
-.089	.076	.194	-.136	.662
-.140	-.095	.057	-.851*	.775
.605*	.060	-.150	.230	.489
.613*	.532	-.133	-.002	.510
.007	.046	-.183	.127	.636
.03	.156	-.160	.024	.728
-.092	.070	-.016	-.036	.724
-.693	.806	-.674	-.851	
.091	.074	.093	.069	
.410	.485	.577	.646	

APPENDIX L

VARIMAX ROTATION ANALYSIS FOR FATHER TEMPERAMENT ATTRIBUTES-ROTATED FACTOR LOADINGS

		Factor 1 (Mood)	Factor 2 (Energy)	Factor 3 (Consistancy)
S.T.S.	1 - Activity	.065	.793*	.006
	2 - Regularity	.781	.039	.261
	3 - Approach	-.806*	.142	.065
	4 - Adaptibility	-.689*	-.002	-.258
	5 - Threshold	.041	-.238	-.013
	6 - Intensity	.017	.619*	-.038
	7 - Mood	-.704*	-.150	.045
	8 - Distractibility	-.075	.046	-.155
	9 - Persistance	-.108	-.110	.174
T.D.O.T.	10 - Sociable	-.301	.454*	-.047
	11 - Ascendent	-.307	.506*	-.211
	12 - Cheerful	-.199	-.077	-.167
	13 - Placid	.094	-.288	-.106
	14 - Accepting	-.145	.021	-.024
	15 - M - F	-.096	.068	.001
	16 - Reflective	.091	-.156	-.360
	17 - Impulsive	-.047	.157	-.769*
	18 - Active	-.015	.600*	.407
	19 - Responsible	.005	.172	.843*
	HI. Load	-.806	.793	.843
	Proportion of Variance	.101	.112	.099
	Cum. P.V.	.101	.213	.312

Factor 4	Factor 5	Factor 6	Factor 7	Cumm.
-.059	-.161	-.023	-.076	.668
.650*	-.225	.092	.137	.575
-.011	-.115	.154	.123	.726
-.255	.221	-.260	.026	.723
-.056	.619*	-.100	.211	.499
.173	-.103	.120	-.221	.488
.344	-.165	-.143	.019	.686
.174	-.307	.034	-.675*	.613
.016	-.158	-.010	.645*	.495
-.043	.442	-.367	-.115	.644
.184	.115	.091	.384	.599
.210	-.070	-.528	.586*	.745
.186	-.077	-.730*	.238	.733
.712*	.301	-.152	-.195	.680
.092	-.661*	-.251	.122	.537
.158	.040	.673*	.130	.659
.269	.042	-.004	-.037	.693
-.204	-.088	-.003	.070	.581
-.018	-.043	-.082	.157	.774
.712	-.661	-.730	-.675	
.076	.076	.087	.088	
.388	.463	.550	.638	

APPENDIX M

PEARSON CORRELATION COEFFICIENTS BETWEEN ALL INFANT , MOTHER, AND FATHER TEMPERAMENT FACTORS AND CHILD ADJUSTMENT

		Adjust-ment	Infant Mood	Infant Consistancy	Infant Energy	Mother Mood	Mother Consistancy	Mother Energy	Father Mood	Father Consistancy
1	Adjustment									
2	Infant Mood	.22*								
3	Infant Consistancy	.02	.00							
4	Infant Energy	.12	.00	.00						
5	Mother Mood	.25**	.21	.11	.02					
6	Mother Consistancy	.07	.00	.00	-.19	.00				
7	Mother Energy	.00	.39	.07	.16	.00	.00			
8	Father Mood	-.09	.11	.09	-.10	.04	.21	.06		
9	Father Consistancy	.09	.04	.02	.06	.14	.06	.10	.00	
10	Father Energy	.05	.10	-.10	-.19	.13	.12	-.05	.00	.00

* $p < .05$
** $p < .02$

APPENDIX N

MULTIPLE REGRESSION EQUATION AND SIGNIFICANT PEARSON CORRELATIONS FOR TEMPERAMENT FACTORS PREDICTING ADJUSTMENT FOR TOTAL SAMPLE

Multiple Correlation Coefficients

r	r^2
.33	.11

	Beta Weights	Std. Errors of Betas	F of Betas	Significance
Infant Mood	.19	.09	4.82	.03
Father Mood	-.12	.08	2.12	.15
Mother Mood	.22	.09	6.49	.01

Significant Pearson Correlation Coefficients

	r	
Infant Mood	.22	$p < .05$
Mother Mood	.25	$p < .02$

APPENDIX O

STEPS IN THE TRANSFORMATION OF COEFFICIENT ALPHA DATA

To establish statistical rules from which to transform the alpha coefficient values, all possible alpha values were computed. They are listed below.

For Mother, Father, and Infant	For Dyads
1.00	1.00
.86	.67
.38	-2.00
.00	- ∝ (there was a division by zero here)
-3.00	
- ∝ (there was a division by zero here)	

So as to preserve the increments in the potential alpha scores, while not having scores that would distort the overall direction of the results the negative values were transformed. As extreme negative value (∝ listed above) was set to -1.00; and values of -3.00 and -2.00 were set to -.50. Thus the increments of variability were preserved, and the range of possible scores was balanced from +1.00 to -1.00.

APPENDIX P

MULTIPLE REGRESSION EQUATION AND SIGNIFICANT PEARSON CORRELATIONS FOR PREDICTING ADJUSTMENT FROM HOMOGENEITY OF FAMILY TEMPERAMENT FOR TOTAL SAMPLE

Multiple Correlation Coefficients

	r	r^2
	.20	.04

	Beta Weights	Std. Errors of Betas	F of Betas	Significance Level
Mother-Infant	-.20	.09	5.20	.02

Significant Pearson Correlation Coefficients

	r	
Mother-Infant	.20	$p < .05$