

AN ABSTRACT OF THE THESIS OF

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This study examined the relationships among authoritarian parental attitudes, home environments, parental attitudes toward the children's freedom, and the cognitive performances of kindergarten children. Socioeconomic status of the family and sex of child and parent differences were also examined. Subjects consisted of 73 pairs of Korean parents and their children. There were 42 boys and 31 girls ranging in age from four to six years.

The Authoritarian Family Ideology, the Cognitive Home Environment Scale, and the Attitude Toward the Freedom of Children--Scale II were used for the parental measurements. To assess children's cognitive ability, the Kodae-Binet Intelligence Test for Korean Children was administered. Data were analyzed using Pearson Product Moment correlations, analysis of variance, and multiple regression analysis.

Findings obtained appeared that father's authoritarian attitudes were negatively related to children's cognitive abilities. However, the hypothesis of a negative correlation between authoritarian maternal attitudes and intellectual

ability was not confirmed. It was also found that the characteristics of home environments were highly related to children's intellectual performances, and that mother's cognitive home environment scores accounted for 13 percent of the variation in I.Q. scores. The findings of this study did not reveal a significant negative relationship between authoritarian parental perceptions of children's freedom and children's intellectual test performances.

In addition, there was a trend of a significant relationship between the family's socioeconomic status and I.Q. scores. Further, this study revealed important sex-differences in both child and parent. While boy's cognitive ability was predicted by the paternal authoritarian attitudes, girl's ability was predicted by three of the mother's variables ; maternal authoritarian attitudes, mother's perceptions of children's freedom, and mother's cognitive home environments.

Finally, the relationship between parental attitudinal differences and their children's cognitive performance was investigated in this study. It was found that parents of higher attitudinal differences had children with higher I.Q. scores.

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# Parental Attitudes, Home Environment, and the Cognitive Ability of Korean Kindergarten Children

## I. INTRODUCTION

While discussions of the nature of human intelligence are frequently all too frustrating, narrowing the topic for better management has not always led researchers to definitive results. Such has been the case in studies of intellectual growth in young children. One experimental difficulty involves the age and concurrent concept development of subjects. Bloom (1964) has established that the parameters of intellectual functioning are well-developed long before children begin their formal education. Studies of factors influencing a child's intellectual development have primarily focused on the identification of early environmental effects. One of the most fruitful factors investigated has been the child's family unit, particularly the parents (Sigel, Dreyer, and McGillicuddy-Delisi, 1984).

Hamilton (1976) points out that parents play an important role in making children aware of the external world. Parents oversee the need for and use of stimulation and moderation in children's lives. Furthermore, the amount of parental stimulation correlates positively with their offspring's mental abilities (Hunt, 1961). Thus,

parental monitoring of incoming information impacts on children's mediation of their own cognitive processes. For example, it has been found that the level of verbal interaction and communication between parents and children directly affects children's cognitive activities (Vygotsky, 1962; Kellaghan and MacNamara, 1972).

Although many attempts have been made to specify parental influences on children's cognitive abilities, only a few studies have examined family interaction styles as they relate to the process of children's cognitive development (Radin, 1971, 1972; Camp, 1982; Camp, Swift, and Swift, 1982). The majority of investigations have focused on the issue of parental influences and social-psychological development such as sex-typing (Rothbart and Maccoby, 1966; Mussen and Rutherford, 1963), self-esteem (Coopersmith, 1967) and personality adjustment (Baumrind and Black, 1967; Baumrind, 1971), to the exclusion of the relationship between styles of family interaction and children's cognitive functioning.

Knowledge of the relationship between family environment and cognitive abilities has also been restricted by the lack of specificity in the variables used to represent family influences. The variables used most often have been global and molar. There is, however, some evidence of parental attitudinal influence on children's cognitive development (Freeberg and Payne, 1967; Emmerich,

1969; Hamilton, 1976). Parental patterns of interaction and communication with their children (Quay, Hough, Mathews, and Jarrett, 1981; Price, Hess, and Dickson, 1981; Davis and Lange, 1973) have been often used as the mediating variables. Measures of achievement or mental ability (Solomon, 1969; Hamilton, 1976) and cognitive style (Kogan, 1976; Davis and Lange, 1973) have frequently been used as criteria of children's outcomes.

In attempting to relate more specific elements of family variables to cognitive development, a few researchers have investigated the relationship between authoritarian parental attitudes and their children's cognitive performances (Hess and Shipman, 1965; Ernhart, Jordan, and Spanier, 1971; Camp, 1982; Camp et al., 1982). The results of these studies indicate that parental authoritarian attitudes toward their children are negatively related to the children's cognitive functioning.

In addition to the negative relationship between authoritarian parental attitudes and children's cognitive competency, other family variables appear to be related to parental authoritarian attitudes and to the cognitive development of children. These include children's early home environment (Henderson, 1981; Laosa, 1982; Bradley and Caldwell, 1976) and parental perceptions of children's freedom.

Although researchers report that a well-established home environment facilitates the cognitive development of young children (Henderson, 1981; Laosa, 1982), and that authoritarian parental attitudes are related to children's freedom to act within the home (Morse, 1980), no research has investigated the relationships among authoritarian parental attitudes, home environment, and parental perceptions of children's freedom. Furthermore, previous research has not addressed the individual and cumulative contributions of these variables to cognitive functioning.

To identify more specific determinants of children's cognitive functioning, efforts are needed to analyze the relationship between parental authoritarian attitudes, home environment features, and parental perceptions of children's freedom, since attitudinal differences are suspected to result in different home environments and different attitudes toward children's freedom. Most importantly, research is necessary to examine the relative effects of these variables on children's cognitive performance.

In conjunction with the issue regarding the relationship between family variables and children's cognitive development, social class and sex of the child can be considered as extrinsic variables influencing both family variables and children's cognitive competency. Social class has been demonstrated to affect parental

attitudes during child-rearing. Lower-class parents tend to be more rigid and less accessible to their children than middle-class parents (Deutsch, 1973). Differences in cognitive performance among children of different social classes have also been known to exist (Freeberg and Payne, 1967; Deutsch, 1973; Hess and Shipman, 1965). Research investigating social class and children's cognitive development has revealed that lower-class children showed fewer cognitive abilities than middle- and upper-class children (Hess and Shipman, 1965). Social class is believed to affect parental attitudes which might determine the quality of stimulation children received (Deutsch, 1973). This quality of stimulation has a potential effect on cognitive development. These relationships have not been systematically investigated within a single data set.

There is also evidence that parents behave differently depending upon the sex of their children (Baumrind, 1971; Radin and Epstein, 1975). Boys with authoritarian parents showed lower cognitive performances than girls with authoritarian parents (Radin and Epstein, 1975).

Typical research on the relationship between parenting styles and child behaviors seldom distinguish between fathers and mothers or focus on mother-child relationships, leaving out the father's influence on the child's development. This has been the case in studies of parental attitudinal influences on children's cognitive

development. (Hess and Shipman, 1965; Ernhart, Jordan, and Spanier, 1971; Camp, 1982; Camp et al., 1982).

Although only a few investigators (Radin, 1972, 1976) have examined paternal influence on children's cognitive abilities, no accurate account of mother-child versus father-child effects exists in the literature. Since it is evident that fathers influence their children's cognitive development through the influence they exert on their wife's attitudes (Radin, 1981), there is a clear need for systematic research to clarify the relative effects of both maternal and paternal attitudes on children's cognitive development.

### Statement of Purpose

The major purpose of this research was to examine whether or not authoritarian parental attitudes relate to home environment and parental attitudes toward children's freedom, and to determine how these variables influence the cognitive performances of Korean kindergarten children. The second purpose of this study was to examine the effects of agreement in attitudes between fathers and mothers on their children's cognitive performances, and whether or not one particular parent's attitude influences cognitive performance more than the other. In addition,

socioeconomic status and sex of child differences were also examined.

Although the literature indicated that authoritarian parental attitudes are negatively related to children's cognitive competency (Hess and Shipman, 1965; Camp, 1982), these findings lack explanatory power. When examining parental attitudes as environmental antecedents of children's cognitive development, it is necessary to understand the processes through which parental attitudes might account for differences in children's abilities.

Parental attitudes might affect their capability to offer preparatory experiences and support for children as well as patterns of interactions with their children. Differences in parental attitudes may give different information about the types and choices of activities or events in the home that children might have. Parental attitudinal differences may affect perceptions of their children's freedom to act in the home. These unidentified relationships limit a deeper understanding the processes involved.

Thus, there is a need to investigate the inclusive effects of authoritarian parental attitudes and other variables such as home environment and parental attitudes toward children's freedom on children's cognitive development. Although some researchers have studied the relationship between home environment and children's

intellectual growth (Bradley, Caldwell, and Elardo, 1979; Hess and Shipman, 1965) and another has investigated the relationship between parental attitudes and their perceptions of children's freedom (Morse, 1980), there are no studies in which all of these variables were investigated using the same subjects. Such a study is necessary to understand the relative importance of these variables as they influence children's cognitive development.

Studies primarily focusing on the mother's influence (Camp, 1982; Camp et al., 1982) are not sufficient to explain the effects of parental attitudes on children's cognitive development. For a more complete analysis, it is important to include both mothers and fathers in the study to clarify parental influences on children's cognitive performances. In cases where fathers are included, it will be possible to identify the effects of a particular attitude by either parent. By examining the degree of parental agreement in their attitudes and comparing both parents on measures of interrelationships among the variables, it will be possible to identify more specific elements of family variables that ultimately influence children's intellectual development.



### Hypotheses

Given the purpose of this study, the following hypotheses were examined.

1. There will be a negative relationship between authoritarian parental attitudes and cognitive home environment.
2. There will be a relationship between authoritarian parental attitudes and parental perceptions of children's freedom.
3. There will be a negative relationship between authoritarian parental attitudes and children's cognitive performances.
4. There will be a positive relationship between cognitive home environment and children's cognitive performances.
5. There will be a relationship between parental perceptions of children's freedom and children's cognitive performances.
6. There will be relationships between SES and authoritarian parental attitudes, parental perceptions of children's freedom, cognitive home environment, and children's cognitive performances.

7. There will be parental sex differences affecting the relationships among authoritarian parental attitudes, parental attitudes toward children's freedom and cognitive home environment.

### Definitions of Terms

To clarify the discussion in the present study, the terms below were defined as follows :

1. Authoritarianism/Nonauthoritarianism. These terms refer to the level of variation in parental attitudes. Authoritarianism implies highly controlling, restrictive, and protective parental attitudes toward their children, while nonauthoritarianism indicates parents' democratic attitudes, allowing children opportunities to make decisions and to be flexible. The present study explored this distinction in more detail, relying heavily on the Proshansky's insights(1966). Baumrind's (1971) definition of authoritarian parents also corresponds to the definition used in this study.
2. Children's Freedom. This term refers to the unrestricted choice of activities without interference from others. The freedom of children is determined by

the level of the liberty which children can act in the home.

3. Cognitive Ability refers to the development of intelligence. Hamilton (1976) mentioned that

.... the cognitive capacities which emerge and reach full competency in perception, in the formation and use of the conceptual structure, in linguistic skills, and in the conditions and processes of learning and attention deployment, are the essential raw material of intelligence (p.256).

As a general term, cognitive ability encompasses all processes by which knowledge of objects or relationships is attained.

4. Home Environment is determined by home activities and educational materials which a family provides children to stimulate their cognitive activities. Henderson's (1981) definition is useful in clarifying this term.

5. Socioeconomic Status refers to the broad grouping of people, and is defined in terms of economic level and prestige attribution of a family (Deutsch, 1973).

## II. REVIEW OF RESEARCH LITERATURE

Many social psychologists believe that attitudes may lead to or determine social behavior. An attitude, as defined by Rokeach (1968), is "a relatively enduring organization of interrelated beliefs that describe, evaluate, and advocate action with respect to an object or situation " (p.132). Horrocks and Schoonover (1968) added a further notion in their definition of attitude as "an expression, by word or deed, of an individual's reaction toward or feeling about a person, a thing, or a situation" (p.495). In relation to an individual's purpose of behavior, attitude acts as a motivation toward the final goal of the individual. Parental attitudes toward children, as one of the many complex social attitudes, appear to be related to parent-child interactions.

In the great majority of studies on parental attitudes, authoritarian parental attitudes have been examined in a social context. To clarify this point, it should be noted that authoritarian parents may be characterized as highly prejudiced; they show a more rigid personality, have more difficulty in accepting socially deviant impulses, and are more likely to be status and power-oriented in their personal relationships (Proshansky, 1966).

Authoritarian parents have been found to relate to early childhood experiences characterized by threatening parental discipline and a concern for family status. Furthermore, they believe that obedience is the important thing a child learns, and that children should never be allowed to set their will against that of parents (Proshansky, 1966). These attributes, in turn, have been found to relate to children's intellectual activities (Hess and Shipman, 1965; Radin, 1975). Also, authoritarian parents employ fairly strict controls and restrictions on exploration (Hamilton, 1976). These restrictions of exploration may subsequently affect children's cognitive capacities in a negative fashion. Laosa (1982) also pointed out that other variables such as socioeconomic status, parental behavior, and intellectual activities in the home may also affect the relationship between parental attitudes and children's cognitive abilities.

