

THE RELATIONSHIP OF PARENTAL CHARACTERISTICS
AND INFANT AND TODDLER EXPLORATORY
PLAY BEHAVIORS

By

TAMERA SULLIVAN
Bachelor of Science in Education
University of Oklahoma
Norman, Oklahoma
1986

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 1989

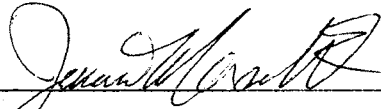
THESIS
1989
S952r
cap. 2

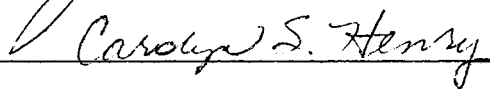
THE RELATIONSHIP OF PARENTAL CHARACTERISTICS
AND INFANT AND TODDLER EXPLORATORY
PLAY BEHAVIORS

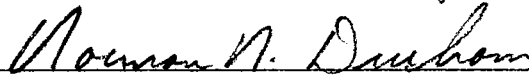
Thesis Approved:



Thesis Adviser







Dean of the Graduate College

ACKNOWLEDGEMENTS

Thanks go to all the children and parents who participated in this study. Without their involvement this study would not have been possible.

My committee is to be applauded for their help and patience throughout this study and my entire graduate program. Dr. Carolyn Henry provided unique insights and suggestions for this study, without which this work would not be half as exciting. Dr. James Moran, whose role has been one of chair, co-chair and committee member at various points in time, offered crucial stylistic and methodological suggestions. His cognitive expertise was actually the least of his contributions. Special thanks go to Dr. Donna Couchenour for the generous contributions of her data, her knowledge of the play literature, and an inordinate amount of time spent in assistance with all aspects of this study. Her emotional support actually comes second to the other ways in which she assisted in the production of this project.

Pam Ramming and Heidi Welch provided assistance in coding the data at breakneck speed, and their efforts are deeply appreciated. Thanks are extended to Sarah Putnam, who provided assistance in the organization of a

voluminous amount of descriptive data. Anne, Paige and Heidi deserve special thanks for helping to make this study not only bearable, but lots of fun.

My entire family has been a tremendous source of support throughout my graduate program. Special thanks go to my sister Sherry, who believed in me from the beginning and encouraged my efforts during some very trying moments. Eric also deserves an extra big thank you for providing the impetus which guided me to this endeavor of the study of children.

Finally, I wish to thank my husband, Mark Rubenstein. His mastery of a new word processing program in the middle of my project is commendable. His editorial abilities have been superb. His patience throughout this project has been unbelievable. His love and support have not only made this study possible; they provided the motivation which I sorely lacked and have ultimately led to the completion of my goal.

TABLE OF CONTENTS

	Page
ABSTRACT	1
INTRODUCTION.	2
METHOD	6
Subjects	6
Instruments	6
Exploratory Play Behavior Observations	6
Demographic Questionnaire	7
FACES III	7
Adult Adjective Checklist	8
Scoring Procedure	8
RESULTS	9
DISCUSSION	12
REFERENCES	19
TABLES	
Frequencies	24
Correlations	25
APPENDIXES	26
APPENDIX A: LITERATURE REVIEW	27
APPENDIX B: EXPLORATORY PLAY BEHAVIOR OBSERVATION SHEET	48
APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE	51
APPENDIX D: FACES III INSTRUMENT	53
APPENDIX E: ADULT ADJECTIVE CHECKLIST	55
APPENDIX F: RAW DATA	57

APPENDIX G: CORRELATIONS	60
APPENDIX H: T-TESTS	67

ABSTRACT

The exploratory play behaviors of sixteen preschool children were recorded over the course of eight months. Total exploratory play behavior scores were correlated with a measure of parental values, a family adaptability and cohesion questionnaire and a family demographic questionnaire. Significant relationships were found between total exploratory play behaviors exhibited by the children and family cohesion. Paternal values and total exploratory play behaviors were also significantly correlated. Additionally, maternal age and children's total exploratory play behavior scores were related.

The Relationship Between Parental Characteristics and Infant and Toddler Exploratory Play Behaviors

Empirical evidence exists that play is a multi-faceted activity in which young children participate. Play serves several important functions during early childhood, ranging from familiarity with objects and their uses (Rogers & Sawyers, 1988) to promoting cognitive competency (Sutton-Smith, 1967). Documentation also exists that play is a successful socialization tool (Garvey, 1977). Moreover, the effects of the family system in regards to specific children's behaviors is also a prevalent theme in current child development research (Minuchin, 1985).

A number of theoretical approaches have been used to explain exploratory play behaviors in young children. One of the major theorists who has influenced the direction of research on play is Berlyne (1960), whose theory of play is derived from earlier drive theorists, e.g. Mead, Butler and Hull. According to Berlyne, the organism seeks to maintain an optimal level of arousal. The organism is constantly adjusting its arousal level by controlling the amount of stimulation that it receives. Thus, according to drive theory, exploratory behavior is the mechanism by which the amount of stimulation is regulated.

Hutt (1971) has conducted research which strengthens Berlyne's notions of exploration controlling stimulation.

Hutt (1970) was also responsible for incorporating the idea of novelty into exploration and play. Other theorists, such as Nunnally and Lemond (1973) expanded upon this idea and devised a temporal scheme of exploratory behavior. Piaget (1962) is another noted theorist upon whose conceptions of exploration and play have been expounded. The Piagetian play stage which is the most similar to the concept of exploratory play is that of practice play. This type of play dominates the sensorimotor period, birth to two years. Practice play involves determining the properties of the object. Several authors have chosen to use Piaget's concept of practice play in studying play behaviors of preschool children (Rogers & Sawyers, 1988, Fenson, Kagan, Kearsley & Zelazo, 1976).

Caruso (1989) highlights the growing concern among both theorists and practitioners of the interdependence of attachment and exploration when studying young children. This approach is based on the viewpoint of Ainsworth (1964, 1969, 1982). Both Caruso and Ainsworth believe that attachment is related to separation anxiety and exploration of the environment (Ainsworth, 1969, 1974). Evidence exists that infants often move away from their mothers during exploration (Ainsworth, 1969; Anderson, 1972; Rheingold & Eckerman, 1973). The concept of the interrelatedness of attachment and exploration has

been examined longitudinally. Quality of attachment has been found to play an important role in later exploratory behaviors (Main, 1973; Main & Louderville, 1977; Matas, 1977) More recently, Pastor (1981) found that securely attached toddlers were both more sociable and demonstrated more positive affect than insecurely attached agemates.

If, in fact, there is an interdependency between attachment and exploration, examining qualities of family systems that help promote attachment is worthy of consideration. Minuchin (1985) proposes that the study of children can no longer be conducted in isolation. Not only do family systems variables need to be considered, parent-child influences can no longer be studied as a dyadic relationship. She states "...researchers created the single-parent family long before it was a characteristic of American society." (p. 296). Therefore, looking at family interaction as primarily mother-child interaction is obsolete.

Documentation exists that there is a contingency between maternal personality characteristics and their children's subsequent behavior (Crandall, 1973, Tower, 1980, Couchenour, 1983). For example, Clarke-Stewart found that there was a relationship between maternal sensitivity to the child's needs and verbal ability.

In addition to the findings that maternal personality effects a child's behavior, literature supports the notion

that the family may be an important correlate of childrens' behavior (Garbarino, Sebes & Schellenbach, 1984, Watson & Protinsky, 1988). Garbarino et al.(1984) found that adolescents in families identified as being chaotic or enmeshed by Olson's (1980) Circumplex Model had parents who were less supportive and more punishing. Watson & Protinsky (1988) found a direct relationship between family levels of cohesion and adaptability and subsequent adolescent identity development.

Family systems theory stems from the broader concept of systems theory, which has as a major premise that any subset of a system is affected by the entire system. Systems theory argues that one part of a system cannot be effectively examined independently. This concept has been incorporated by family systems theorists who have devised a measure which provides information on the family's levels of adaptability and cohesion (Olson, Russell & Sprenkle, 1979). Thus, looking at both family and individual variables when examining children's exploratory play behaviors provides a more wholistic picture of the children's observed behavior.

Specific hypotheses for this study are: that relationships will be found between (1) family adaptability and cohesion, parental values, and parental demographics and children's exploratory play behaviors; (2) parental values will be related to children's

exploratory play behaviors; and (3) parental demographics and children's exploratory play behaviors.

Method

Subjects

The sample consisted of 24 children (13 boys and 11 girls) ranging in age from 12 to 33 months. The subjects were enrolled in either a morning or afternoon five half-day per week program at a university laboratory school.