#### Authoritarian Parental Attitudes

Much research has been reported concerning parental authoritarian influences upon the behavior of children, with the majority of the studies focusing on the social-psychological development of children. The research results suggest that parental authoritarian attitudes tend to be negatively related to the social development of

children (Baldwin, Kalhorn, and Breese, 1949; Harris, Gough, and Martin, 1950; Behrens, 1954; Hart, 1957; Mussen and Kagan, 1958; Baragona, 1964; Starr, 1965; Byrne, 1965; Baumrind, 1971). In studying preschool children and their parents, Baumrind (1971) found that children with authoritarian parents were relatively discontent, withdrawn and distrustful. These authoritarian parents, by contrast with authoritative parents, were highly controlling, restrictive, and protective. Authoritative parents were controlling and demanding, but also warm and receptive to their children. They were balanced, exemplifying a combination of high control and positive encouragement of their children's independence.

Although parental influences on children's cognitive development are poorly understood, some researchers (Hess and Shipman, 1965; Camp, 1982) have demonstrated that authoritarian attitudes are negatively correlated with the cognitive functioning of children. An early project reported that children reared in democratic families showed higher I.Q. scores than children from authoritarian families (Baldwin et al., 1945).

Hess and Shipman (1965) examined the relationship between the conceptualizing styles of mothers and children, based on a sample of 160 black mothers and their four-year-old children. This research found a negative

relationship between maternal and child behavior with respect to cognitive attainment when the mother displayed a lack of warmth. Hess and Shipman (1965) also introduced two types of family control in the study; the status-oriented family and the person-oriented family. In the status-oriented family, family roles were rigidly defined with a norm expectancy, while the person-oriented family recognized the unique characteristics of the child. Differential growth of cognitive processes was related to the distinction between these two types of family control. Children in the status-oriented family tended to engage in less cognitive activity. The results showed a negative relationship between cognitive competency and linguistic codes with respect to mother-child interaction in the status-oriented family.

Radin (1971) defined parental warmth or nurturance as the degree of physical or verbal reinforcement a parent gives to a child. In observing mothers and their four-year-old children, he found a significant positive correlation between mother's warmth and their children's scores on the Stanford-Binet test. Perhaps, parents who show warmth and nurturance may be more likely to use reasoning and explanation in dealing with their children than parents who are restrictive. The restrictive type of parenting, which is described as authoritarian parenting (Baumrind, 1971), has been shown to be negatively related to children's mental ability. Baumrind (1971) found that

the children of restrictive fathers had lower scores on the Stanford-Binet test.

Ernhart, Jordan, and Spanier (1971) found that children of authoritarian mothers obtained lower scores than those of nonauthoritarian mothers on the Peabody Picture Vocabulary Test at three years of age. This sample consisted of 503 mother-child pairs, and the Authoritarian Family Ideology (Ernhart and Loevinger, 1969) was used as an index of authoritarian parental attitudes.

Camp (1982) and Camp and others (1982) also found a negative correlation between authoritarian maternal attitudes and concurrent cognitive scores of kindergarten children on the Leiter I.Q., Peabody Picture Vocabulary and McCarthy Scales of Children's Ability Tests. They used the Authoritarian Family Ideology Scale (Ernhart and Loevinger, 1969) as a measure of parental attitudes.

Maccoby and Martin (1983) mentioned Baumrind's currently incomplete study examining the relationship between authoritarian parenting and children's cognitive development. Authoritarian parenting is defined as involving high levels of demandingness and low levels of responsiveness. It was found that high parental demandingness as well as high parental responsiveness were associated with higher cognitive competency in children.



On the basis of this research, it is evident that authoritarian parents emphasize external control, while nonauthoritarian parents emphasize environmental enrichment and the consequences of alternative actions, leading to diverse thoughts. Thus, authoritarian parental attitudes are negatively related to children's cognitive competency.

### Home Environment

If there already tends to be differences in the cognitive ability of children at three to four years of age, it seems likely that their origin lies in the experiences provided by the home environment. Studies of the home environment (Bradley, Caldwell, and Elardo, 1977, 1979; Radin, 1976, 1981) have reported consistent relationships between home environmental variables and the cognitive performance of children.

[The home environment refers to the social-psychological enrichment of the home, including parent-child relationships. Typical variables of home environment include the activity of a family, play materials, reading materials, and opportunities for the use of imagination in daily life (Henderson, 1981). However, studies of home environment have been criticized for not providing sufficient information on the differences in

children's cognitive abilities, due to failure in specifying the processes through which the environment affects children's development (McGillicuddy-DeLisi, 1982).]

Much of the interest in the relationship between intellectual ability and home environment derives from Hunt's (1961) work on human intellectual capability and Bloom's (1964) suggestion of the importance of the preschool years for cognitive stimulation. Their thoughts were followed by other researchers such as Dave and Wolf (1967), who Henderson (1981) reports, investigated home environment influences on the intellectual performance of children. These researchers indicated that home environment can nourish children's cognitive growth, and that intervention programs can engineer changes in children's intellectual attainment.

Other researchers have also found a high positive correlation between children's cognitive abilities and home environment variables such as the parent's educational activities (Walberg and Marjoribank, 1973; Scarr and Weinber, 1978; Marjoribank, 1977, 1979), and intensity of verbal stimulation (Wachs, Uxgiris, and Hunt, 1971).

Walberg and Marjoribank (1976) have employed complex statistical models to understand the relationship between family environment and cognitive development. The statistical models of the relationship showed that family environment is interrelated to family size and

socioeconomic status of family, and that facilitative family environment can systematically promote children's cognitive development.

Caldwell and her associates developed an instrument called the Home Observation for Measurement of the Environment (HOME) Scale to assess the home environment of infants and very young children (Bradley, Caldwell, and Elardo, 1977, 1979). Early home stimulation, especially maternal involvement with the child and provision of appropriate play materials were found to foster the cognitive development of young children. However, the HOME measure appears somewhat less effective in predicting high and average performances of children on mental tests (Henderson, 1981). Furthermore, the measure was developed only for use in the environments of very young children between the ages of six to thirty-six months.

Radin and Epstein (1975) developed a Cognitive Home Environment Scale (CHES) to assess the amount of cognitive stimulation found within the home. The measurement asks about the occurrence of home activities such as amount of time spent reading to children and possessions related to education. In assessing the utility of the Cognitive Home Environment Scale, it was found that CHES has a good validity and can predict the cognitive competency of preschool-aged children. With the CHES instrument, Radin and his associates (1973, 1975) found that cognitive

stimulation presented in the home was associated with cognitive competency in youngsters. In the studies with four-year-old children and their parents (Radin, 1972, 1975), greater home stimulation for children significantly increased children's test scores which were measured by the Stanford-Binet Intelligence Scale and the Peabody Picture Vocabulary test.

### Parent's Perceptions of Children's Freedom

After Dewey championed the concept of children's freedom, emphasizing intellectual exploration for diverse interest (Neil, 1964), it was believed that children should be granted maximum freedom of choice in the home or the school. Freedom for children means that they have the liberty to act without interference from an adult. Parents may interfere with their children's freedom by using power. Authoritarian control may understimulate children so that they fail to achieve a broad knowledge or experience of the outside world (Baumrind, 1966).

Morse (1980) confirmed the expected relationship between parental attitudes and children's freedom. To investigate whether participation in a Dreikursian parent study group would have a positive influence on parent's knowledge, attitudes, and child rearing practices, pre- or

elementary-school age children and their parents were selected. She found that parents who participated in the Dreikursian study group had nonauthoritarian attitudes and that this group evidenced more liberal attitudes toward children's freedom. In addition, Freeman (1971), Runyan (1972), and DeLaurier (1975) compared parents' attitudes using the Attitude Toward the Freedom of Children--Scale II (Shaw and Wright, 1967). They found that parents with more liberal attitudes toward freedom showed significantly less restrictiveness and authoritarianism, while authoritarian parents attempted to replace freedom with exterior control of their children. Although authoritarian parental attitudes are undoubtedly related to their perceptions of children's freedom, research has not yet attempted to identify the elements within this relationship. No research has investigated the relationship between parental authoritarianism and children's freedom to explore the environment which might be needed for optimum cognitive development.

### Socioeconomic Status

The socioeconomic status of the family have been found to generally reflect significant variations in children's intellectual development (Laosa, 1981; Henderson, 1981; Bradley, Caldwell, Elardo, 1977; Trotman, 1877; Deutsch,

1973; Hess, 1970; Mumbauer and Miller, 1970; Tulkin, 1968; Hess and Shipman, 1965). Although it has been noted that socioeconomic status is a poor predictor of children's intellectual competency (Marjoribank, 1977), and that correlations between parental SES and I.Q.s of children are lower than those found between home environment and children's I.Q. (Willerman, 1979), most studies show that differences in SES contribute to considerable variation in children's cognitive abilities. Radin (1976) noted that the social class of a child accounts for, at most, less than 25 percent of the variation in a child's cognitive score. Similarly, Henderson (1981) indicated that socioeconomic status has consistently accounted for somewhere between 6 and 25 percent of the variance in performance on intellectual measures such as I.Q. and academic achievement tests. In general, it has been found that children from middle- or upper- class families perform better than lower-class children on intelligence tests. It is important to note that mother's socioeducational values exert a strong influence on their children's intellectual growth (Laosa, 1982).

Since there is evidence of an interaction between SES and family constellation such as family size, and since measures of SES are gross and undifferentiated, there may be unexplained elements in these researches. Variations in home environment and attitudinal differences may stem from differences in SES. Thus, SES can be characterized by

different attitudes and different home environments. These facts may be related to different levels of intellectual performance of children among different SES groups. In spite of the different measures of SES used, this variable has been employed as one of the predictive variables in assessing the potential cognitive abilities or intellectual competency of children.

Mumbauer and Miller (1970) found with four-year-old children that culturally disadvantaged preschool children were less efficient in intellectual performance than other children. They employed the Stanford-Binet Test as a measure of general intellectual performance.

Hess and Shipman (1965) studied the responses of 160 Negro mothers and their four-year-old children from four different social status levels. They concluded in their research that the growth of cognitive process is fostered in family types which permit a wide range of alternatives of thinking.

It has also been assumed that SES groups differ in their language facility. Quay and others (1981) examined general cognitive abilities within a sample of first-, second-, and third-grade children in three socioeconomic classes. The results suggested that SES influences communication encoding directly, and cognitive levels indirectly.

One of the most potent background variables used in studying children's cognitive functioning has been social class (Kohn and Rosman, 1973). These researchers have used the Stanford-Binet Intelligence Scale, Caldwell's Preschool Inventory (Caldwell (1967), Goodenough-Harris-Draw-A-Man (Harris, 1963) and four additional tests which measure specific aspects of cognitive functioning among children. These children included 287 boys attending kindergarten, selected from a broad range social classes as determined by Hollingshead's Index of Social Position(1957). The finding was consistent, indicating that middle- class children obtained higher scores on cognitive measures than lower-class youngsters.

### Sex of Child

Some researchers have attempted to determine the influences of the child's sex on cognitive development, in addition to examining the differential cognitive attainments of children from varying socioeconomic classes. The influence of the child's sex on cognitive ability seems to be complicated by different parental attitudes. The impact of parent's attitude on the children's cognitive development may not be the same for the two sexes, since parents behave differently toward sons and daughters.



Laosa (1982) found with his three-year-old subjects that girls obtained higher scores on intellectual tests than did boys. He postulated that parents involved daughters more than sons on school-relevant activities. Even after the environmental influences measured were held constant, a sex difference was obtained in that study. A structured interview and the Cattell Culture Fair Intelligence Scale (1973) were administered to the mother, and the Preschool Inventory (1970) was used to measure children's general intellectual development.

Baumrind's study (1971), consisting of a largely middle-class sample, revealed that authoritarian parental attitudes were negatively related to the cognitive abilities of young boys as well as girls. Maccoby and Martin (1983) mentioned, however, that Baumrind's currently incomplete study found a negative relationship between parental authoritarianism and boy's cognitive competency. This relationship was not found among daughters.

Perhaps differences in parental attitudes toward children of different sexes may be related to the differential cognitive activities which occur in parent-child interactions. The sex differences of parent as well as child may also lead to different intellectual activities between fathers or mothers and sons or daughters. It seems fair to say that the relationships between this variable and the other variables reviewed have

not been clearly established. Direct study of parent's influence on children's cognitive development is needed to clarify how the child's sex affects the parent-child interaction, and which aspects of the parent's attitudes influence children's cognitive development.

### Sex of Parent

The "parent" usually refers to a mother in studies of parent-child relationships, since researchers have focused their attention on the mother-child relationship. The omission of fathers from these studies have often involved the assumption either that the father does not play a significant part in the family, or that the father's attitudes are adequately represented by the mother. Only maternal attitudes influencing children's intellectual development have been reported in most of the literature.

Hess and Shipman (1965) found a positive relationship between maternal warmth and cognitive attainment among four-year-old children. Radin (1971) obtained similar results. He found a significant positive correlation between children's scores on the Stanford-Binet and mother's warmth, defined as a high degree of physical or verbal reinforcement.

Ernhart, Jordan, and Spanier (1971) found that mother's authoritarian attitudes were negatively related to children's cognitive performances, as measured by the Peabody Picture Vocabulary Test. The sample consisted of three-year-old children and their mothers. The Authoritarian Family Ideology Scale (Ernhart and Loevinger, 1969) was used to assess authoritarian parental attitudes. Camp and his co-workers (1982, 1982) also found a negative correlation between authoritarian maternal attitudes and concurrent cognitive scores of kindergarten children. The Authoritarian Family Ideology (Ernhart and Loevinger, 1969) was again used to obtain a measure of authoritarian parental attitudes.

In spite of the prevalency of using mothers and their children as subjects, a few researchers (Harrington, Block, and Block, 1978; Radin, 1972, 1973, 1975, 1981) have investigated the father's role in the child's cognitive functioning. A significant negative link between paternal authoritarianism and the cognitive performance of children emerged in a longitudinal study involving three-year-old middle class children and their fathers engaged in a puzzle situation together (Harrington, Block, and Block, 1978). This result was interpreted from the point of view that authoritarian fathers tended to hinder the youngster's cognitive growth, possibly by fostering anxiety in an ambiguous situation.

Radin and his co-investigators have conducted a long and continuing series of studies of paternal influences on cognitive performances in young children (Radin, 1972, 1973; Radin and Epstein, 1975). Paternal nurturance was found to be significantly and positively related to the cognitive growth of preschool boys in middle-class families (Radin, 1972; Radin and Epstein, 1975). Paternal involvement in childcare was also found to be significantly and positively correlated with the mental test scores of preschool boys obtained with the Peabody Picture Vocabulary Test, but not that of girls (Radin, 1978, 1980). Authoritarian paternal behavior tends to be positively associated with reduced academic competency for both boys and girls (Radin, 1981).

In summary, research findings have revealed that authoritarian parental attitudes are negatively related to children's cognitive development. It has been suggested that parents with authoritarian attitudes toward their children prohibit cognitive growth in youngsters, due to the highly structured parent-child interactions, while nonauthoritarian parents stimulate children's intellectual functioning with cognitive activities.

Parental authoritarianism also seems to be related to the home environment and parental perceptions of children's freedom. Since parents' attitudes toward children are considered to be a source of interactions with their

children, research indicates that children with nonauthoritarian parents are provided with more frequent intellectual stimulation and are allowed to have more freedom to act in their homes.

Finally, the variables of socioeconomic status and sex of the child and parents have been found to be related to parental attitudes toward children which may exert an effect on intellectual growth in young children. The research regarding authoritarian parental attitudes have provided us with information of different cognitive competency in socioeconomic status characteristics. Children from the lower-class tended to perform lower on cognitive performance test.

(In spite of the inconsistent findings, research indicated that boys who had authoritarian parents gained less on scores of cognitive ability than girls who had authoritarian parents.) Paternal authoritarianism has been found to be negatively related to children's cognitive performance as maternal authoritarian attitudes.

### III. METHOD

#### Subjects

Subjects consisted of 73 pairs of Korean parents and their natural born kindergarten children. There were 42 boys and 31 girls ranging in age from four to six years. Originally, 111 parents and their children were selected to participate in this study. However, due to incomplete questionnaires, the final number of subjects was reduced to 73 pairs of parents and 73 children. The sample was limited to two-parent families. Five child care programs, four in the capital city of Seoul and one in a rural area near Seoul, Korea, were selected to carry out the present study. The following child care institutes were selected for participation in this study, (a) the Kindergarten of Kyunghee University, (b) the Moon-Sung Kindergarten, (c) the Hyun-Dai Kindergarten, (c) the Myen-Mok Child Care Program, and (e) the Jinjup Child Care Program. The first three institutes enrolled children from upper- and middle-class families, while the remaining institutes served children from lower-class families, based on a Korean Social Stratification (Hong, 1983) and Chung, Palmore, Lee, and Lee's (1972) Index of Social Class.

The children's ages ranged from forty-nine to eighty-three months with a mean age of seventy-one months. Girls' ages ranged from fifty-one to eighty-two months with a mean age of seventy-two months. Boys' ages ranged from forty-nine to eighty-three months with a mean age of seventy-months. Table 1 summaries the number of children at the different age groupings. Almost half, 53 percent (N=39), of the children were first born children. A majority of these first born children were boys (N=29). Thirty six percent (N=26) of the children were second-born children and of this figure, fifteen children were boys. None of the boys were only-born, last-born, or middle-born, while some girls (N=8) of the sample were only-born, last-born, or middle-born.

As indicated in Table 2, parents' ages ranged from 29 to 50 years, with a mean age of 36.1 years. Fathers' ages ranged from 30 to 50 years, with a mean of 37.8 years, and mothers' ages ranged from 29 to 46 years, with a mean of 34.5 years. Nearly half (48 %) of the parents were college graduates or held graduate degrees, and approximately one third (32%) had at least completed high school course.

TABLE 1. Summary of Children's Age

Age	Frequency		Total
	Boys	Girls	
48-59 months	5	2	7
60-71 months	15	9	24
over 72 months	22	20	42
	N=42	31	73
Mean Age =70 months		72	71

TABLE 2. Summary of Parents' Characteristics

( ) percent

Age	Fathers	Mothers	Total
Below 30	1	14	15 (10.2)
31-35	22	33	55 (37.7)
36-40	41	20	61 (41.8)
41-45	3	4	7 ( 4.8)
46-50	6	2	8 ( 5.5)
	N=73	73	146(100.0)
Mean Age=37.8		34.5	36.1
Education			
Elementary	3	10	13 ( 8.9)
Junior High	4	10	14 ( 9.6)
Senior High	22	23	45 (30.8)
Vocational or Some College	1	3	4 ( 2.7)
College Graduate	37	26	63 (43.2)
Graduate Degree	6	1	7 ( 4.8)



### Instruments

A demographic questionnaire provided general information about the family background characteristics. The Authoritarian Family Ideology Scale (AFI: Ernhart and Loevinger, 1969) was used to measure parental attitudes. Parents also responded to the Cognitive Home Environment Scale (CHES: Radin, 1975) and the Attitude Toward the Freedom of Children-Scale II (ATFC-II: Shaw and Wright, 1967). To assess children's cognitive functioning, the Kodae-Binet Intelligence Test for Korean Children(1971) was administered.

The AFI, CHES, and ATFC-II, were all available in English, therefore, had to be translated into Korean language. Extreme care was taken in the translation process. Upon completion of the translation, the "back translation" technique was used with each measure to translate the tests back into English with the help of five college teachers, previously educated in the United States. This allowed for further refinement of the Korean versions of the scales. Using a sample of 15 fathers and 15 mothers of kindergarten children, a pilot study was conducted to obtain reliability estimates for the measurement devices. The test-retest method, with a two week interval between testings, was employed to obtain estimates of test stability. All measurement devices and their reliability

estimates are described in the following sections.

### Parental Measurements

#### Demographic Questionnaire

Each parent answered a questionnaire designed to elicit general information about the family background, including parent's ages, parent's education level, father's occupation, family income, and the ages of each of their children. Social class was estimated from this Demographic Questionnaire using The Social Class Index (Kang, 1983) based on the Korean Social Stratification Index (Hong, 1983) and Chung, Palmore, Lee, and Lee's (1972) Index of Social Class. Occupation and educational level of fathers were each scored on a 7-point scale and educational level of mothers was also scored on a 7-point scale. Summing these three scores resulted in scores ranging from 3, low, to 21, high. A copy of the Demographic questionnaire is provided in Appendix A.

#### Authoritarian Family Ideology Scale (AFI)

The AFI was used to assess the extent of authoritarianism in a family. A 49-item questionnaire developed by Ernhart and Loevinger (1969) contains pairs of statements showing different ideas about raising children.

The items reflect in hierarchial family organizations, demands for respect from the children, the right of parents to intrude in the lives of their children, a tendency to stereotype, and banality. Each item has a forced choice response which indicates parents agreement with the item. The form is illustrated by some representative items:

- 1) A. You can spoil a tiny baby by picking him up every time he cries.  
B. You cannot spoil a tiny baby by picking him up every time he cries.
- 2) A. Parents should not pay any attention when small children use naughty words.  
B. Parents should punish small children when they use naughty words.

The reliability of this instrument using the Kuder-Richardson formular 20 is reported to be high, ranging between .85 and .90 (Johnson, 1976). This has been established as a well constructed attitude scale with demonstrated reliability across different ages and levels of socioeconomic status (Camp,1982).

Due to cultural differences in authoritarianism, three items were omitted from the original 49-item questionnaire based on the five judges' agreements. This 46-item questionnaire has been shown to have adequate test-retest reliability. Correlation coefficient was acceptably high at .77. A list of the items found in the AFI is provided

in Appendix B.

### Cognitive Home Environment Scale (CHES)

Radin (1968) developed the Cognitive Home Environment Scale based on the Environmental Process Scale by Wolf in 1964. This instrument is a semi-structured questionnaire designed to measure the degree of cognitive stimulation in the home. It contains 25 items whose answers are scored on a 7-point rating scale, ranging from a low to a high level of cognitive stimulation. The questions cover such areas as the availability of educational items to the child, the grade the parent wants and expects the child to receive in school, the kinds of activities the child shares with the parent and the rest of the family, the parent's plans for the child's future education, and so forth. Five factors are labeled as follows; Educational Materials in the Home, Grades Expected, Future Expectations, Educationally Oriented Activities, and Direct Teaching. The instrument has been used in research examining the relationship between maternal or paternal behavior and preschoolers' cognitive functioning (Johnson, 1976).

An interscorer reliability estimate for the CHES yielded agreement between two independent scorers on 91 percent of the items. A construct validity study indicates the CHES to be sensitive to a home environment that is conducive to cognitive growth (Johnson, 1976). The

instrument has also been used in research examining the relationship between maternal or paternal behavior and preschoolers' cognitive functioning on such measures as the Peabody Picture Vocabulary Test, and the Stanford-Binet I.Q. test (Radin, 1975,1977).

Five items were again omitted from the CHES, due to cultural differences, based on five judges' agreement. Test-retest reliability for the Korean translation of the 20-item CHES was established with 15 pairs of fathers and mothers, and the correlation coefficient was .71. The CHES is provided in Appendix C.

#### Attitude Toward the Freedom of Children--Scale II (ATFC-II)

The ATFC-II was developed by Koch, Dentler, Dysart, and Streit, and consists of 33 items (Shaw and Wright,1967). Respondents are asked to either agree or disagree with each of the items. Scale values from .54 to 10.29 are assigned to statements with low scores specifying a more liberal attitude toward the freedom of children, while a high value indicated a more authoritarian attitude. The score each parent receives is the mean of the scale values for the total number of items with which he or she agreed.

Reliability of scale values was determined by comparing the values assigned by two groups of 100 judges, and reported a correlation coefficient of .97 (Shaw and

Wright, 1967)). The authors also reported the ATFC-II to have an established validity in discriminating between lenient and stern people. As a test of validity, professionals in psychological services identified people who they judged as lenient or stern in their discipline of children. Of a total of eleven subjects, only five percent who were judged lenient exceeded the mean of the ATFC-II of those who were judged as stern.

The reliability coefficient of the Korean-version of the ATFC-II was adequately high at .74. A copy of this measure and the scale value for each item is provided in Appendix D.

### Children's Measurement

#### Kodae-Binet Intelligence Test for Korean Children

The most widely used intelligence test for preschool children is the Stanford-Binet test. Various items in the Stanford-Binet include tasks calling for display of past learning, perception of relation, judgement, interpretation, sustained attention, immediate memory, and other cognitive processes. Interest of the test is focused on the common score of cognitive ability running through the varied tasks (Thorndike and Hagen, 1977, p.305). The test has proven to be extremely reliable and valid in

assessing mental ability. The revised Stanford-Binet Intelligence Scale published in 1937 was received in Korea, and standardized for Korean children in 1971. Some items from the English version were eliminated or modified, and other items were relocated at different age levels. The test-retest reliability for the Korean version has been reported to be .91 with a one-year interval between testings. This Pearson Product Moment correlation coefficient was calculated using a sample of 94 children, four to eleven years of age (Chun, 1971).