Sixteen of the 24 parents completed the Family Adaptability and Cohesion Evaluation Scales (FACES III), the Adult Adjective Checklist and The Parental Demographic Questionnaire. Analyses utilizing these instruments and the longitudinal observations of children's exploratory play behavior are based on 16 subjects.

Instruments

Exploratory Play Behavior Observations. The observational data of this study were originally collected for the purpose of a larger ongoing research project. A time sampling method was used to collect narrative descriptions of each child's exploratory play behavior. Each child was observed for an interval of five minutes (a total of sixty minutes) during six two week periods in a University laboratory program. Five minute observations (twelve for each subject) were then divided into six two week periods (with a total number of 60 minutes of observation) and coded for the occurrence of four

exploratory play behaviors: locomotion, manipulation, vocalization and visual exploration. Locomotion is defined as the movement of the child from one space to another and other types of body movement, e.g. shaking their head when interacting with an object or person. Manipulation constitutes the child manually exploring an object. Vocalization is defined as talking or babbling. Visual exploration is noted when the child looks at an object or person. The category of other was also included in coding; this category was used for any behaviors that occurred which did not fit into any of the four exploratory play categories. A copy of the observation sheet for recording exploratory play behaviors is contained in Appendix B.

Demographic Questionnaire. Parents were requested to fill out a questionnaire designed to gain the following information: age of parents, educational level of parents, occupation, primary language spoken in the home and marital status. A copy of the questionnaire is contained in Appendix C.

FACES III. At the beginning of the year, parents of children attending this University laboratory school are asked to complete a variety of questionnaires which are incorporated into the existing lab school data base. The FACES III questionnaire was included in the parents'

packet of information. These packets were sent home by the child's teacher and returned at a later date.

The Family Adaptability and Cohesion Evaluation Scale III (Olson, Russell & Sprenkle, 1979) is a twenty-item scale designed to empirically measure family adaptability and cohesion. The scale consists of twenty statements which are ranked by the subject on a five point Likert-type scale. This ranking, from 1 (almost never) to 5 (almost always), denotes the subjects' perceived idea of the way in which family situations are handled. The adaptability and cohesion scores yielded a total of fifty possible points each. The scores were based on the number of items answered by the family. If a family elected not to answer a question, their scores were derived from the questions they chose to answer. Even numbered items are measures of adaptability; odd numbered items indicate the cohesion score. Norms have been developed which rank the family on adaptability and cohesion by one of three categories: Balanced, Mid-range or Extreme. A copy of the FACES III instrument is contained in Appendix D.

Adult Adjective Checklist. The Adult Adjective Checklist was developed by Tower (1980). The purpose of the instrument is to provide a parental self-report measure of values. Given a list of 27 adjectives, parents are instructed to check the ten adjectives that are most descriptive of themselves. From the ten chosen,

subjects are asked to circle the five that most accurately describe themselves.

Scoring yields one point for each checked adjective and two points for each circled adjective. The total score for each subject is 15. The points can be distributed in any way from 0-15 for each of the parental values. The score reflects the "relative priority" assigned to that part of the parent's life: responsibility, resourcefulness, and relationships to others.

Scoring Procedure. Two students, naive to the purpose of the study, were asked to assist in scoring the observational data. One graduate student and one senior level undergraduate were given detailed descriptions and definitions of each exploratory play category. Each scorer was given a copy of a set of data to score for the purpose of establishing reliability. The independently scored data sets were compared; the percentage of agreement was 75%. Scorers were then given further instruction and data were scored simultaneously to clarify the operational definitions of each of the four categories of exploratory play behavior. The students again scored the same data separately; percentage of agreement was 90%.

Results

Exploratory Play Behavior. One of the primary purposes of this study was to gain information about the nature and amount of observed exploratory play behaviors of one- and two-year-old children in a group setting: Table 1 contains descriptive data about the exploratory play behaviors of the sixteen subjects in this part of the study.

--

Insert Table 1 about here

--

Results of t-tests to compare means of exploratory play behaviors demonstrates that in the preschool setting, vocal exploration occurred with significantly lower frequency than the other categories of exploratory play behavior. Comparisons of total vocal exploration with total manipulation yielded a t of 8.311 ($p < .001$), with total locomotion, $t = 5.908$ ($p < .001$), and with total visual, $t = 6.831$ ($p < .001$).

Family Adaptability and Cohesion III. Pearson product-moment correlations were conducted to examine relationships among all categories of exploratory play behavior and family adaptability and cohesion as measured by FACES. Significant relationships were found between family cohesion and total manipulation scores ($r = .55$,

$p < .05$) and cohesion and total exploratory play behavior ($r = .53$, $p < .05$). Correlations between other exploratory play behaviors and family variables were not significant.

--

Insert Table 2 about here

--

Adult Adjective Checklist. Correlations among exploratory play variables and the Adult Adjective Checklist variables (Responsibility, Resourcefulness & Relationship to Others) revealed the following significant relationships: fathers who scored highest on the Relationship to Others value had children who were observed to engage in a greater frequency of manipulation, $r = .59$ ($p < .05$) and a lower frequency of visual exploration, $r = -.49$ ($p < .05$). No significant relationships were found between maternal values and children's observed exploratory play behavior.

Demographics. Correlational analyses were conducted to examine relationships of parental age, employment, and levels of education with children's exploratory play behaviors. Maternal age was negatively correlated with total exploratory play behaviors, $r = -.51$ ($p < .05$). Paternal age was positively correlated with the child's observed vocal exploration, $r = .54$ ($p < .05$). Additionally,

paternal employment was significantly negatively correlated with the child's observed visual exploratory play behavior, $r = -.58$ ($p < .05$).

Discussion

The types of children's exploratory play witnessed during the observations were quite diverse. Henderson (1984) defines the categories of exploratory play behaviors in terms of interaction with objects. The observational data demonstrated that not only do children participate in exploration of objects; they also explore their own physical capabilities. For instance, a child may have engaged in four locomotion exploratory behaviors during a fifteen second interval. One of these locomotions was a means-end movement designed to move the child toward a novel object. The other movements, walking, running, and hopping to the table, demonstrated the child's interest in different ways to achieve this end. Piaget (1962) discussed the occurrence of play for pleasure; this seems to apply to object play as well as exploratory behaviors involving the child's own body.

Not only were the types of play behaviors witnessed varied, frequencies were different as well. Total number of manipulations exhibited over the twelve observations ranged from 145 to 238. Number of locomotion behaviors were between 132 and 268. Visual exploration totals for

each subject ranged from 141 to 249. The widest frequency range of behaviors was in the vocalization category totals ranging from 13 to 156.

The nature of play during the sensorimotor stage is practice play (Piaget, 1962). Practice play is not extinguished as children move to the pre-operational stage and symbolic play. Even adults continue to practice new skills (Rogers & Sawyers, 1988). If play is examined from this perspective, the logic of the distribution of total exploratory behaviors is evident. Visual, manipulative and locomotion behaviors would be more likely to occur during the sensorimotor period. Verbalizations, which occur with greater frequency at the onset of the symbolic play period, would be less likely to occur in the context of exploratory play during the sensorimotor period. This accounts for the large discrepancy between frequency of vocalizations and the other exploratory play behaviors in this particular study.

The finding of a relationship between family cohesion and total amount of exploratory play behavior is not surprising to these authors. Duvall (1985) documents that families in Stage II of the family life cycle demonstrate a higher mean level of cohesion because of the nature of the interaction between parents and children. Vega, Patterson, Sallis, Nader, Atkins, & Abramson (1986) also note that cohesion is highest in the early stages of the

family life cycle. Parents are more directive; decision making is often unilateral because of the age of the children.

Olsen (1985) lists norms for families in Stage 1 (families without children) and Stages 4 and 5 (adolescent launching stages) separate from norms for families in the other stages. This seems to be a problem in light of the fact that families with preschool children are a unique population; Based on Duvall's findings, the level of family involvement in decision making is low during this stage of the life cycle. Parents are the primary decision makers.

A concern encountered with the FACES III instrument in this study was the nature of some of the questions. Specifically, questions #2 (In solving problems, the children's suggestions are followed) and #4 (Children have a say in their discipline) were of particular concern because of the family structure of our population as discussed above. Both of these questions were part of the adaptability score. Four of the sixteen parents did not answer these questions. Olson (1985) acknowledges the FACES III instrument is biased toward families of adolescents. It might be useful, then, to consider modification of this instrument when using it with families of preschool children or to consider modifying the norms for Stage II families. However, the limitations

of the instrument do not diminish the need to examine family characteristics when studying childrens' exploratory play behaviors.

Clearly, one of the most important aspects of the link between exploratory play behaviors and family cohesion level is that an empirical relationship has been found. Evidence now exists that there is a connection between exploration and aspects of the family system, at least for the subjects in this study.