### Procedure

A letter explaining the research project was sent to parents of children enrolled in the five child care programs, whom the researcher was able to contact, and who were supposed to enroll children from diverse socioeconomic classes. One class at each institute was randomly selected for participation in this research project. Parents received the four questionnaires from teachers of the child care programs who asked that each parent fill out the questionnaire independently, without comparing answers with their spouse. Parents were requested to return the questionnaires to the teachers upon completion. Each parent needed to spend approximately one hour to answer the four parent questionnaires.

Children whose parents completed the parents' questionnaires were also involved in this study. The Kodae-Binet Intelligence Test was administered to the children individually by five female graduate students who were majoring in child development in the Department of Family Studies and Housing at Kyunghee University in Seoul, Korea. These testers were trained to administer the test in advance. They were instructed to follow standardized directions. Subjects were tested in their classrooms by a tester while the other children were playing outside during their free play time. The Kodae-Binet Intelligence Test took approximately thirty minutes per child to administer.

The AFI and ATFC-II, which are forced choice questionnaires, and the Kodae-Binet Intelligence Test were scored by the testers. The CHES, a semi-open-ended questionnaire, was scored by the researcher, following the coding sheets. The parent's questionnaires and children's I.Q. test were administered during the period of October 11, 1984 to December 3, 1984.



#### IV. RESULTS

The purpose of this study was to examine the relationships among authoritarian parental attitudes, home environment, parental attitudes toward children's freedom, and the cognitive performances of kindergarten children. Furthermore, socioeconomic status of the family, sex of child and parent differences were examined. This study also attempted to evaluate the impact of parental attitudinal differences on children's intellectual performance.

The dependent variable in this study was children's I.Q. scores as measured by the Kodae-Binet Intelligence Test for Korean Children. The children's I.Q. scores on this test ranged from 67 to 156 with a mean score of 111.5. The girls' scores ranged from 67 to 156 with a mean of 111.2, and the boys scored from 76 to 143 with a mean of 111.7. A t-test comparing boys and girls I.Q scores was not statistically significant (See Table 3)

The independent variables scores were derived from the Authoritarian Family Ideology Scale (AFI), the Attitude Toward the Freedom of Children- Scale II (ATFC-II), and the Cognitive Home Environment Scale (CHES). The AFI scores ranged from 10 to 37 with a mean score of 27.19 out of a possible 46 points. The mean score of fathers (M=27.49) was slightly higher than the mean score of mothers

TABLE 3. Summary of Children's I.Q. Scores

Range	Frequency		
	Boys (N=42)	Girls (N=31)	Total (N=73)
below 80	2	1	3
81- 90	2	2	4
91-100	5	7	12
101-110	13	5	18
111-120	5	6	11
121-130	9	6	15
131-140	4	2	6
over 141	2	2	4
	M =111.7	111.2	111.5
	S.D.= 16.38	18.92	17.38

( $M=26.89$ ). However, a t-test yielded no significant difference ( $p>.05$ ) between the scores of fathers and mothers (See Table 4).

The mean scores of each parent on the ATFC-II were also calculated. The ATFC-II has individual scale values ranging from .54 to 10.29. A high value indicates more authoritarian attitudes. The parents' mean value was 5.19, with mothers' mean value as 5.11 and fathers' mean value as 5.27. A t-test yielded no statistically significant difference between mothers' and fathers' scores ( $p>.05$ ). Appendix E presents the distribution of the sample's responses on the ATFC-II.

The CHES scores ranged from 2.224 to 5.897 with a mean score of 4.605 out of a possible 7 points. Mean scores for fathers and mothers were 4.484 and 4.728, respectively. A t-test showed there was a significant difference ( $p< .01$ ) between these means. This difference indicated that mothers tended to provide more stimulating cognitive home environments than fathers (See Table 5).

#### Pearson Product-Moment Correlations for the Total Sample

Pearson Product Moment correlation coefficients were used to examine the relationships between the parental variables, children's I.Q. scores, and SES. The

TABLE 4. AFI Response Summary

Range	Frequency		
	Fathers (N=73)	Mothers (N=73)	Total (N=146)
below 20	5	6	11
20-22	6	6	12
23-24	7	11	18
25-26	7	9	16
27-28	11	15	26
29-30	16	7	23
31-32	11	11	22
33-34	6	3	9
above 35	4	5	9
<hr/>			
	M =27.49	26.89	27.19
	S.D.= 5.00	4.86	4.92

TABLE 5. CHES Response Summary

Range	Frequency		
	Fathers (N=73)	Mothers (N=73)	Total (N=146)
below 2.99	1	1	2
3.00-3.99	12	12	24
4.00-4.99	41	27	68
5.00-5.99	19	33	52
<hr/>			
	M =4.484	4.728	4.605
	S.D.= .67	.75	.71

zero-order correlation coefficients for these variables were obtained for the total sample and are presented in Table 6. Seperate inter-correlations of the same variables for parents' with boys and those with girls are also reported.

The correlation coefficients demonstrated that both fathers' and mothers' authoritarian attitudes were significantly and negatively related to mothers' cognitive home environment scores ( $r = -.202, p < .05$ ;  $r = -.330, p < .01$ ), but not to fathers' cognitive home environment scores. In addition, fathers' authoritarian attitudes were not only significantly and positively related to maternal authoritarian attitudes ( $r = .369, p < .01$ ), but also fathers' cognitive home environment scores were significantly and positively related to mothers' cognitive home environment scores ( $r = .734, p < .001$ ). These latter results demonstrated a significant and positive link between fathers and mothers in their authoritarian attitudes and in their providing the cognitive home environments for their children.

Both fathers' and mothers' authoritarian attitudes were significantly and positively related to their authoritarian perceptions of children's freedom ( $r = .344, p < .001$ ;  $r = .505, p < .001$ ). These findings indicate that parents with more authoritarian attitudes had significantly more authoritarian perceptions toward their children's freedom. Also, fathers' authoritarian perceptions of

TABLE 6. Correlations among the Variables for the Total Sample

	1	2	3	4	5	6	7	8
1 Father's Authoritarian Attitudes	x							
2 Mother's Authoritarian Attitudes	.369***	x						
3 Father's Perceptions of Children's Freedom	.344***	.156	x					
4 Mother's Perceptions of Children's Freedom	.169	.505***	.280**	x				
5 Father's Cognitive Home Environment	-.065	-.152	-.118	-.159	x			
6 Mother's Cognitive Home Environment	-.202*	-.330**	-.052	-.259**	.734***	x		
7 Socioeconomic Status	-.359***	-.471***	-.163	-.243*	.368***	.531***	x	
8 Children's I.Q. Scores	-.226*	-.110	-.035	-.116	.309**	.373***	.217*	x

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

children's freedom were significantly and positively related to mothers' perceptions of children's freedom ( $r=.280$ ,  $p<.01$ ). Furthermore, mothers' perceptions of children's freedom were significantly and negatively related to their cognitive home environment scores ( $r=-.259$ ,  $p<.05$ ).

Correlations revealed that fathers' authoritarian attitudes were significantly and negatively related to their children's I.Q. scores ( $r=-.226$ ,  $p<.05$ ), while mothers' authoritarian attitudes were not significantly related to their children's I.Q. scores. The data also indicated that both fathers' and mothers' cognitive home environment scores were significantly and positively related to children's I.Q. scores ( $r=.309$ ,  $p<.01$ ;  $r=.373$ ,  $p<.001$ , respectively). There were no significant relationships between fathers' and mothers' perceptions of children's freedom and children's I.Q. scores.

The socioeconomic status of the family was significantly and positively related to children's I.Q. scores ( $r=.217$ ,  $p<.05$ ) (See Table 6). The data suggested that higher socioeconomic status is associated with higher I.Q. scores. The family's socioeconomic status was significantly and negatively associated with fathers' and mothers' authoritarian attitudes ( $r=-.359$ ,  $p<.001$ ;  $r=-.471$ ,  $p<.001$ ), and mothers' perceptions of children's freedom ( $r=-.243$ ,  $p<.05$ ). However, fathers' and mothers'

cognitive home environment scores were significantly and positively related to SES ( $r=.368$ ,  $p<.001$ ;  $r=.531$ ,  $p<.001$ ). There was no significant correlation between the socioeconomic status of the families and the fathers' perceptions of children's freedom.

Finally, two correlations, the correlations between both fathers' and mothers' authoritarian attitudes and children's I.Q. scores ( $r=-.226$ ,  $r=-.110$ , respectively), were tested to see whether the correlation is the same for both populations. It was found that there was no significant difference between the two correlation coefficients. Similarly, the correlations between both fathers' and mothers' cognitive home environment scores and children's I.Q. scores ( $r=.309$ ,  $r=.373$ ) were tested. Again there was no significant difference between these two correlation coefficients.

#### Correlations within Families with Boys

Separate correlation matrices were computed for boys and girls. Table 7 shows the interrelations between variables in families where the subject was a boy. The authoritarian attitudes of mothers were significantly and negatively related to fathers' cognitive home environment scores ( $r=-.279$ ,  $p<.05$ ) and mothers' cognitive home



TABLE 7. Correlations among the Variables for the Parents with Boys

	1	2	3	4	5	6	7	8
1 Father's Authoritarian Attitudes	x							
2 Mother's Authoritarian Attitudes	.279*	x						
3 Father's Perceptions of Children's Freedom	.106	.056	x					
4 Mother's Perceptions of Children's Freedom	.096	.530***	.101	x				
5 Father's Cognitive Home Environment	-.146	-.279*	-.128	-.198	x			
6 Mother's Cognitive Home Environment	-.174	-.297*	-.037	-.175	.782***	x		
7 Socioeconomic Status	-.376**	-.481***	-.095	-.211	.431**	.498***	x	
8 Boy's I.Q. Scores	-.364**	-.234	.055	.093	.243	.293*	.158	x

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

environment scores ( $r = -.297$ ,  $p < .05$ ). In contrast, fathers' authoritarian attitudes had no relationship to his cognitive home environment scores or his spouse's home environment scores.

In assessing the authoritarian attitude similarities between fathers and mothers, a similar pattern holds as appeared in the total sample. Fathers' authoritarian attitudes were significantly and positively correlated with mothers' authoritarian attitudes ( $r = .279$ ,  $p < .05$ ). For mothers with boys, there was a significant positive relationship between authoritarian attitudes and their authoritarian perceptions of the children's freedom ( $r = .530$ ,  $p < .001$ ). In contrast, a relationship was not found between fathers' authoritarian attitudes and their attitudes toward the children's freedom.

In the relationship between authoritarian parental attitudes and children's I.Q. scores, the results obtained were similar to the total sample. Fathers' authoritarian attitudes were significantly and negatively related to children's I.Q. scores ( $r = -.364$ ,  $p < .01$ ), in comparison to no relationship between mothers' attitudes and their children's I.Q. scores. As in the total sample, no significant relationship was found between parental authoritarian perceptions of children's freedom and children's I.Q. scores. With regard to cognitive home environment, children's I.Q. scores were significantly and

positively related to mothers' cognitive home environment scores only ( $r=.293$ ,  $p<.05$ ), but not to fathers' cognitive home environment scores. However, parents' cognitive home environment scores were significantly and positively related to each other ( $r=.782$ ,  $p<.001$ ).

Unexpectedly, the family's socioeconomic status was not related to boys' I.Q. scores. However, similar to the results in the total sample, the family's socioeconomic status was significantly related to fathers' and mothers' authoritarian attitudes ( $r=-.376$ ,  $p<.01$ ;  $r=-.481$ ,  $p<.001$ ) and fathers' and mothers' cognitive home environment scores ( $r=.431$ ,  $p<.001$ ;  $r=.498$ ,  $p<.001$ ) in this group.

#### Correlations within Families with Girls

Seperate correlations for parents with girls (See Table 8) showed that the relationships between authoritarian parental attitudes and parental authoritarian perceptions of children's freedom that were similar to the results obtained with the total sample. Fathers' and mothers' authoritarian attitudes were significantly and positively related to their attitudes toward children's freedom ( $r=.538$ ,  $p<.001$ ;  $r=.467$ ,  $p<.01$ ). A significant negative relationship was found between mothers' authoritarian attitudes and mothers' cognitive home

TABLE 8. Correlations among the Variables for the Parents with Girls

	1	2	3	4	5	6	7	8
1 Father's Authoritarian Attitudes	x							
2 Mother's Authoritarian Attitudes	.451**	x						
3 Father's Perceptions of Children's Freedom	.538***	.241	x					
4 Mother's Perceptions of Children's Freedom	.224	.467**	.471**	x				
5 Father's Cognitive Home Environment	.033	.016	-.109	-.093	x			
6 Mother's Cognitive Home Environment	-.205	-.355*	-.101	-.325*	.702***	x		
7 Socioeconomic Status	-.299	-.443**	-.187	-.232	.284	.571***	x	
8 Girl's I.Q. Scores	-.010	.023	-.139	-.314*	.392*	.454**	.303*	x

\*  $p < .05$ \*\*  $p < .01$ \*\*\*  $p < .001$

environment scores ( $r = -.355$ ,  $p < .05$ ), and between mothers' perceptions of children's freedom and mothers' cognitive home environment scores ( $r = -.325$ ,  $p < .05$ ). However, there were no significant relationships between fathers' authoritarian attitudes and his cognitive home scores or his spouse's scores, and between mothers' authoritarian attitudes and fathers' cognitive home environment scores.