Another plausible explanation for the relationship between cohesion and total amount of exploratory play rests in the concept of attachment and its relation to exploration as outlined by Caruso (1989). Caruso (1989) concludes that attachment and exploration function as one interdependent behavioral system. The findings of Ainsworth and Bell (1974) support this conclusion: these authors reported relationships between the quality of attachment and the level and quality of exploratory behavior and play. More recently, Thompson and Lamb (1983) discovered a relationship between attachment to fathers at 12 1/2 and 18 1/2 months and the child's sociability level. Ross, Goldman & Hay (1979) have demonstrated a link between exploration behavior and children's sociability level. These two studies provide indirect evidence that attachment to family and exploratory play behavior are related.

The significant correlations between exploratory play behaviors and paternal values were of interest, especially since the state of the science of research on fathers and children is infantile at best and a clear explanation cannot be presented. We do know, however, that the research on the effects of paternal participation yield some interesting findings. This study demonstrates the need to further examine relationships among paternal values and their effects on children's behavior.

Currently, reports of the amount of time fathers spend on child care are consistently around two hours per week (Robinson, 1977; Walker & Woods, 1976, Pleck & Rustad, 1980). However, fathers spend a significantly larger amount of time playing with their children than they do in caregiving tasks (Lamb, 1976, Russell, 1982). If fathers' present involvement with their children is mostly within the realm of play, it makes sense that fathers behaviors would have an effect on children's play behaviors.

Very few empirical studies exist which report an increased amount of father participation with children, especially in U.S. families (Lamb & Sagi, 1983). Cross-culturally, however, families with a significant amount of father involvement have been documented (Lamb, Frodi, Hwang, Frodi & Steinberg, 1982, Harper, 1980, Sagi, 1982).

Of the studies which report a significant amount of father involvement, fathers report an enhanced sensitivity to their children (Sagi, 1982), as well as a closer emotional relationship with the children (Lamb et al, 1982, Harper, 1980).

The fact exists that the families in this study are of a very small number (n=16), and are a relatively homogeneous sample. These are characteristics often found when subjects are recruited through a university laboratory school. Even with the homogeneous nature of the sample, relationships were discovered between children's exploratory play behaviors and parental demographic characteristics. Younger mothers had children who engaged in significantly more total exploratory play behaviors. Older fathers had children with higher vocal exploratory behavior scores.

This study has several limitations. The sample size is small (n=16). The population is homogeneous, typical of a population of a University laboratory preschool setting. However, exciting frontiers have been approached with this study. The addition of data on exploratory play behaviors with infants and toddlers is noteworthy. Clearly, further studies must be conducted to examine exploratory play in group settings with infants and toddlers. Also, descriptive data about exploratory play is virtually non-existent. Additional descriptive studies need to be

conducted in this area of children's play. Further descriptive research could be utilized in the creation of a more precise measure of exploratory play behaviors.

Other novel aspects of the current study are the inclusion of father values and family characteristics when examining children's exploratory play. Significant relationships were found between paternal characteristics and their children's naturalistic exploratory play behaviors. Correlations between family cohesion and amount of exploratory play behavior were demonstrated. These findings strongly suggest the need for inclusion of paternal and family characteristics in exploratory play studies.

Exploratory play research with infants and toddlers is at an embryonic stage. Further studies which incorporate several components of individual and family characteristics are crucial to the development of scientific knowledge about exploratory play behaviors of young children in group settings.

References

- Ainsworth, M.D. (1964). Patterns of attachment behavior shown by the infant in interaction with his mother. Merrill-Palmer Quarterly, 10, 51-58.
- Ainsworth, M.D. (1969). Object relations, dependency, and attachment: a theoretical review of the infant-mother relationship. Child Development, 40, 969-1025.
- Ainsworth, M.D. (1974). Infant-mother attachment and social development: socialization as a product of reciprocal responsiveness to signals. In M. Richards (Ed.), Socialization of the child into the social world. Cambridge: University Press.
- Ainsworth, M.D. (1982). Attachment: retrospect and prospect. In C.M. Parkes and J. Stevenson-Hinde (Eds.), The place of attachment in human behavior. NY: Basic.
- Ainsworth, M.D. & Bell, S. (1974). Mother-infant interaction and the development of competence. In J. Bruner (Ed.), The growth of competence. NY: Academic.
- Anderson, J. (1972). Attachment behavior out of doors. In N. Blurton-Jones (Ed.), Ethological studies of child behavior. Cambridge: Cambridge University Press.
- Berlyne, D.E. (1960). Conflict, arousal and curiosity. NY: McGraw-Hill.
- Bradley, R.H. (1986). Play materials and intellectual development. In Gottfried, A.W. & Brown, C.C. (Ed) Play Interactions. Lexington, Mass.: Lexington Books.

- Brody, S. & Axelrad, S. (1978). Mothers, fathers & children.
New York: International Universities Press.
- Caruso, D.A. (1989). Attachment and exploration in infancy:
research and applied issues. Early Childhood Research
Quarterly, 4, 117-132.
- Couchenour, D.L. (1983). The influence of mothers'
cognitive orientation on preschool children's play,
curiosity and creativity. Unpublished doctoral
dissertation, The Ohio State University, Columbus.
- Crandall, V.J. (1973). Differences in parental antecedents
of internal-external control in children and in young
adulthood. Paper presented at the meeting of the
American Psychological Association, Montreal.
- Duvall, E.M. & Miller, B.C. (1985). Marriage and family
development (6th edition). NY: Harper & Row.
- Fenson, L., Kagan, J., Kearsley, R., & Zelazo, P. (1976).
The developmental progression of manipulative play in
the first two years. Child Development, 8, 185-222.
- Garbarino, J., Sebes, J., & Schellenbach, C. (1984).
Families at risk for destructive parent-child relations
in adolescence. Child Development, 55, 174-183.
- Garvey, C. (1977). Play. Cambridge, Mass: Harvard Univer-
sity Press.
- Henderson, B.B. (1984). The social context of exploratory
play. In Yawkey, T.D. & Pellegrini, A.D. (Eds.) Child's
play: Developmental and applied. Hillsdale, N.J.:
Erlbaum.

- Holman, T.B., & Burr, W.R. (1980). Beyond the beyond: the growth of family theories in the 1970's. Journal of Marriage and the Family, 42, 729-741.
- Hutt, C. (1971). Exploration and play in children. In R.E. Herron & B. Sutton-Smith (Eds.), Child's play. NY: Wiley, 231-251.
- Hutt, C. (1976). Developmental processes in early childhood. London: Routledge.
- Kagan, J. (1982). Psychological research on the human infant: an evaluative summary. NY: W.T. Grant Foundation.
- Kagan, J., Kearsley, R., & Zelazo, R. (1978). Infancy: Its place in human development. Cambridge, MA: Harvard University Press.
- Lamb, M.E. (1981). Fathers and child development: an integrative overview. In M.E. Lamb (Ed.), The role of the father in child development. NY: Wiley.
- Main, M. (1973). Play, exploration, and competence as related to child-adult attachment. Unpublished doctoral dissertation, Johns Hopkins University.
- Matas, L. (1977). Mother-infant attachment: implications for understanding the two-year-old. Unpublished doctoral dissertation, University of Minnesota.
- Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. Child Development, 56, 289-302.

- Nunnally, J.C. & Lemond, L.C. (1973). Exploratory behavior & human development. In H. Reese (Ed.), Advances in child development and behavior, volume 8. NY: Academic.
- Olson, D.H., (1985). Family Adaptability and Cohesion Evaluation Scales III.
- Olson, D.H., Russell, C.S., & Sprenkle, D.H. (1979). Circumplex model of marital and family systems II: Empirical studies and clinical intervention. In J. Vincent (Ed.), Advances in family intervention, assessment and theory. Greenwich, CT:
- Pastor, D.L. (1981). The quality of mother-infant attachment & its relation to toddlers' initial sociability with peers. Developmental Psychology, 17, 326-335.
- Piaget, J. (1962). Play, dreams and imitation in childhood. NY: Norton.
- Pleck, J.H. & Staines, G.L. (1985). Work schedules & family life in 2-earner couples. Journal of Family Issues, 6, 61-82.
- Rheingold, H.L. & Eckerman, C.O. (1973). Fear of the stranger: a critical examination. Advances in Child Development and Behavior, 8, 185-222.
- Robinson, J.P. (1977). How americans use time: a social-psychological analysis. NY: Praeger.
- Rogers, C. & Sawyers, J. (1988). Play in the lives of children. Washington, D.C.: NAEYC

- Ross, H.S., Goldman, B.D., & Hay, D.F. (1979). Features and functions of infant games. In B. Sutton-Smith (Ed.), Play & learning. NY: Gardner.
- Rubin, K.H., Fein, G.G., & Vandenberg, B. (1983). Play. In E.M. Hetherington (Ed.), P.H. Mussen (Series Ed.), Handbook of child psychology: Vol. 4. New York: Wiley.
- Russell, L. (1982). Shared caregiving families: an Australian study. In M.E. Lamb (Ed.), Nontraditional families: parenting and child development. Hillsdale, N.J.: Erlbaum.
- Sutton-Smith, B. (1967). The role of play in cognitive development. Young Children, 22, 361-370.
- Thompson, R.A., & Lamb, M.E. (1983). Security of attachment & stranger sociability in infancy. Developmental Psychology, 19, 194-191.
- Tower, R.B. (1980). The influence of parents' values on preschool children's behavior. Unpublished doctoral dissertation, Yale University.
- Watson, M.F. & Protinsky, H.O. (1988). Black adolescent identity development: effects of perceived family structure. Family Relations, 37, 288-292.

TABLE 1
FREQUENCIES OF EXPLORATORY PLAY BEHAVIOR

Behavior	Range	Mean	S.D.
Vocalizations	13-156	90.69	44.01
Manipulations	145-238	180.25	25.10
Locomotion	132-268	192.88	41.00
Visual	141-249	192.06	27.93
Total Exploration	566-779	668.13	64.52

TABLE 2
PEARSON PRODUCT MOMENT CORRELATIONS FOR OBSERVED
EXPLORATORY PLAY BEHAVIORS
AND FAMILY VARIABLES

Behavior	Cohesion	Adaptability
Vocalizations	.16	.09
Manipulations	.55*	-.14
Locomotion	.08	-.15
Visual	.22	-.08
Total Exploration	.53*	-.28

* $p \leq .05$

APPENDIXES

APPENDIX A
LITERATURE REVIEW

LITERATURE REVIEW

Empirical evidence exists that play is a multi-faceted activity in which young children participate. Play serves several important functions during early childhood, ranging from familiarity with objects and their uses (Rogers & Sawyers, 1988) to promoting cognitive competency (Sutton-Smith, 1967). Documentation also exists that play is a successful socialization tool (Garvey, 1977).

The interest in play as a method of studying behavior has increased dramatically over the last few decades (Fein, 1981). The theoretical direction has not been a linear one; in fact, as with most theoretical conceptions, directions have been non-linear in nature. As several authors have noted, one of the problems of the study of play stems from the fuzziness of the concept and the lack of an exact behavioral definition (Rubin, Fein & Vandenberg, 1983, McCune-Nicholich & Fenson, 1984, Sutton-Smith, 1983). An additional frustration for those who choose to study play in the first 2-3 years of life is the lack of a plausible distinction between exploration and play.

The issue of the dichotomy (or lack of) between exploration and play existed as early as the seventies. Reilly (1974), experiencing the frustration of a lack of any logical or conceptually sound description of the difference, attempted to address the issue of the diversity in the terms

'exploration' and 'play'. Her primitive description of the difference between these terms is one that is much more understandable than any subsequent attempt by other authors to make this delineation. Her hypothesis is that exploration, which occurs during the first two years of life, is used for functional pleasure. She states that although the rudimentary aspects of play exist during this developmental phase, exploration is of primary importance because of the coexisting processes of cognitive, social and emotional development. Thus, exploration is used to enhance all aspects of development during the first two years. Reilly (1974) also discusses the relationship between initial exploratory behavior and later rule learning. "...in the pure pleasure of doing something for its own sake, exploratory behavior teases and tests reality as the imagination searches for rules. Conditions which permit activities to be done for themselves generate in the player a feeling of hope and trust. When the environment is not safe, and therefore cannot be trusted, rule learning cannot emerge." (p. 146). Reilly (1974) has obviously based her theoretical construction of exploration and/or play on specific philosophical stances; the activity for pure pleasure ideas coming from a Piagetian perspective, and the trust issue a direct extension of Erikson's initial stage of development. One of the most positive aspects of Reilly's (1974) delineation of the issues is that it is obviously theoretically based, whereas others who have attempted to

come up with a feasible definition of exploration, play, and the differences between the two have not been successful.

Several authors have attempted to separate and define both exploration and play behaviors in young children. Exploration and play are so closely linked that researchers are far from unanimous in agreeing about the distinction between the two. Currently, the most feasible definition of the distinction between these topics comes from Rogers & Sawyers (1988). They hypothesize that exploration answers the question 'What can the object do?', whereas play involves the discovery of what the individual can do with the object. These authors also note that exploration and play are not limited to interactions with objects; discovering symbols and rules also make use of exploration and play behaviors.

Berlyne (1960), is one of the major theorists who has influenced the direction of research on play. His theory of play is derived from earlier drive theorists, including Mead, Butler and Hull. Aspects of behaviorism have also been encompassed in Berlyne's work. According to Berlyne, the central nervous system of an organism seeks to maintain an optimal level of arousal. If arousal is heightened to an other than optimal level, the organism 'shuts down', i.e. reduces the amount of stimulation. Similarly, when stimulation falls below the optimal level, the organism seeks stimulating activity.

Both extremes of arousal are discussed in terms of the exploratory behaviors that the organism uses to increase or decrease stimulation. Berlyne uses the term 'specific exploration' for the arousal reduction behaviors. These exploratory behaviors help the individual focus on the specific features of the environment that are the source of arousal. The organism attends to a specific stimulus and shuts out other distracting stimuli. Conversely, diverse exploration increases arousal by producing stimulation.

Berlyne views exploration as a method of achieving balance. According to Berlyne and other drive theorists, the organism has the ability to stabilize the level of arousal through exploration. Thus, behavior is motivated by aversive states that need to be alleviated.

Another noted play theorist of this century, Piaget, has a somewhat different interpretation of exploratory play behaviors. According to Piaget, play represents an imbalanced state where assimilation dominates accommodation (Piaget, 1962). The evolution of play behaviors parallel his stages of cognitive development. However, he does not see his structural stages impending the development of play; he even goes so far as to state "...all the behaviors we studied in relation to intelligence are susceptible of becoming play as soon as they are repeated for mere assimilation, i.e., purely for functional pleasure" (p.89). Thus, Piaget sees the merit of play being an act of pleasure

in and of itself, which is not directly related to the child's cognitive development.

The Piagetian play stage which is the most similar to the concept of exploratory play is that of practice play. This type of play dominates the sensorimotor period, birth to two years. Piaget (1962) describes practice play as play that is not imitative (or symbolic) of real life activities. Whereas in symbolic play, a child may be involved in imaginary cooking, practice play would be reflected through the discovery of the attributes of the object, such as looking at the object, kicking or throwing the object, or shaking an object. Once again, exploratory, 'practice', play involves determining the properties of the object. According to Piaget,(1962), the pleasure of practice play comes from the child's sense of control over self and environment.

Although using Piaget's definition of practice play is useful in observing the development of play behaviors, Rogers and Sawyers (1988) point out another view of this type of play. Practice play behaviors do not disappear after the individual has proceeded from the sensorimotor stage. These practice or exploratory behaviors continue into adult life. Rogers and Sawyers also conclude that a variety of play behaviors occur simultaneously. Therefore, it would seem logical that exploration cannot be confined to Piaget's first developmental stage. Developmentalists such as Wohlwill (1984) state that any type of behavior cannot

exist in a vacuum. It is useful to look at the whole picture instead of one variable.

Hutt (1976) has conducted research which strengthens Berlyne's notions of specific and diverse exploration. Her investigations used the idea of novelty as producing exploratory behavior. Exploration occurred simultaneously upon discovery of an unfamiliar object. With subsequent experimental trials, children's behavior changed when the object was no longer unfamiliar; increased use of the object significantly reduced the time in which the subjects attended to the previously novel object. Other investigators have also found a decrease in time spent exploring the object's properties when the object became familiar (Belsky & Most, 1981).

In a later work by Hutt, (1981) she addresses the issue of the difficulty in separating exploration and play in children under two years of age. So much of their activity encompassed both exploration and play that it led her to the conclusion that the delineation was not only ludicrous for children under two years of age, it was impossible to distinguish. Her conclusion was that the properties of exploration and play were so symbiotic during the first two years of life that it did not make sense to look at either category individually. Therefore, Reilly (1974,) concluded that children in the sensorimotor stage of development lacked the capacity to experience exploration and play as separate entities. She did not view the empirical question

as an indicator of children's functioning in regard to play; she simply stated that separation of the entities of exploration and play were not appropriate given the lack of empirical evidence which had thus far been reported.

Rubin (1978) addressed some inherent problems in the novelty studies: Does an experimental setting itself cause the child to explore an object as if it were novel, or is the object actually novel? He also questions novelty in terms of developmental progressions: an object which was introduced to the child at an earlier stage and then reintroduced at a later time would be novel again because of the child's abilities to interact differently with the object. Rubin (1978) questions the previous belief that only novel objects produce exploration.