Like the total sample and the sample of parents with boys, fathers' and mothers' authoritarian attitudes as well as fathers' and mothers' cognitive home environment scores were significantly and positively related in this group ( $r = .451$ ,  $p < .01$ ;  $r = .702$ ,  $p < .001$ , respectively). Again, the relationship between fathers' and mothers' perceptions of children's freedom were similar to the results obtained from the total sample. Their perceptions of children's freedom were significantly and positively related to each other ( $r = .471$ ,  $p < .05$ ).

Contrary to the hypothesis, a significant negative relationship was not found between authoritarian parental attitudes and children's I.Q. scores in parents with girls. However, girls' I.Q. scores were highly related to fathers' and mothers' cognitive home environment scores ( $r = .392$ ,  $p < .05$ ;  $r = .454$ ,  $p < .01$ , respectively), although these two correlations were not found as being significantly different from each other. Mothers' perception of children's freedom was negatively related to

girls' I.Q. scores ( $r = -.314$ ,  $p < .05$ ). There was again strong evidence of a significant positive relationship between the socioeconomic status and girls' I.Q. scores ( $r = .303$ ,  $p < .05$ ). However, none of the paternal variables were significantly associated with the socioeconomic status of the family, but two measures of maternal variables, authoritarian attitudes and cognitive home environment score, were related to the family's socioeconomic status ( $r = -.443$ ,  $p < .001$ ;  $r = .571$ ,  $p < .001$ , respectively).

#### Analysis of Parental Attitudinal Difference

In order to assess the impact of parental differences on children's intellectual performance, parental attitudinal differences were obtained by subtracting the mother's scores from the father's scores in the questionnaires of the Authoritarian Family Ideology (AFI) and the Attitudes Toward the Freedom of Children-Scale II (ATFC-II). Parents were designated as either representing high or low attitudinal difference group in both measurements. After the difference scores were assigned to the parents, they were divided into four groups ; high-high, high-low, low-high, low-low. Figure 1 illustrates the arrangement of groups. Of 76 parents, 15 comprised the high-high group and 14 comprised the high-low group. There were 18 parents in the low-high group and 24

FIGURE 1. Arrangement of Groups

		ATFC-II scale	
		high difference group	low difference group
A F I c a l e	high difference group	115.3 (N=15)	109.1 (N=14)
	low difference group	119.3 (N=18)	105.5 (N=24)

parents in the low-low group.

Parents with three and more points differences (N=29) in the Authoritarian Family Ideology scale were included in the high difference group, while the others (N=44) were assigned to the low difference group. Likewise, parents with .4 and more points differences on the Attitudes Toward the Freedom of children (N=33) were included in the high difference group, remaining parents (N=40) were included in the low difference group.

A 2x2 analysis of variance (Table 9) indicated a significant difference in children's intellectual performance between high and low parental groups on the ATFC-II. Unexpectedly, the group of higher parental attitudinal differences had children with higher I.Q. scores. No significant effect between the authoritarian attitudinal difference groups was found. The results did not show a significant interaction between the variables.

### Multiple Regression Analyses

Finally, multiple regression analyses were conducted using the stepwise and backward methods of variable selection to determine which variables were significant predictors of children's I.Q. scores.



TABLE 9. Analysis of Variance of Parental Differences in ATFC-II and AFI

Source	df	Sum of Squares	Mean Square	F
Parental Differences in ATFC-II	1	2128.35	2128.35	7.590*
Parental Difference in AFI	1	27.94	27.94	.100
Interaction	1	242.41	242.41	.864
Error	69	19349.50	280.43	
Total	72	21748.20		

\*  $p < .05$

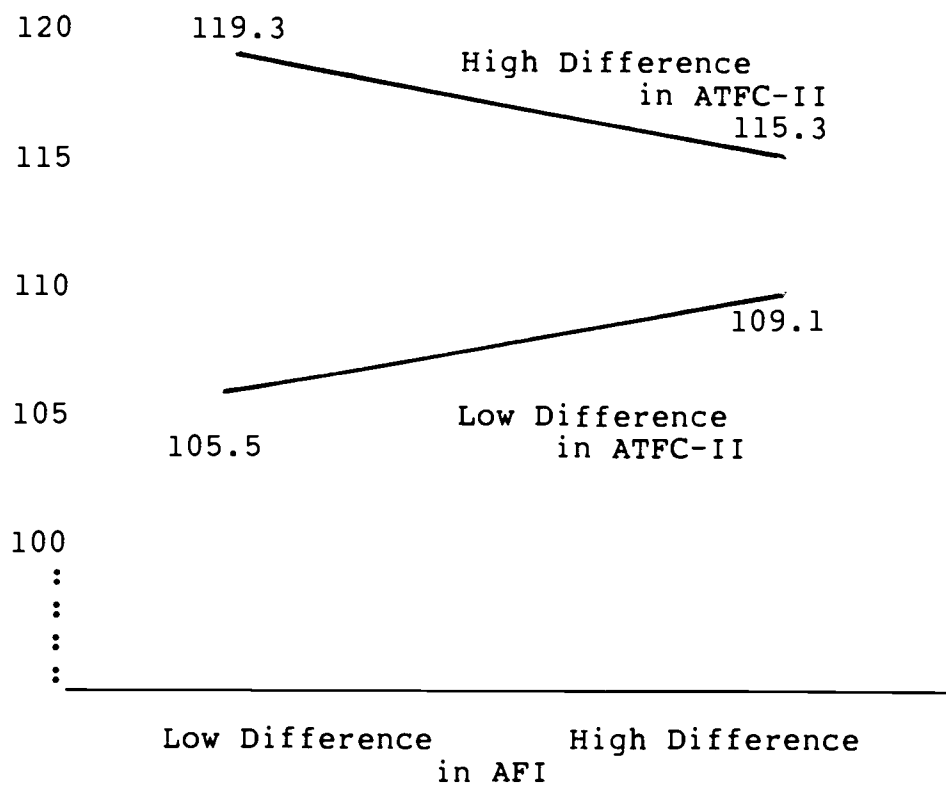


FIGURE 2. Mean Scores of Children's I.Q. Tests by the Groups

Using the total sample for analysis, only one variable was accepted into the equation; mothers' cognitive home environment scores ( $p < .001$ ). Mothers' cognitive home environment accounted for approximately 13 percent of the variation in I.Q. scores, and the regression coefficient for this equation was 8.675 (See Table 10). The correlation coefficient between mothers' cognitive home environment scores and children's I.Q. scores was .373 which was the highest correlation between any independent variable and the dependent variable.

The backward method of selection resulted in removing the socioeconomic status variable at first, and then mothers' attitudes toward the children's freedom, fathers' attitudes toward the children's freedom, mothers' authoritarian attitudes, fathers' cognitive home environment scores, and finally fathers' authoritarian attitudes.

Multiple regression analysis of parents with boys using the stepwise method resulted in the acceptance of fathers' authoritarian attitudes (See Table 11). The regression coefficient for this equation was -1.29, and fathers' authoritarian attitudes accounted for approximately 11 percent of the variance. In the Pearson's correlations, fathers' authoritarian attitudes were most highly related to children's I.Q. scores ( $r = -.364$ ). In the backward method of multiple regression analysis, the

TABLE 10. Multiple Regression Analysis in  
the Total Sample

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Analysis of Variance					
	df	Sum of Squares	Mean Squares		
Regression	1	3031.639	3031.639		
Residual	71	18716.580	263.614		
		F=11.500	Sig F=.001		
Multiple R	.373				
R Square	.139				
Adjusted R Square	.127				
Standard Error	16.236				
Variables in the Equation					
Variable	B	Se B	Beta	T	Sig T
Mother's					
CHES	8.675	2.558	.373	3.391	.001
Constant	70.469	12.242		5.757	.000

---

TABLE 11. Multiple Regression Analysis  
in the Parents with Boys

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Analysis of Variance					
	df	Sum of Squares	Mean Square		
Regression	1	1454.834	1454.834		
Residual	40	9546.500	238.662		
		F=6.096	Sig F=.018		
Multiple R	.364				
R Square	.132				
Adjusted R Square	.111				
Standard Error	15.449				
Variables in the Equation					
Variable	B	Se B	Beta	T	Sig T
Father's					
AFI	-1.292	.523	-.364	-2.469	.018
Constant	148.254	15.009		9.877	.000

---

variables were removed in the following order ; fathers' cognitive home environment variable, fathers' attitudes toward the children's freedom, the family's socioeconomic status, mothers' authoritarian attitudes, mothers' attitudes toward the children's freedom, and finally mothers' cognitive home environment variable.

As a result of applying a multiple regression stepwise method to the parents with girls, three variables were accepted in predicting girls' intellectual ability ; mothers' cognitive home environment scores, mothers' authoritarian attitudes, and mothers' perceptions toward the children's freedom. Regression coefficients were 10.458, 1.276, and -12.110 respectively, and these three variables combined accounted for 25 percent of the variance (See Table 12). In Pearson's correlation analysis, both mothers' cognitive home environment scores and mothers' perceptions toward the children's freedom were significantly related to children's I.Q. scores ( $r=.454$ ,  $r=-.314$  respectively), but mothers' authoritarian attitudes were not related to the dependent variable. It is interesting to note that girls' I.Q. scores were associated with all possible mothers' variables in this study.

In addition, the data were analyzed by means of the hierachical multiple regression method. Within this approach, the independent variables are arrayed in blocks ;

TABLE 12. Multiple Regression Analysis  
in the Parents with Girls

Analysis of Variance			
	df	Sum of Squares	Mean Square
Regression	3	3461.444	1153.815
Residual	27	7281.975	269.703
	F=4.278	Sig F=.014	
Multiple R	.568		
R Square	.322		
Adjusted R Square	.247		
Standard Error	16.423		

Variables in the Equation					
Variable	B	Se B	Beta	T	Sig T
Mother's ATFC-II	-12.110	6.914	-.320	-1.752	.091
Mother's AFI	1.276	.693	.340	1.840	.077
Mother's CHES	10.458	3.834	.471	2.728	.011
Constant	88.640	42.535		2.084	.047

father's variables and mother's variables. As each block of variables is added to the regression equation, the change in the multiple R square can be determined and tested for significance by means of an F ratio.

The hierachical multiple regression analyses were carried out in two different sequences. In the first sequence, the block of father's variables was entered prior to mother's variables. In the second sequence, the block of mother's variables was entered prior to father's variables. The increments of R square accounted for by successive blocks are presented (See Table 13). In the first sequence, the block of father's variables was entered prior to the block of mother's variables, the father's variables did not account for a significant portion of the variance in the dependent variable. After mother's variables were added, the two blocks accounted for significant portions of variance in dependent variable and value of R square increased from .08 to .25 ( $F=3.57$ ,  $p<.05$ ).

In the second sequence, the block of mother's variables was entered prior to the block of father's variables. The value of R square (.14) was almost twice the value obtained in sequence 1 (.08) (See Table 14). The block of mother's variables accounted for a significant portion of variance in children's intellectual ability ( $F=3.820$ ,  $p<.001$ ) and it turned out as the most powerful

TABLE 13. Multiple Regression Analysis with Blocks (1)

## STEP 1

Analysis of Variance				
	df	Sum of Squares	Mean Square	
Regression	3	50468685.06	16822895.02	
Residual	69	605149136.94	8770277.35	
F=1.918				
Multiple R	.568			
R square	.077			
Adjusted R square	.037			
Standard Error	2961.465			
Variables in the Equation				
Variable	B	Beta	Std error B	F
Father's AFI	1030.97	.195	614.630	2.814
Father's ATFC-II	-3.01	-.028	12.511	.058
Father's CHES	-21.31	-.206	11.985	3.161
Constant	2987.77			

## STEP 2

Analysis of Variance				
	df	Sum of Squares	Mean Square	
Regression	6	160630386.41	26771731.07	
Residual	66	494987435.59	7499809.63	
F=3.570				
Multiple R	.495			
R square	.245			
Adjusted R square	.176			
Standard Error	2738.578			
Variables in the Equation				
Variable	B	Beta	Std error B	F
Father's AFI	1756.53	.333	659.522	7.093
Father's ATFC-II	1.95	.018	11.812	.027
Father's CHES	-19.34	-.187	11.423	2.868
Mother's ATFC-II	16.34	.145	12.302	1.765
Mother's AFI	3.07	.308	1.233	6.266
Mother's CHES	29.08	.284	11.44	6.463
Constant	-2268.59			



TABLE 13 (Continued)

## Summary Table

Variable	Multiple R	R square	Rsq change	Simple R
Father's AFI	.183	.034	.034	.183
Father's ATFC-II	.186	.035	.001	-.051
Father's CHES	.277	.077	.042	-.193
Mother's ATFC-II	.307	.094	.017	.082
Mother's AFI	.414	.171	.077	.136
Mother's CHES	.495	.245	.074	.335