Wohlwill (1984) has pointed out that although convincing arguments have been presented which separate exploration from play, the 'leap' from one to another cannot be explained by looking only at the concepts of exploration and play. He surmises that some of the inherent problems of making this a direct relationship and the subsequent lack of ability to find a suitable theoretical construct exist because play does not necessarily follow exploration. He hypothesizes an intermediate step between the two constructs. Wohlwill (1984) hypothesizes that this may be the reason for the lack of a plausible theoretical model for exploration and play behaviors. Wohlwill argues that as long

as a segment of the sequence is unidentified, we will be unable to separate the two categories.

Other play researchers such as Henderson (1984) question the need for the division of exploration and play. His argument is that since both exploration and play are occurring simultaneously, it is impossible to examine a sequence of behaviors and label them either exploration or play. Henderson implies that structuralists need those clear-cut differences in behavior that can only be achieved by experimental conditions. Observational research cannot and does not have as a goal an exact sequence in which exploration turns into play. These researchers would be more open to the sequencing if a transitional step between exploration and play were discovered.

According to Henderson (1984), parents can influence the frequency, duration and quality of their child's exploratory behavior in many ways, both directly and indirectly. Belsky, Goode & Most (1981) found what they termed as a causal relationship between maternal stimulation and infant exploratory behavior. Ainsworth's (1969) attachment theory certainly demonstrates parental influences, such as style, have a direct effect on their infant's exploratory behavior in the Strange Situation setting.

The Relationship Between Parental Attitudes and Belief
Systems and Children' Behaviors

Studies of parent-child relationships have a long history among developmentalists. Evidence exists which supports the notion the influence of parental belief systems on several areas of children's functioning. For example, Brody and Axelrad (1978) found that both maternal and paternal attitudes towards family values had a direct effect on their children's behavior. Parents who valued physical contact had infants who were more likely to respond to touch as a soothing mechanism. Parents who rated their children's development and well-being as a primary value had children who interacted more with adults at school age. Parents who expressed satisfaction with their career choices indicated more positive feelings toward their children than parents who demonstrated dissatisfaction with their careers. These findings indicate that the parent-child relationship is affected by a gamut of parental attitudes and behaviors. Concurrently, the individual child's interaction with the world is also influenced by parental values.

Another interesting finding of Brody and Axelrad's (1978) longitudinal study was the dramatic consistency of parental values and behaviors over the first seven years of their child's life. This was the case for both primiparous and multiparous parents. Hence, the parental behaviors and beliefs identified at the outset of their project showed no significant changes in behavior across the first few years of the child's life. Their findings of continual synchrony of parental behavior during their child's early years has

also been reexamined by others (Yarrow, Rubenstein, Pedersen & Janowski, 1972; Farran & Haskins, 1980) who conclude that parental attitudes and beliefs are not static; parental development has an effect on the interaction of the dyad as does children's developmental changes. Belsky, Lerner & Spanier (1984) suggest that the interactive effects of parent and child are of great importance. According to these authors, isolating a parent or child and only looking at one side of the dyad's behavior cannot fully explain the reasons for the way in which parents and/or children react and interact. Thus, the direction of effect is not a one-way phenomenon. The entire parent-child system must be taken into account.

Ideally, according to Belsky et. al (1984), both parental and child belief, behavior and development must be taken into account. The problem with eliciting information from both sources can be that of communicative ability. In the study of communication between parent and child, it is difficult at best to be able to determine children's effects on parental behaviors when the children are infants and toddlers. Consequently, studies which examine infant/toddler beliefs and/or values and their effects on parents are virtually non-existent. It is virtually impossible for a preschool age child to verbally communicate these beliefs and values, if they exist at all. Logically, evidence of parental attitudes that influence children's behaviors are more likely to be empirically examined.

Belsky, Goode and Most (1980) provided strong evidence for a causal role for maternal stimulation in the development of exploration. These authors demonstrated that when an observer pointed out specific maternal behaviors which were conducive to the child's exploration behaviors, it brought about increased exploration behaviors with the mother's child. Control mothers who were given no feedback on their behavior toward facilitating exploration had children who did not show a significant increase in exploration. The mothers who were given reinforcement for appropriate encouragement of the children's exploratory behaviors had children whose explorations of the environment increased over time.

Henderson (1981) conducted a study which assessed the influence of parents on prolonging exploration in their children. Preschool and school-age children visited an interaction museum. For both age groups, children who were accompanied by their parents explored the touch and see museum for a longer duration than children who were accompanied by adults other than their parents.

Henderson (1981) states that this study highlights the potential role that parents have in influencing exploration. He also points out that the correlational nature of this study as well as others limits the interpretation of results. With both the Belsky et al(1984) and Henderson(1981) studies, the influence by mothers is direct

and immediately visible. There is evidence that other indirect aspects of parental behavior can also have a significant effect on behaviors of young children.

Tower (1980) examines parental influence in the form of values on preschool children's behavior. She determined that parental attitudes of resourcefulness, responsibility and relationship to others predict certain child behaviors. Specifically, parents' values predicted their daughter's behavior at home. Mothers' values were significant predictors of boys' behaviors at school.

The instrument Tower (1980) used to assess parental values was the Adult Adjective Checklist. In a study by Couchenour, (1983), the value of maternal resourcefulness had a significant positive influence on the child's total observed play. Mothers' responsibility scores accounted for the variance in two types of play: parallel functional play and solitary functional play.

As stated above, the child's attachment to parent has yielded some interesting findings. Most recently, Caruso (1989) has identified attachment, exploration and wariness as an interdependent system. He states ".....a more complete understanding of infant development may result when attachment, wariness, and exploration are conceptualized as related aspects of one system..." (pg 117).

Other empirical findings strengthen Caruso's (1989) ideas about the interdependency of these three variables. Lamb (1985) and Kagan (1982) have also addressed this issue

from a theoretical standpoint. Lamb (1981) has indicated that unless the entire family system is examined, the proper interpretation of results cannot be conducted. Kagan (1982) hypothesized that attachment quality, when combined with family and caregiving characteristics, explains many important aspects of development.

Most play interaction studies have attended to immediate effects of parental participation in infant play. This type of examination of experimentally based data is logical and reasonable. However, some studies have incorporated indirect parental characteristics into their examination of parental effects on children's play. The examination of parental characteristics that have an effect on children's play behaviors have been studied largely in the realm of social development and young children.

Voss & Keller (1983) have examined the effects of various behaviors related to social class on children's play behaviors. They indicate that the most commonly used variables to explain socioeconomic status are those of parental employment, level of income and level of education.

Bradley (1986) conducted observational study of children's play behaviors and their relevance to parental social class. This author found that children's interactive behaviors with toys were significantly correlated with parental SES. Children whose parents were in the upper socioeconomic class tended to have more frequent and diverse interactions with objects. Bradley (1986) concluded that

this difference in behavior was aided by the availability of materials; that is, upper SES children were given different and more diverse opportunities to interact with a number of objects than were their lower SES counterparts.

Family Systems Theory

Both developmental psychology and family studies have long regarded the family as a focus for understanding human behavior (Minuchin, 1985). As early as the seventies, researchers began to examine the individual family member within the entire family system (Hill, 1970). Although general systems theory has been employed by other disciplines in their research endeavors, comparatively, the use of this theory in understanding human behavior and development is relatively recent.

The basic tenets of systems theory are that within each system there are a variety of subsystems (Minuchin, 1974). The examination of individuals within these various subsystems allow for much diversity. For instance, one can examine the subsystem of the extended family in relation to the individual as well as the individual in the context of the immediate family who is cohabitating (Broderick & Smith, 1979).

Although the study of families from a systems perspective has a relatively short history, it is becoming an increasingly useful approach for examining family interaction (Holman & Baer, 1980, Thomas & Wilcox, 1987).

Based upon systems theory, Olsen, Russell & Sprenkle (1979) created the Circumplex Model of Family Systems to examine variations in types of family systems. The circumplex model provides a determination of each family's level of cohesion, adaptability and family communication. Cohesion is defined as the level of emotional bonding among family members. Adaptability indicates the level to which the family adapts to change, as well as the ability of a system to change its power structure. Communication is identified by the level to which these two areas are integrated into the family's approach to life.

The Circumplex Model determines which of four levels of cohesion in which the family participates, ranging from high to low cohesion. These four variables, disengaged, separated, connected and enmeshed are determinants of the level of family cohesion. Adaptability also is measured by four levels; these are rigid, structured, flexible and chaotic. The adaptability portion of FACES III measures the family's response to change.

Olson, Russell & Sprenkle (1979) have provided a relatively easy to administer measure of family adaptability and cohesion. Norms have been developed for families at different stages of the life cycle; parents across all stages of the life cycle, parents and adolescents in the adolescent launching stages, and young couples without children. These authors demonstrate the recognition that

that which is applicable for a young family with small children changes as the children move into adolescence.

This brief overview of systems theory demonstrates the applicability of family systems theory to bridge the gap between research on individuals and families, (Minuchin, 1985) and highlights several dimensions to consider when conducting research involving individuals within a family context. One hypothesis is the idea that evolution and change are inherent in family systems. Reorganization is an inevitable part of the family life cycle. Minuchin emphasizes that the critical point is that each member of the system participates in these reorganizations, whether or not they are directly related to that particular individual. The complexity of individual and family life cycles and their interactions are taken into account by systems theory in studying development.

Another issue that Minuchin (1985) points out is that much of parent-child interaction has been studied as a dyadic relationship. She states ".....researchers created the single-parent family long before it was a characteristic of American society." (p. 296). The strength of the circumplex model is that it addresses the interaction of the family system instead of relationships of one child and one parent.

References

- Ainsworth, M.D. (1969). Object relations, dependency, and attachment: a theoretical review of the infant-mother relationship. Child Development, 40, 969-1025.
- Belsky, J., Goode, M.K., & Most, R.K. (1980). Maternal stimulation and infant exploratory competence: Cross-sectional, correlational, and experimental analyses. Child Development, 51, 1163-1178.
- Belsky, J., Lerner, R.M., & Spanier, G.B. (1984). The child in the family. Reading, MA: Addison-Wesley.
- Belsky, J., & Most, R. (1981). Infant exploration & play: a window on cognitive development. In J. Belsky (Ed.), In the beginning. Columbia: NY, 109-120.
- Berlyne, D.E. (1960). Conflict, arousal and curiosity. NY: McGraw-Hill.
- Brody, S. & Axelrad, S. (1978). Mothers, fathers & children. New York: International Universities Press.
- Caruso, D.A. (1989). Attachment and exploration in infancy: research and applied issues. Early Childhood Research Quarterly, 4, 117-132.
- Couchenour, D.L. (1983). The influence of mothers' cognitive orientation on preschool children's play, curiosity and creativity. Unpublished doctoral dissertation, The Ohio State University, Columbus.
- Fein, G.G. (1981). Pretend play: An integrative review. Child Development, 52, 1095-1118.

- Fenson, L., Kagan, J., Kearsley, R., & Zelazo, P. (1976).
The developmental progression of manipulative play in
the first two years. Child Development, 8, 185-222.
- Garvey, C. (1977). Play. Cambridge, Mass: Harvard Univer-
sity Press.
- Henderson, B.B. (1981). Exploration by preschool children:
Peer interaction and individual differences. Merrill-
Palmer Quarterly, 1981, 27, 241-255.
- Henderson, B.B. (1984). The social context of exploratory
play. In Yawkey, T.D. & Pellegrini, A.D. (Eds.) Child's
play: Developmental and applied. Hillsdale, N.J.:
Erlbaum.
- Hill, R. (1970). Family development in three generations.
Cambridge, MA: Schenkman.
- Holman, T.B., & Burr, W.R. (1980). Beyond the beyond: the
growth of family theories in the 1970's. Journal of
Marriage and the Family, 42, 729-741.
- Hutt, C. (1976). Developmental processes in early childhood.
London: Routledge.
- Hutt, C. (1979). Exploration and play. In B. Sutton-Smith
(Ed.), Play and learning. New York: Gardner Press.
- Hutt, C. (1981). Toward a taxonomy and conceptual model of
play. In H.I. Day (Ed.), Advances in intrinsic
motivation and aesthetics. NY: Plenum.
- Kagan, J. (1982). Psychological research on the human
infant: an evaluative summary. NY: W.T. Grant
Foundation.

- Kagan, J., Kearsley, R., & Zelazo, R. (1978). Infancy: Its place in human development. Cambridge, MA: Harvard University Press.
- Lamb, M., Thompson, R., Gardner, W., & Charnov, E. (1985). Infant-mother attachment. Hillsdale, NJ: Erlbaum.
- McCune-Nicolich, L., & Fenson, L. (1984). Methodological issues in studying early pretend play. In Yawkey & Pellegrini (Eds.), Child's play: developmental & applied. Hillsdale, NJ: Erlbaum.
- Minuchin, S. (1974). Families & family therapy. Cambridge: Harvard University Press.
- Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. Child Development, 56, 289-302.
- Olson, D.H., Russell, C.S., & Sprenkle, D.H. (1979). Circumplex model of marital and family systems II: Empirical studies and clinical intervention. In J. Vincent (Ed.), Advances in family intervention, assessment and theory. Greenwich, CT:
- Piaget, J. (1962). Play, dreams and imitation in childhood. NY: Norton.
- Rogers, C. & Sawyers, J. (1988). Play in the lives of children. Washington, D.C.: NAEYC
- Rubin, K.H. (1978). Role-taking in childhood: some methodological considerations. Child Development, 49, 534-536.

- Rubin, K.H., Fein, G.G., & Vandenberg, B. (1983). Play. In E.M. Hetherington (Ed.), P.H. Mussen (Series Ed.), Handbook of child psychology: Vol. 4. New York: Wiley.
- Sutton-Smith, B., & Kelly-Byrne, D. (Eds.) 1983. The masks of play. West Point, N.Y.: Leisure Press.
- Sutton-Smith, B. (1967). The role of play in cognitive development. Young Children, 22, 361-370.
- Thomas, D.L. & Wilcox, J.E. (1987). The rise of family theory: a historical and critical analysis. In M.B. Sussman and S.K. Steinmetz (Eds.), Handbook of marriage and the family (pp. 81-102). NY: Plenum.
- Tower, R.B. (1980). The influence of parents' values on preschool children's behavior. Unpublished doctoral dissertation, Yale University.
- Voss, H., & Keller, H. (1983). Curiosity and exploration: theories and results. New York: Academic.
- Wohlwill, J.F. (1984). Relationships between exploration and play. In Yawkey & Pellegrini (Eds.), Child's play: developmental & applied. Hillsdale, N.J.: Erlbaum.

APPENDIX B
EXPLORATORY PLAY BEHAVIOR OBSERVATION SHEET

EXPLORATORY PLAY BEHAVIOR OBSERVATION SHEET

Name _____	Observer _____	Date _____	Affect
Time _____			
:00			
:15			
:30			
:45			
1:00			
1:15			
1:30			
1:45			
2:00			
2:15			
2:30			

2:45	
3:00	
3:15	
3:30	
3:45	
4:00	
4:15	
4:30	
4:45	

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

Demographic Data Questionnaire

1. Name of Child _____ Sex _____
2. Parent Date of Birth (Mother) _____ (Father) _____
3. Are you employed outside the home? _____ If "yes", please circle "parttime" or "fulltime".
4. Is your spouse employed outside the home? _____ If "yes", please circle "parttime" or "fulltime".
5. Occupation: Mother _____ Father _____
6. Highest level of education completed:
- | Mother: | Father: |
|----------------------------|----------------------------|
| _____ some high school | _____ some high school |
| _____ high school | _____ high school |
| _____ two-year degree | _____ two-year degree |
| _____ four-year degree | _____ four-year degree |
| _____ some graduate school | _____ some graduate school |
| _____ graduate degree | _____ graduate degree |
| _____ some post grad | _____ some post grad |
| _____ post-graduate degree | _____ post-graduate degree |
7. Language spoken most frequently in the home _____
8. Marital Status: Single Married Divorced
9. Briefly describe child care arrangements for this past school year (September 1988 - May 1989) outside of the CDL: _____

10. Parent who filled out questionnaire: Mother _____ Father _____

APPENDIX D
FACES III INSTRUMENT

FACES III

1	2	3	4	5
ALMOST NEVER	ONCE IN A WHILE	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

INSTRUCTIONS: The following statements describe common family situations. Using the 5 responses listed above, please place the NUMBER (1-5) that you believe best describes your family.

- _____ 1. Family members ask each other for help.
- _____ 2. In solving problems, the children's suggestions are followed.
- _____ 3. We approve of each other's friends.
- _____ 4. Children have a say in their discipline.
- _____ 5. We like to do things with just our immediate family.
- _____ 6. Different persons act as leaders in our family.
- _____ 7. Family members feel closer to other family members than to people outside the family.
- _____ 8. Our family changes its way of handling tasks.
- _____ 9. Family members like to spend free time with each other.
- _____ 10. Parent(s) and children discuss punishment together.
- _____ 11. Family members feel very close to each other.
- _____ 12. The children make the decisions in our family.
- _____ 13. When our family gets together for activities, everybody is present.
- _____ 14. Rules change in our family.
- _____ 15. We can easily think of things to do together as a family.
- _____ 16. We shift household responsibilities from person to person.
- _____ 17. Family members consult other family members on their decisions.
- _____ 18. It is hard to identify the leader(s) in our family.
- _____ 19. Family togetherness is very important.
- _____ 20. It is hard to tell who does which household chores.