TABLE 14. Multiple Regression Analysis with Blocks (2)

## STEP 1

Analysis of Variance				
	df	Sum of Squares	Mean Square	
Regression	3	93386089.41	31128696.47	
Residual	69	562231732.59	8148285.98	
F=3.820				
Multiple R		.377		
R Square		.142		
Adjusted R square		.105		
Standard error		2854.520		
Variables in the Equation				
Variable	B	Beta	Std error B	F
Mother's AFI	1.46	.145	1.119	1.693
Mother's ATFC-II	10.79	.096	12.613	.732
Mother's CHES	35.13	.343	11.431	9.446
Constant	1687.94			

## STEP 2

Analysis of Variance				
	df	Sum of Squares	Mean Square	
Regression	6	160630386.41	26771731.07	
Residual	66	494987435.59	7499809.63	
F=3.570				
Multiple R		.495		
R square		.245		
Adjusted R square		.176		
Standard Error		2738.578		
Variables in the Equation				
Variable	B	Beta	Std error B	F
Father's AFI	1756.53	.333	659.522	7.093
Father's ATFC-II	1.95	.018	11.812	.027
Father's CHES	-19.34	-.187	11.423	2.868
Mother's ATFC-II	16.34	.145	12.302	1.765
Mother's AFI	3.07	.308	1.233	6.266
Mother's CHES	29.08	.284	11.439	6.463
Constant	-2268.59			

TABLE 14 (Continued)

## Summary Table

Variable	Multiple R	R square	Rsq change	Simple R
Mother's AFI	.136	.019	.019	.136
Mother's ATFC-II	.158	.025	.007	.082
Mother's CHES	.377	.142	.117	.335
Father's AFI	.460	.212	.069	.183
Father's CHES	.495	.245	.033	-.193
Father's ATFC-II	.495	.245	.000	-.051

block in terms of significant relationships to the cognitive variable.

## V. DISCUSSION

### Authoritarian Parental Attitudes

Results of this study suggested that fathers' authoritarian attitudes are significantly and negatively related to children's intellectual abilities. Children with fathers who had more authoritarian attitudes had lower I.Q. scores. These findings are consistent with Baumrind's (1971) research. As previously suggested, authoritarian parents emphasize external control in which compliance is stressed. Those parents are less likely to use reasoning and explanation in dealing with their children, due to the highly structured parent-child interactions (Camp, 1982). Their interactions are based on arbitrary decisions rather than on logical consequences, leading to the restrictiveness of thought (Hess and Shipman, 1965).

It is interesting to note that the most predictive variable of boys' intellectual performance was authoritarian paternal attitudes. The explanation may lie in the psychologist's perspectives of son's developmental identification with their fathers, a view which is still held by most psychoanalytically oriented professionals and social learning theorists (Hamilton, 1979). It may also suggest that sons are most adversely affected by fathers'

authoritarian attitudes in the Korean culture, where fathers tend to be perceived as very powerful. These findings supported previous research (Radin, 1972; Radin and Epstein, 1975) suggesting that fathers who are highly authoritarian tend to employ strict controls and restrictions in parent-child interactions, which may subsequently hinder cognitive growth.

Despite the finding that authoritarian paternal attitudes were significantly and negatively related to children's intellectual competency, the hypothesis of a significant negative correlation between authoritarian maternal attitudes and intellectual scores was not confirmed. The relationship between authoritarian maternal attitudes and children's intellectual ability did not attain a consistent level of significance, but some significant negative correlations were found. A significant negative correlation was found between mothers' authoritarian attitudes and cognitive ability in both the total sample and with boys' only. This significant association was not found within the girls' sample.

This is in contrast to Camp's(1982) study of kindergarten children which found a significant negative correlation between these two variables. However, similar lack of significant findings have also been reported by Jordan and Spaner (1972) and Maccoby and Martin (1983) in their investigations of the relationship between parental

authoritarianism and children's cognitive competency. In the Maccoby and Martin (1983) research, significant correlations were found between parental authoritarianism and boys' cognitive competency, but not for girls' cognitive competence. Jordan and Spaner also (1972) failed to predict children's cognitive attainment with mothers' authoritarianism. They used the Preschool Attainment Record and Peabody Vocabulary Test scores as the criteria for cognitive attainment in children, and the Authoritarian Family Ideology to assess mothers' child-rearing values.

The relationship between authoritarian parental attitudes and mothers' cognitive home environment indicated a very high negative correlation. Both fathers' and mothers' degree of authoritarian attitudes were significantly and negatively related to the mother's provision of a cognitive home environment for their kindergarten children. However, mothers' and fathers' authoritarian attitudes did not significantly correlate in a negative fashion with fathers' cognitive home environment scores. It appears, therefore, that the incidence of authoritarian attitudes among parents was not high when mothers were providing stimulating cognitive home environment for their children. No studies are currently available which have examined the relationship between authoritarian parental attitudes and their provision of cognitive home environments.

The data also suggest that attitudes of each parent may be influenced by the other's attitudes. Fathers and mothers tend to have similar attitudes in their authoritarianism.

### Home Environment

Results of this study support previous researches (Radin, 1976, 1981; Bradley, Caldwell, and Elardo, 1977, 1979) suggesting that the characteristics of home environments are highly related to children's intellectual performances. Children's I.Q. scores were positively related to the cognitive home environment scores of both fathers and mothers. These findings indicate that children's cognitive ability is influenced by the educational materials and home activities which parents provide. While positive relationships were reported between maternal home environment scores and both sons' and daughters' intellectual abilities, and between paternal cognitive home environment scores and daughters' intellectual ability, no significant relationship was found between paternal cognitive home environment scores and sons' intellectual test performance. Unlike the negative correlation found between paternal authoritarian attitudes and sons' I.Q. scores, paternal home environment scores were not related to sons' intellectual scores. One



possible explanation is that boys may be less amenable to environmental influences than girls. Similar findings were reported by Henderson (1981). He summarized the sex differences in children's intellectual ability and gave rise to speculation that girls are more influenced by environmental variables than boys during the first 3 years of life.

It is impressive to note that among the seven independent variables investigated, children's I.Q. scores appears to be best predicted by mothers' cognitive home environment scores, which account for 13 percent of the variance. This important role of mothers in the parent-child interaction is consistent with findings of previous researches (Laosa, 1982; Ramey, Farren, and Campbell, 1979). Laosa (1982) reported that mothers' modeling can significantly affect preschooler's I.Q. scores. Also, Ramey and others (1979) found that mothers' attitudes and behaviors account for more than half the variance of young children's I.Q. scores.

It is evident that maternal authoritarian attitudes are associated with less frequent intellectual stimulation in the home due to the highly structured parent-child interactions. This interaction may eventually inhibit children's intellectual ability.

An examination of gender subgroups revealed that fathers provide less cognitive home environments for their children than do mothers. This difference may be due to the Korean culture, where fathers are very powerful and authoritarian. Osgood(1951) describes Korean fathers as stern and somewhat distant from their children. He added that the relationships between Korean fathers and their children are not a union of familiarity and demonstrable affection. Since the father is the symbol of discipline and appears coldly distant, he seldom has an opportunity to provide cognitive home environments for his children.

With respect to the cognitive home environment and the sex of parents, no studies are currently available which have examined the differences between fathers and mothers in providing a variety of opportunities for stimulation and a warm cognitive environment for children. Perhaps more maternal stimulation in the home can be explained on the basis that Korean mothers tend not to have jobs and spend much time with their children, while fathers are working and spend less time with their children. In these situations, Korean mothers are expected to provide playthings considered important for development, read books, and teach the basic skills to their children before they enter elementary school. These cultural characteristics would make mothers more likely to facilitate cognitive home environments for their children than fathers.

The quality of home environments as measured by the CHES instrument can predict children's intellectual ability, whereas other variables used in this study could not. The data, however, indicate that the CHES instrument is somewhat less effective in predicting boys' I.Q. scores than in predicting such scores for girls.

#### Parent's Perceptions of Children's Freedom

The findings of this study do not indicate a significant negative relationship between authoritarian parental perceptions of children's freedom and children's mental test performances. Although it is assumed that less authoritarian parental attitudes toward children's freedom lead to high intellectual scores of children, no research has investigated the relationship between these two variables. The ATFC-II is only one of many tests available measuring parental attitudes. This scale was selected for the present study because of previous suggestions about the relationship between environmental nonenrichment and authoritarian parental attitudes (Baumrind, 1971). It is conceivable that the ATFC-II is not sensitive enough to assess parental attitudes among Korean parents. Informal impressions support the notion that some items found in the ATFC-II may not be well understood within a Korean cultural context. For example, Korean parents may have questions

about what the Puritan method is, if they are not familiar with it.

Authoritarian parents have been reported to replace freedom with external control of children, and their authoritarian relationship was based on some form superiority-inferiority relationship (Morse, 1981). However, this study, using the ATFC-II, did not support such a hypothesis.

Despite the overall lack of a significant relationship between the two variables, mothers' authoritarian perceptions toward children's freedom tended to reduce their daughters' I.Q. scores. This result suggests that girls with authoritarian mothers who give less freedom for exploration have lower mental test performances. This finding might suggest that mothers are more sensitive in their interactions with daughters than with sons.

As mentioned earlier, each parent's authoritarian attitudes are correlated to his/her attitudes toward children's freedom. Since the AFI reliably measures a single global factor, namely authoritarian attitudes, it was expected to be significantly associated with the ATFC-II.

In addition, analysis of parental differences in the perceptions of children's freedom indicates that children of the highly different parental group had higher

intellectual test scores than did children in the less different parental group. This finding appears most difficult to interpret, and no study is currently available for comparison purposes. Baumrind's research (1971) of authoritative parents seems to explain this result. When one parent exercises firm control and the other parent is warm and rational to the child, like an authoritative parent, children's competence and achievement may be enhanced. This pattern of child rearing might be characteristic of a balanced and harmonious home. Of course, the concept of this authoritative "home" is different from the concept of Baumrind's authoritative "parent". She has identified an authoritative parent as an individual who is controlling and concerned in his/her child rearing, while both parents are included in the balanced and harmonious home.

### Socioeconomic Status

An examination of the relationship between socioeconomic status and children's intellectual competence corresponds with results of past research (Kohn and Rosman, 1973; Radin, 1976; Quay et al., 1981; Hess and Shipman, 1965). There was a trend suggesting a significant positive relationship between the family's socioeconomic status and children's I.Q. scores in both the total sample and the

parents with girls. Radin and Epstein's (1975) study of 4 to 6 years old children reported a high positive correlation between socioeconomic status and intelligence scores of children. The results of the current study are similar to those of Kohn and Rosman (1973) who also found a significant positive correlation between the I.Q.s of kindergarten children and their father's socioeconomic status.

In the current investigation, the above relationship did not appear among parents with boys. Similar research reporting low correlations between these two variables has been previously noted by Radin and Epstein (1975). Employing the Hollingshead Two-Factor Index of Social Position, they found a non significant correlation coefficient of .12, between the I.Q.s of kindergarten boys and their scores on the Index. Contrary to the findings for boys, they obtained a significant correlation of .34 for girls. Baumrind's (1971) and Kohn and Rosman's (1973) studies also revealed higher correlation coefficients for girls than for boys. Thus, this study confirms that there is some consistency in the correlation patterns across studies. However, no significant difference was found between the two correlation coefficients of the relationships between socioeconomic status and both boys' and girls' I.Q. scores.

High correlations between the family's socioeconomic status and the independent variables indicate a trend suggesting that the parents of lower class, compared to the parents of higher class, had more authoritarian attitudes and provided less facilitative cognitive home environments for their children. Most notably, the current study showed a correlation of more than .50 between the socioeconomic status and mothers' cognitive home environment scores. This was the most predictable variable of children's intellectual ability, in the total sample and the parents with girls. Thus, these findings suggest that children from different socioeconomic status levels receive different treatments within the home. This significant relationship implies that home environments can be inferred from indexes of socioeconomic status. This might indirectly account for a substantial portion of the variance in I.Q. measures obtained (Marjoribanks, 1979; McGillicuddy-DeLisi, 1982).

The data of this study did not reveal a significant relationship between socioeconomic status and fathers' perceptions of children's freedom, either in the total sample or in the parents of boys or girls.

#### Sex of Child

The current data strongly support the suggestion of children's developmental responses to the demands of same-sex parents (Hamilton, 1979). Korean fathers appear to be significant in contributing to the cognitive competency in their kindergarten boys, while mothers appear to significantly contribute to girls' ability. The most predictable variable in boys' intellectual ability was their fathers' authoritarian attitudes, while mothers' cognitive home environment, mothers' perceptions of children's freedom, and mothers' authoritarian attitudes were the best predictors of girls' ability.