APPENDIX E

ADULT ADJECTIVE CHECKLIST

ADULT ADJECTIVE CHECKLIST (Tower, R. B., 1980)

From the list of adjectives given below, please check the ten (10) that are most descriptive of you. Then select from this list of ten (10) the five (5) adjectives that most accurately describe you. Place a circle around each of these five (5) adjectives.

resourceful	outgoing
competent	efficient
imaginative	foresighted
reliable	curious
likeable	energetic
enthusiastic	adventurous
sincere	generous
self-reliant	helpful
friendly	hospitable
stable	independent
creative	practical
organized	kind
warm	rational
dependable	

APPENDIX F

RAW DATA

stats

TOTAL OBSERVATIONS: 16

	TOTVOC	TOTMAN	TOTLOC	TOTVIS	TOTEXP
N OF CASES	16	16	16	16	16
MINIMUM	13.000	145.000	132.000	141.000	566.000
MAXIMUM	156.000	238.000	268.000	249.000	779.000
MEAN	90.688	180.250	192.875	192.063	668.125
STANDARD DEV	44.013	25.096	41.004	27.927	64.518

	COHE	ADAP	MRESO	MRESP	MRELA
N OF CASES	16	16	16	16	16
MINIMUM	29.000	14.000	0.000	2.000	1.000
MAXIMUM	46.000	28.000	9.000	13.000	8.000
MEAN	40.563	21.313	4.125	6.438	4.375
STANDARD DEV	4.633	4.347	3.096	3.076	2.125

	FRESO	FRESP	FRELA	MAGE	MEMP
N OF CASES	16	16	16	15	16
MINIMUM	0.000	0.000	1.000	20.000	0.000
MAXIMUM	10.000	12.000	9.000	41.000	2.000
MEAN	4.750	6.875	3.438	33.267	1.375
STANDARD DEV	2.671	4.015	2.683	5.351	0.806

	MEDUC	FAGE	FEMP	FEDUC
N OF CASES	16	15	16	16
MINIMUM	2.000	22.000	1.000	2.000
MAXIMUM	8.000	57.000	2.000	8.000
MEAN	5.375	35.533	1.938	5.750
STANDARD DEV	2.306	8.052	0.250	2.145

>quit

SYSTAT PROCESSING FINISHED

INPUT STATEMENTS FOR THIS JOB:

```
USE HOMEEXPL
STATS
Stop - Program terminated.
```

2J

```
01:01H7mSYSTAT 3.0 OKLAHOMA STATE UNIV. STILLWATER, OKLAHOMA (SITE LICENSE SER
87200m 02:03H 1 DATA      2 GRAPH      3 STATS      4 TABLES      5 NPAR      6 CO
RR      03:03H 7 MGLH      8 FACTOR      9 MDS      10 CLUSTER  11 SERIES  12 NON
LIN      04:03H 23:01H7mEnter number, module name, HELP, or other command. QUIT r
eturns you to DOS.      Om 10:01H 10:01H
```

10:01H >3

TOTAL OBSERVATIONS: 16

	TOTVOC	TOTMAN	TOTLOC	TOTVIS	TOTEXP
N OF CASES	16	16	16	16	16
MINIMUM	13.000	145.000	132.000	141.000	566.000
MAXIMUM	156.000	238.000	268.000	249.000	779.000
MEAN	90.688	180.250	192.875	192.063	668.125
STANDARD DEV	44.013	25.096	41.004	27.927	64.518

	COHE	ADAP	MRESO	MRESP	MRELA
N OF CASES	16	16	16	16	16
MINIMUM	29.000	14.000	0.000	2.000	1.000
MAXIMUM	46.000	28.000	9.000	13.000	8.000
MEAN	40.563	21.313	4.125	6.438	4.375
STANDARD DEV	4.633	4.347	3.096	3.076	2.125

	FRESO	FRESP	FRELA	MAGE	MEMP
N OF CASES	16	16	16	15	16
MINIMUM	0.000	0.000	1.000	20.000	0.000
MAXIMUM	10.000	12.000	9.000	41.000	2.000
MEAN	4.750	6.875	3.438	33.267	1.375
STANDARD DEV	2.671	4.015	2.683	5.351	0.806

	MEDUC	FAGE	FEMP	FEDUC
N OF CASES	16	15	16	16
MINIMUM	2.000	22.000	1.000	2.000
MAXIMUM	8.000	57.000	2.000	8.000
MEAN	5.375	35.533	1.938	5.750
STANDARD DEV	2.306	8.052	0.250	2.145

SYSTAT PROCESSING FINISHED

INPUT STATEMENTS FOR THIS JOB:

```

USE HOMEEXPL
STATISTICS
RUN
OUTPUT
STATISTICS
OUTPUT STATISTICS
OUTPUT
PRINT STATISTICS

```

```

OUTPUT
STATISTICS
OUTPUT@
STATISTICS

```

APPENDIX G
CORRELATIONS

	TOTVOC	COHE
TOTVOC	1.000	
COHE	0.161	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVOC	ADAP
TOTVOC	1.000	
ADAP	0.093	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVOC	MRESO
TOTVOC	1.000	
MRESO	0.129	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVOC	MRESP
TOTVOC	1.000	
MRESP	-0.045	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVOC	MRELA
TOTVOC	1.000	
MRELA	-0.106	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVOC	FRESO	FRESP	FRELA	MAGE
TOTVOC	1.000				

FRESP	0.059	-0.688	1.000		
FRELA	0.170	0.080	-0.776	1.000	
MAGE	0.284	0.048	0.225	-0.341	1.000
MEMP	0.286	-0.264	0.052	0.179	0.436
MEDUC	-0.100	0.281	-0.061	-0.152	0.471
FAGE	<u>0.535</u>	-0.009	-0.005	-0.009	0.714
FEMP	0.218	-0.447	0.250	0.047	0.169
FEDUC	0.134	0.501	-0.101	-0.317	0.498

	MEMP	MEDUC	FAGE	FEMP	FEDUC
MEMP	1.000				
MEDUC	<u>0.462</u>	1.000			
FAGE	0.362	0.126	1.000		
FEMP	-0.226	-0.341	0.121	1.000	
FEDUC	-0.000	0.622	0.117	-0.312	1.000

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTMAN	COHE	ADAP	MRESO	MRESP
TOTMAN	1.000				
COHE	<u>0.550</u>	1.000			
ADAP	-0.149	0.057	1.000		
MRESO	-0.231	-0.266	0.471	1.000	
MRESP	0.092	0.182	-0.055	-0.787	1.000
MRELA	0.222	0.199	-0.647	-0.569	-0.055
FRESO	-0.025	0.211	-0.355	-0.108	-0.067
FRESP	-0.414	-0.297	0.145	-0.004	0.251
FRELA	<u>0.585</u>	0.251	0.119	0.072	-0.275
MAGE	-0.215	0.035	0.275	-0.174	0.530
MEMP	0.054	0.146	0.352	-0.104	0.234
MEDUC	-0.246	-0.130	-0.180	-0.081	-0.024

	MRELA	FRESO	FRESP	FRELA	MAGE
MRELA	1.000				
FRESO	0.271	1.000			
FRESP	-0.338	-0.688	1.000		
FRELA	0.256	0.080	-0.776	1.000	
MAGE	-0.378	0.048	0.225	-0.341	1.000
MEMP	-0.088	-0.264	0.052	0.179	0.436
MEDUC	0.208	0.281	-0.061	-0.152	0.471

	MEMP	MEDUC
MEMP	1.000	
MEDUC	0.462	1.000

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTMAN	FAGE	FEMP	FEDUC
--	--------	------	------	-------

TOTMAN	1.000				
FAGE	0.037	1.000			
FEMP	0.002	0.121	1.000		
FEDUC	-0.197	0.117	-0.312	1.000	

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTLOC	COHE	ADAP	
TOTLOC	1.000			
COHE	0.080	1.000		
ADAP	-0.153	0.054	1.000	

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTLOC	MRESO	MRESP	MRELA	FRESO
TOTLOC	1.000				
MRESO	0.216	1.000			
MRESP	-0.176	-0.776	1.000		
MRELA	-0.117	-0.383	-0.282	1.000	
FRESO	0.082	0.036	-0.318	0.417	1.000
FRESP	-0.139	-0.095	0.388	-0.432	-0.731
FRELA	0.108	0.081	-0.251	0.250	0.091

	FRESP	FRELA
FRESP	1.000	
FRELA	-0.744	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTLOC	MAGE	MEMP	MEDUC	FAGE
TOTLOC	1.000				
MAGE	-0.098	1.000			
MEMP	-0.161	0.436	1.000		
MEDUC	0.271	0.471	0.462	1.000	
FAGE	-0.244	0.714	0.362	0.126	1.000
FEMP	-0.061	0.169	-0.226	-0.341	0.121
FEDUC	0.292	0.498	-0.000	0.622	0.117

	FEMP	FEDUC
FEMP	1.000	
FEDUC	-0.312	1.000

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTVIS	COHE	ADAP
TOTVIS	1.000		
COHE	0.220	1.000	
ADAP	-0.081	0.054	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVIS	MRESO	MRESP	MRELA	FRESO
TOTVIS	1.000				
MRESO	-0.114	1.000			
MRESP	0.162	-0.776	1.000		
MRELA	-0.075	-0.383	-0.282	1.000	
FRESO	0.069	0.036	-0.318	0.417	1.000
FRESP	0.303	-0.095	0.388	-0.432	-0.731
FRELA	<u>-0.489</u>	0.081	-0.251	0.250	0.091

	FRESP	FRELA
FRESP	1.000	
FRELA	-0.744	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTVIS	MAGE	MEMP	MEDUC	FAGE
TOTVIS	1.000				
MAGE	-0.057	1.000			
MEMP	0.053	0.436	1.000		
MEDUC	0.089	0.471	0.462	1.000	
FAGE	-0.325	0.714	0.362	0.126	1.000
FEMP	<u>-0.577</u>	0.169	-0.226	-0.341	0.121
FEDUC	0.270	0.498	-0.000	0.622	0.117

	FEMP	FEDUC
FEMP	1.000	
FEDUC	-0.312	1.000

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTEXP	COHE	ADAP
--	--------	------	------

TOTEXP	1.000			
COHE	0.533	1.000		
ADAP	-0.279	0.054	1.000	

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTEXP	MRESO	MRESP	MRELA	FRESO
TOTEXP	1.000				
MRESO	-0.050	1.000			
MRESP	-0.134	-0.776	1.000		
MRELA	0.240	-0.383	-0.282	1.000	
FRESO	0.102	0.036	-0.318	0.417	1.000
FRESP	-0.257	-0.095	0.388	-0.432	-0.731
FRELA	0.244	0.081	-0.251	0.250	0.091

	FRESP	FRELA
FRESP	1.000	
FRELA	-0.744	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTEXP	MAGE	MEMP	MEDUC	FAGE
TOTEXP	1.000				
MAGE	-0.505	1.000			
MEMP	-0.216	0.436	1.000		
MEDUC	-0.249	0.471	0.462	1.000	
FAGE	-0.283	0.714	0.362	0.126	1.000
FEMP	-0.088	0.169	-0.226	-0.341	0.121
FEDUC	-0.055	0.498	-0.000	0.622	0.117

	FEMP	FEDUC
FEMP	1.000	
FEDUC	-0.312	1.000

NUMBER OF OBSERVATIONS: 15

PEARSON CORRELATION MATRIX

	TOTEXP	TOTVIS
TOTEXP	1.000	
TOTVIS	0.098	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTEXP	TOTLOC
TOTEXP	1.000	
TOTLOC	0.333	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTEXP	TOTMAN
TOTEXP	1.000	
TOTMAN	<u>0.594</u>	1.000

NUMBER OF OBSERVATIONS: 16

PEARSON CORRELATION MATRIX

	TOTEXP	TOTVOC
TOTEXP	1.000	
TOTVOC	0.247	1.000

NUMBER OF OBSERVATIONS: 16

SYSTAT PROCESSING FINISHED

INPUT STATEMENTS FOR THIS JOB:

```

USE HOMEEXPL
PEARSON TOTVOC COHESION
OUTPUT @
PEARSON TOTVOC COHE
PEARSON TOTVOC ADAP
PEARSON TOTVOC MRESO
PEARSON TOTVOC MRESP
PEARSON TOTVOC MRELA
PEARSON TOTVOC FRESO FRESP FRELA MAGE MEMP MEDUC FAGE FEMP FEDUC
PEARSON TOTMAN COHE ADAP MRESO MRESP MRELA FRESO FRESP FRELA MAGE MEMP MEDUC
PEARSON TOTMAN FAGE FEMP FEDUC
PEARSON TOTLOC COHE ADAP MRESO MRESP MRELA FRESO FRESP FRELA MAGE MEMP MEDUC F
PEARSON TOTLOC COHE ADAP
PEARSON TOTLOC MRESO MRESP MRELA FRESO FRESP FRELA
PEARSON TOTLOC MAGE MEMP MEDUC FAGE FEMP FEDUC
PEARSON TOTVIS COHE ADAP
PEARSON TOTVIS MRESO MRESP MRELA FRESO FRESP FRELA
PEARSON TOTVIS MAGE MEMP MEDUC FAGE FEMP FEDUC
PEARSON TOTEXP COHE ADAP
PEARSON TOTEXP MRESO MRESP MRELA FRESO FRESP FRELA
PEARSON TOTEXP MAGE MEMP MEDUC FAGE FEMP FEDUC
PEARSON TOTEXP TOTVIS

```

APPENDIX H**T-TESTS**

PEARSON TOTEXP TOTMAN
PEARSON TOTEXP TOTVOC

PAIRED SAMPLES T-TEST ON TOTVOC VS TOTMAN WITH 16 CASES

MEAN DIFFERENCE = -89.563
SD DIFFERENCE = 43.104
T = 8.311 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTVOC VS TOTLOC WITH 16 CASES

MEAN DIFFERENCE = -102.188
SD DIFFERENCE = 69.186
T = 5.908 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTVOC VS TOTVIS WITH 16 CASES

MEAN DIFFERENCE = -101.375
SD DIFFERENCE = 59.365
T = 6.831 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTVOC VS TOTEXP WITH 16 CASES

MEAN DIFFERENCE = -577.438
SD DIFFERENCE = 68.534
T = 33.702 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTMAN VS TOTLOC WITH 16 CASES

MEAN DIFFERENCE = -12.625
SD DIFFERENCE = 44.097
T = 1.145 DF = 15 PROB = .270

PAIRED SAMPLES T-TEST ON TOTMAN VS TOTVIS WITH 16 CASES

MEAN DIFFERENCE = -11.813
SD DIFFERENCE = 42.347
T = 1.116 DF = 15 PROB = .282

PAIRED SAMPLES T-TEST ON TOTMAN VS TOTEXP WITH 16 CASES

MEAN DIFFERENCE = -487.875
SD DIFFERENCE = 53.573
T = 36.427 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTLOC VS TOTVIS WITH 16 CASES

MEAN DIFFERENCE = 0.813
SD DIFFERENCE = 50.510
T = .064 DF = 15 PROB = .950

PAIRED SAMPLES T-TEST ON TOTLOC VS TOTEXP WITH 16 CASES

MEAN DIFFERENCE = -475.250
SD DIFFERENCE = 63.872
T = 29.763 DF = 15 PROB = .000

PAIRED SAMPLES T-TEST ON TOTVIS VS TOTEXP WITH 16 CASES

MEAN DIFFERENCE = -476.063
SD DIFFERENCE = 67.743

VITA

Candidate for the Degree of
Master of Science

Thesis: THE RELATIONSHIP BETWEEN PARENTAL CHARACTERISTICS
AND INFANT AND TODDLER EXPLORATORY PLAY BEHAVIORS

Major Field: Home Economics - Family Relations and Child
Development.

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma,
September 20, 1962, the daughter of Dale and
Beverly Sullivan; married November 26, 1989 to Jon
Mark Rubenstein.

Education: Graduated from Norman High School, Norman,
Oklahoma, January, 1981; received Bachelor of
Science Degree in Elementary Education from the
University of Oklahoma in May of 1986; completed
requirements for the Master of Science Degree at
Oklahoma State University in December 1989.

Professional Experience: Graduate Teaching Assistant,
University of Oklahoma, June, 1987 to August,
1987; Lead Teacher, Oklahoma State University
Child Development Laboratories, August, 1987 to
May, 1988; Graduate Administrative Assistant,
Oklahoma State University Child Development
Laboratories, May, 1988 to August, 1988; Graduate
Research Assistant, Oklahoma State University,
Department of Family Relations and Child
Development, August, 1988 to May, 1989; Graduate
Teaching Assistant, Oklahoma State University
Early Intervention Training Institute, May, 1989
to August, 1989.

Professional Affiliations: Society for Research in
Child Development; Southwest Society for Research
in Human Development; Omicron Nu.