In the sample of parents with boys, the correlation between paternal authoritarian attitudes and boys' I.Q. scores reached a significant level. The correlation between maternal authoritarian attitudes and boys' I.Q.s was also high, although not as high as they were for fathers. The two correlations coefficients between both paternal and maternal authoritarian attitudes and boys' I.Q. scores were not significantly different from each other. These relationships were not found when girls' I.Q.s were studied. Neither of the correlations between fathers' or mothers' attitudes and girls' I.Q. scores were significant. These two correlation coefficients were close to zero and were not found to be significantly different from each other. Thus, it can be inferred from these results that parental authoritarian attitudes are highly related to boys' cognitive ability, but not to that of



girls.

Opposite results were obtained with respect to parental perceptions toward children's freedom. While maternal perceptions toward children's freedom were significantly related to girls' I.Q. scores and paternal perceptions were marginally, though not significantly, related, significant correlations between parental perceptions toward children's freedom and boys' I.Q. scores were not found in this study. It is difficult to explain why this difference was obtained, since the two scales, AFI and ATFC-II, measure a single global factor, namely authoritarian attitudes. However, since the separate relationships of these two variables with cognitive ability are so distinct, there is evidence that they do not exactly measure the same construct. An alternative explanation may be that girls' cognitive ability might be enhanced and stimulated by the degree of freedom which they are allowed, especially in a male-dominant society such as Korea. This issue warrants further investigation. In addition, it has been noted that girls with permissive parents were found to be achievement-oriented in American families (Baumrind, 1971).

Cognitive home environments provided by parents were critical variables in this study, although the correlations between parental home environment scores and children's I.Q. scores were not as high for boys as for girls. The

results of Elardo and others (1977) support this finding. This sex difference was explained by implying that girls may be more amenable to environmental influences than boys. They also reported that the quality of the home environment, as measured by the HOME instrument, accounted for more variance in Stanford-Binet I.Q. than other measures such as socioeconomic status.

As mentioned earlier, the correlation between the family's socioeconomic status and children's cognitive ability was higher for girls than for boys, although no significant difference was found between these two correlation coefficients. The data of this research yielded a significant relationship between the socioeconomic status and the girls' I.Q. scores, while no significant correlation was obtained for these variables in the boys' sample. This supports previous research (Radin and Epstein, 1975; Kohn and Rosman, 1973), suggesting that girls are more affected by the status characteristics of the family's social position than are boys.

#### Sex of Parent

There are patterns in the data suggesting that fathers have more authoritarian attitudes and do not provide as facilitative a cognitive home environment for their

children than mothers do. Again, a possible explanation is the unique characteristic of the relationship between Korean fathers and their children. Since the culture sets Korean fathers as the lord and master of their home, Korean fathers are stern and distant from their children. Their relationships with children is not a union of familiarity and demonstrable affection (Osgood, 1951). Korean fathers tend to have more authoritarian attitudes which are negatively related to children's cognitive development, because they think that close relationships with their children would lead to the loss of their authority and respect.

When comparing the parents of boys to those of girls, similar results were obtained. Parents of boys tended to have more authoritarian attitudes and to provide less cognitive home environments than did the parents of girls. To better understand the differences in this data, it is interesting to evaluate the rank ordering of the means of parents' authoritarian attitudes and cognitive home environment scores. Using the AFI scores, the fathers of boys were ranked the highest (most authoritarian), followed by fathers of girls, then mothers of boys, and finally mothers of girls. This pattern was exactly the opposite for the CHES scores. Mothers of girls obtained the highest cognitive environmental scores, followed by mothers of boys, then fathers of girls, and finally fathers with boys. Baumrind's (1971) study supported this findings. The

Parent Attitude Inquiry scores of fathers, with nursery school boys and girls, were compared and showed that fathers of boys were more authoritarian than fathers of girls.

Since children's intellectual ability was found to be negatively related to authoritarian parental attitudes and positively associated to cognitive home environment, it is conceivable that mothers who have less authoritarian attitudes and stimulate their children more often than do fathers might contribute most to children's attainments of high I.Q. scores. Mothers of boys were less authoritarian and provided more facilitative cognitive home environments than did fathers of boys. Similar patterns were found between fathers and mothers of girls. Fathers of girls were somewhat more authoritarian and less likely to provide facilitative cognitive home environments for their daughters. However, significant differences were not found between these correlation coefficients.

## VI. SUMMARY AND CONCLUSIONS

The primary purpose of the current study was to examine the relationships among authoritarian parental attitudes, cognitive home environments, parental attitudes toward children's freedom, and the cognitive performance of kindergarten children. This study also attempted to evaluate the socioeconomic status of the family, sex of child and parent differences. In addition, the impact of parental attitudinal differences on their children's cognitive performance was explored.

Findings of this study provided general support for the result of previous research indicating that authoritarian parental attitudes are negatively related to their children's cognitive competencies. Authoritarian paternal attitudes are negatively related to their intellectual stimulation of their sons, and boys' cognitive ability can be predicted by their paternal authoritarian attitudes. However, the negative relationship between authoritarian maternal attitudes and girls' intellectual ability did not reach statistical significance. Research conducted with more subjects could clarify whether authoritarian maternal attitudes actually decreases their daughter's cognitive ability. The current study also revealed a tendency for authoritarian attitudes of children's fathers and mothers to be similar.

Fathers' and mothers' cognitive home environments are positively associated with children's cognitive competencies. Especially, mothers' cognitive home environmental stimulation appeared as the most predictable variable of children's cognitive ability, regardless of the child's sex. However, the hypothesis that parental perceptions of children's freedom are associated with children's cognitive ability was not supported by data from this study. The possibility of a correlation between parental perceptions of children's freedom and children's cognitive ability has apparently received little research attention. Additional research are needed to examine the relationship between these two variables. The family's socioeconomic status was also found to be related to the children's cognitive performance. Children from higher socioeconomic status families had higher I.Q. scores than did children from lower socioeconomic status families.

(Analyses of data also revealed important sex-differences in both children and parents. While boy's cognitive ability was predicted by paternal authoritarian attitudes, girl's ability was predicted by all three of the mothers' variables including maternal authoritarian attitudes, mothers' perceptions of children's freedom, and mothers' cognitive home environment scores. Fathers and mothers were found to provide different home environments for their sons and daughters, and mothers were more influential in children's intellectual development] than

were fathers when collapsing the data across gender.

The relationship between parental attitudinal differences and their children's cognitive performances was partially investigated in this study. Additional research could further examine the impact of parental differences in attitudes and perceptions of children's freedom on children's intellectual ability. Further research focusing on the parental attitudinal difference is needed to examine parents' individual and combined contributions to their children's cognitive development. Larger numbers of subjects need to be studied to clarify how such differences might impact on their children's ability.

There are several factors that could limit the findings of this study and restrict generalization of the results. First of all, validity of the instruments used in this study could be questioned. Although conscientious efforts were made in translating them into Korean, and extreme care was taken in omitting some items from the instruments due to different cultural contexts, whether they are fully reliable or valid is not well-established. Development of new instruments for Korean parents is essential for more accurate measures of their attitudes and their cognitive home environments. The Authoritarian Family Ideology and the Attitude Toward the Children's Freedom --Scale II seemed not to include items directly related to authoritarianism in the Korean cultural context.

Appropriate measures for Korean parents could ensure the accuracy of assessing parental attitudes and provide greater scale validity. Instruments more sensitive to parental attitudes may have produced different results. Future studies would undoubtedly benefit from the development of new instruments that have more validity and reliability, and that are able to measure particular aspects of parental attitudes and environmental stimulation.

Aside from the validity and the reliability of the instruments, other instrument limitations may have contributed to the results. The respondents appeared reluctant to answer the semi-structured and opened questionnaire on the Cognitive Home Environment Scale. It appeared that some respondents provided the shortest possible answers. This may have limited the ability of the questionnaire to provide accurate informations vital to this study. On the other hand, the forced choice nature of the questions on AFI and ATFC-II did not allow parents to accurately report their opinions. The scales could be revised by the use of a Likert-type scale which might have more choices. These improvements in measurement could provide important information about parental attitudes.

Concerns regarding the subjects involved in this study could also be addressed. There is a selection bias inherent in the fact that only those parents whose both



fathers and mothers completed the questionnaires were ultimately included in this study. The efforts to include fathers in the sample encountered some difficulties. Most of the fathers were reluctant to answer the questionnaires and to reveal their attitudes toward children, due to their value that child-rearing is the mother's concern and not their own. Consequently, the percentage of returned questionnaires was not as high as expected. Furthermore, among the questionnaires returned, some fathers did not complete many of the items. These questionnaires were excluded from the analyses. This subject selection process may be biased, and as a result may have limited the subjects to certain parents who have unique attitudes. Future research should try to obtain a more random sample.

Results of this study should be used in combination with previous research to guide future researchers. Although this study accumulated evidence that the parent-child interaction is a critical determinant of a young child's cognitive development, and that the home environments of families provide primary experiences for developing cognitive competence among children, the relationships between children's cognitive ability and parent's attitudes or home environments are still not fully understood. Furthermore, it is not known what types of experience with parents are related to children's intellectual development. The reciprocal relationship between parent and child should also be investigated,

including not only triadic relationships, but also the entire family as a unit.

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## APPENDICES

## APPENDIX A

## Demographic

Please answer the following questions by checking the appropriate response or writing information requested.

1. Husband's Age : \_\_\_\_\_

Wife's Age : \_\_\_\_\_

2. Husband's Education

Wife's Education

\_\_\_ No schooling

\_\_\_ No schooling

\_\_\_ Elementary school

\_\_\_ Elementary school

\_\_\_ Junior high school

\_\_\_ Junior high school

\_\_\_ Senior high school

\_\_\_ Senior high school

\_\_\_ Some college

\_\_\_ Some college

\_\_\_ Four-year degree graduate

\_\_\_ Four-year degree graduate

\_\_\_ Advance degree

\_\_\_ Advance degree

3. Husband's Occupation : \_\_\_\_\_

4. Monthly Income : \_\_\_\_\_ Won

5. Sex and Ages of Other Children in the Family

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## APPENDIX B

## Authoritarian Family Ideology

Instructions : The following questionnaire contains pairs of statements showing different ideas about raising children. Please put a x beside the statement in each pair which agree most closely with your own ideas. There are no right or wrong answers.

1.   —     You can spoil a tiny baby by picking him up every time he/she cries.  
      —     You cannot spoil a tiny baby by picking him up every time he/she cries.
2.   —     Parents should not pay any attention when small children use naughty words.  
      —     Parents should punish small children when they use naughty words.
3.   —     Overalls are often the most practical thing for a little girl to wear.  
      —     A little girl should wear dresses instead of overalls.
4.   —     If a mother trains her baby properly, he/she will not need diapers after he/she is one year old.  
      —     It is better not to start toilet training a baby until he/she is at least a year old.
5.   —     Teenagers cannot be expected to be grateful to their parents.  
      —     After all the sacrifices parents make, teenage children should be grateful to them.
6.   —     If a young mother finds her baby puzzling, she should talk to some older, more experienced woman about her problems.  
      —     If a young mother finds her baby puzzling, she should talk to friends her own age who have the same kinds of problems.
7.   —     It is more fun to watch a child play than to watch him eat well.  
      —     It is more fun to watch a child eat well than to watch him play.
8.   —     Small babies should be fed when they are hungry.  
      —     Small babies should be fed on a regular schedule.

9. — A three-year-old who wets his/her pants should be made to feel ashamed of himself/herself.  
— There is no use making a child feel ashamed when he/she wets his/her pants.
10. — A child of 8 should have a little money to spend without telling his/her parents.  
— A child of 8 should tell his/her parents how he/she spends his/her money.
11. — The best kind of family life is the kind where the whole family does everything together.  
— Everyone, even a child, needs some privacy in his/her life.
12. — A three-year-old is likely to be more disturbed by having his/her tonsils out than a six-year-old.  
— It is better to have tonsils taken out at three than at six, since a three-year-old soon forgets.
13. — A house that looks a little untidy is more attractive than one where everything is always picked up.  
— An attractive house has a place for everything and everything in its place.
14. — It is up to the parents to train a child to have regular toilet habits.  
— If too much fuss isn't made, a child's toilet training will take care of itself.
15. — If a boy of 6 or 7 lies or steals, he should be punished severely.  
— Lying and stealing aren't very serious in boys 6 or 7.
16. — No child should be permitted to strike his/her mother.  
— A mother should not be harsh with a small child who strikes her.
17. — Mothers should be prepared to make good meals and let children eat what they like.  
— Mothers should teach children to eat everything on their plates.
18. — Parents should not ask about a five-year-old's bowel movement unless he/she is sick.  
— A child of five should be reminded every day to have his/her bowel movement.

19. — More people are doing a good job of raising children today than 30 years ago.  
— Fewer people are doing a good job of raising children today than 30 years ago.
20. — If a little girl is a tomboy, her mother should try to get her interested in dolls and playing house.  
— If a little girl is a tomboy, her mother should let her play boy's games.
21. — It is important to see that a young child does not form bad habits.  
— If a young child is happy, he will not form bad habits.
22. — If a three-year-old still sucks his/her thumb, his/her mother should prevent it or punish him/her.  
— A mother should not prevent a three-year-old from sucking his/her thumb, or punish him/her for doing so.
23. — If parents taught their children obedience, the children wouldn't get into trouble with the law.  
— When a child gets into trouble with the law, it is usually because his/her parents don't love him/her enough.
24. — Children should be allowed to criticize their parents.  
— Children should not be disrespectful of their parents.
25. — If an older child strikes a younger one, he/she should always be punished.  
— If an older child strikes a younger one, he/she may have a good reason for it.
26. — Boys like to date "fast" girls, but when it comes to getting marry, they choose girls for whom they have more respect.  
— Most boys marry the same kind of girl they have been going out with.
27. — A four-year-old is more interested in sex differences than an eight-year-old.  
— An eight-year-old is more interested in sex differences than a four-year-old.
28. — Punishing a child doesn't do any good if you make up to him right afterwards.  
— It is best to make up with a child right after punishing him.

29. — It is foolish for a woman to spend time cleaning house when she has a bad cold.  
— A woman should keep her house neat even when she has a bad cold.
30. — Most children nowadays aren't taught to respect their parents enough.  
— Children have as much respect for their parents nowadays as they ever did.
31. — It is fun to hear a five-year-old tell big stories.  
— A five-year-old should be taught not to tell big stories that aren't true.
32. — Most mothers nowadays let their children get away with too much.  
— Most mothers nowadays do a pretty good job of raising their children.
33. — In the long run, how much you achieve is what gives you satisfaction.  
— In the long run, it's not where you get but how much fun you have getting there that counts.
34. — It is normal for little girls to be interested in sex play.  
— It isn't normal for little girls to be interested in sex play.
35. — It is best for small children not to watch their parents get dressed and undressed.  
— It is all right for small children to watch their parents get dressed and undressed.
36. — Many people aren't careful enough to get their dishes clean.  
— Most people get their dishes clean enough.
37. — Once you've made rules for your children, you should never go back on them.  
— In family living it is often best not to be too strict about rules.
38. — A young child cannot really be happy unless his/her mother is happy.  
— A mother should expect to give up her own happiness for that of her child.
39. — It is silly for a woman to worry about coming home alone at night.  
— A woman should never be alone on the streets at night.

40. — Most college students smoke and drink too much  
for their own good.  
— Most college students seem to smoke and drink  
only moderately.
41. — It is all right to tell a lie to save a friend.  
— It is not right to lie, even if someone will be  
hurt by the truth.
42. — It is more important to have pretty things in a  
house than to keep it spotless.  
— It is more important to have the house spotless  
than to have pictures and flowers in it.
43. — If a wife doesn't like housework, she should let  
some of it go and do things she likes better.  
— There is no excuse for a wife not keeping up with  
her housework.
44. — Nowadays what most children need is more time to  
themselves, even if they waste time.  
— Children should make good use of their time after  
school and during vacations.
45. — Most people lack self-control-- they drink or gossip  
too much.  
— People who are always in complete control of them-  
selves never drink or gossip, are awful bores.
46. — It is unwise for a mother to try into her child's  
secret thoughts.  
— It is a mother's duty to make sure she knows every-  
thing her children are thinking.



## APPENDIX C

## Cognitive Home Environment Scale (CHES)

This is to find out more about how children learn. Since children spend far more time at home than at school, it is important to get a better idea of the things they do outside of school.

Please use your child' name in each question where a blank is indicated, and answer to each question. When additional space is needed, you might use the reverse side of the paper indicating the number of the question.

1. When \_\_\_\_\_ starts school what grade do you expect  
\_\_\_\_\_ to receive in most subjected?  
(Circle one) A B+ B C+ C D+ F
2. What grade would satisfy you?  
(Circle one) A B+ B C+ C D+ F
3. a) What towns has \_\_\_\_\_ visited outside of your town?  
b) Why was one of the recent trips not connected with school taken?  
c) Who went with him/her?  
d) What did he/she do there?
4. a) What newspaper and/or magazines do you have in the home at present?  
b) Who reads them?  
c) Does \_\_\_\_\_ usually look at them?  
d) If so, which ones?
5. a) What did you get \_\_\_\_\_ on his/her last birthday?  
b) For Christmas?  
c) What would you like to get him/her for his/her next birthday or Christmas?
6. Are any of these things available for \_\_\_\_\_ to use at home at present? (Check if yes)
 

<input type="checkbox"/> paste	<input type="checkbox"/> ruler
<input type="checkbox"/> paper	<input type="checkbox"/> crayons
<input type="checkbox"/> paints	<input type="checkbox"/> playdough
<input type="checkbox"/> coloring books	<input type="checkbox"/> scissors
<input type="checkbox"/> paper cut-outs	<input type="checkbox"/> pencils
<input type="checkbox"/> books	<input type="checkbox"/> other (specific)
7. a) Do you have a dictionary in your home? Yes No  
b) Who uses it?  
c) How often? Once a week, once a month, less often than once a month? (Circle one)
8. a) Do you have an encyclopedia in your home? Yes No

- b). Who uses it?
- c). How often? Once a week, once a month, less often than once a month? (Circle one)
9. a). Did you teach \_\_\_\_\_ to write his/her name?  
Yes No
- b). Did you teach \_\_\_\_\_ to count?  
Yes No
- c). Did you teach \_\_\_\_\_ to read?  
Yes No
- d). Did you teach \_\_\_\_\_ to do any other things like that?  
Yes No
- If yes, what?
- e). All together how much time do you spend trying to help \_\_\_\_\_ learn?
- f). Do you play with \_\_\_\_\_ ? Yes No
- g). What do you play?
10. a). When does \_\_\_\_\_ usually eat supper on week days?
- b). Who eats with him/her? (Please list)
- c). Who does most of the talking at the table?
- d). About what?
11. a). At what times are you together as a family on weekdays?
- b). What are some of the things you do together at these times?
- c). How much time do you usually spend playing with \_\_\_\_\_ per day? \_\_\_\_\_, per week? \_\_\_\_\_.
12. a). What are some of the things your wife/husband does with \_\_\_\_\_ on weekdays?
- b). On weekends?
13. a). Do you read books to \_\_\_\_\_? Yes No
- b). If yes, what kind?
- c). How often do you read to him/her?

- d). How long does he/she listen?
14. a). Have you tried to teach \_\_\_\_\_ new words?  
Yes No
- b). Why?
- c). (If yes) When did you teach him/her a new word last?
- d). What was the word?
15. How much schooling would you like \_\_\_\_\_ to receive?
16. How much schooling do you expect \_\_\_\_\_ to receive?
17. What is the least amount of education you think \_\_\_\_\_ must have?
18. a) What kind of work do you think \_\_\_\_\_ will do when he/she grows up?
- b) What kind of work would you not like him/her to do?
19. a) What are some of the things \_\_\_\_\_ does that you approve of?
- b) Does he/she know that you approve of them?  
Yes No
- c) How do you show that you approve of them?
- d) Did you praise or hug \_\_\_\_\_ in the last few days for something he/she did? Yes No
- e) If yes, what was it that he/she did?
20. a) Do you want \_\_\_\_\_ to go to college? Yes No
- b) If yes, how much do you think it will cost to send him/her to college per year?
- c) Have you made any plans for meeting this bill?  
Yes No
- d) If yes, what are some of these plans?

## APPENDIX D

## Attitude Toward The Freedom of Children -- Scale II

Following are 33 statements expressing different attitudes toward the question of children's rights and responsibilities.

For each of the 33 items, circle AGREE if you agree with the statement and circle DISAGREE if you disagree with the statement.

If you cannot decide about a statement, you may mark it with a question mark. This is not an examination. People differ in their opinions about what is right and wrong in this issue.

- |       |          |   |
|-------|----------|---|
| AGREE | DISAGREE | 1. Except in dangerous situations, children should never be expected to obey without being given an adequate reason.      |
| AGREE | DISAGREE | 2. Children should be taught to respect the wishes of elders.   |
| AGREE | DISAGREE | 3. When imposing restrictions upon children, parents should have well considered reasons and should be able to give them. |
| AGREE | DISAGREE | 4. Children should be required to eat everything is set before them.  |
| AGREE | DISAGREE | 5. Children should never be forced to do things they do not wish to do.   |
| AGREE | DISAGREE | 6. Rigid training for obedience should be stated in infancy.  |
| AGREE | DISAGREE | 7. I believe in placing upon young children but few restrictions and enforcing these strictly.                            |
| AGREE | DISAGREE | 8. In all quarrels between young children adults should arbitrate.  |
| AGREE | DISAGREE | 9. Children should never be required to say "please".   |
| AGREE | DISAGREE | 10. The wills of parents should be dominant over the wills of children.   |
| AGREE | DISAGREE | 11. In explorations of property children should always be under close supervision.  |

- AGREE    DISAGREE 12. Children should be given more than one chance to obey.
- AGREE    DISAGREE 13. It is the parents' task to make children want to do what is good for them.
- AGREE    DISAGREE 14. Children's liberties should be restricted in danger situations only.
- AGREE    DISAGREE 15. When children are absorbed in their own immediate affairs, parents should consider the facts before making demands.
- AGREE    DISAGREE 16. Natural forces, not individuals, should discipline young children.
- AGREE    DISAGREE 17. Little children should be forced to obey, but the control of older children should be less exacting.
- AGREE    DISAGREE 18. Within the limits of justice and safety, young children in play should be free from adult interference.
- AGREE    DISAGREE 19. Older preschool children should be allowed certain amount of freedom in making decisions and assuming the consequences.
- AGREE    DISAGREE 20. Children should be allowed to do as they wish in all things.
- AGREE    DISAGREE 21. Children should be given choices in all matters possible.
- AGREE    DISAGREE 22. Children should always be supervised by parents in their work activities.
- AGREE    DISAGREE 23. From a selection of foods chosen by adults as suitable for young children, children should be allowed to choose freely.
- AGREE    DISAGREE 24. The Puritan method of bringing up children is the best method.
- AGREE    DISAGREE 25. If children do not comply at once with requests in matters pertaining to health, they should be forced to.
- AGREE    DISAGREE 26. Children's own limitations in relation to their physical environment should be all that should restrict them in their play activities.

- AGREE    DISAGREE 27. The whims of children should be repressed at all times.
- AGREE    DISAGREE 28. Within certain selected situations, children should be allowed to assert their personal likes and dislikes.
- AGREE    DISAGREE 29. Children should be allowed to do as they wish with their playthings.
- AGREE    DISAGREE 30. Children should never be allowed openly to disagree with their parents.
- AGREE    DISAGREE 31. In the face of emergency situations the immediate obedience of children should be required.
- AGREE    DISAGREE 32. Children should be encouraged but not required to say "please" when they make a request.
- AGREE    DISAGREE 33. Children should not be allowed to destroy or abuse their own playthings.

Scale values assigned to 33 item attitude  
Toward the Freedom of Children-Scale II

1. 2.59	18. 3.38
2. 7.72	19. 4.41
3. 5.25	20. 0.54
4. 10.01	21. 2.14
5. 0.67	22. 8.41
6. 9.44	23. 3.79
7. 5.75	24. 10.29
8. 8.77	25. 7.81
9. 0.91	26. 1.54
10. 9.81	27. 10.28
11. 8.16	28. 5.01
12. 3.95	29. 1.81
13. 5.62	30. 9.36
14. 2.32	31. 6.24
15. 4.24	32. 4.63
16. 1.27	33. 7.17
17. 7.61	



## APPENDIX E

## Summary of ATFC-II Response

Item Number	Fathers			Mothers		
	Agree	Disagree	?	Agree	Disagree	?
1	42	29	2	52	17	4
2	52	20	1	56	13	4
3	69	3	1	68	1	4
4	41	30	2	45	25	3
5	49	23	1	56	14	3
6	52	20	1	51	19	3
7	55	17	1	53	16	4
8	54	16	3	52	17	4
9	46	26	1	44	25	4
10	36	35	2	39	30	4
11	44	27	2	43	25	5
12	43	27	3	47	22	4
13	44	26	3	50	19	4
14	39	31	3	35	33	5
15	56	13	4	62	7	4
16	46	24	3	51	18	4
17	54	16	3	53	17	3
18	64	6	3	67	3	3
19	62	7	4	64	6	3
20	15	55	3	13	56	4
21	68	2	3	69	1	3
22	34	36	3	26	43	4
23	25	44	4	29	40	4
24	24	46	3	21	46	6
25	50	20	3	52	15	6
26	47	24	2	63	6	4
27	39	31	3	32	36	5
28	42	28	3	40	26	7
29	57	14	2	52	16	5
30	27	44	2	18	51	4
31	57	13	3	57	11	5
32	49	21	3	54	15	4
33	37	33	3	35	33	5