Compliance in Young Girls and Boys In Relation to Problem-Solving Skills and Parent Socialization

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ABSTRACT

COMPLIANCE IN YOUNG GIRLS AND BOYS IN RELATION TO PROBLEM-SOLVING SKILLS AND PARENTAL SOCIALIZATION

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It has been frequently suggested that girls are socialized into a world which is more controlled and directed by adults than are boys. Furthermore, it has been also suggested that this differential socialization has decisive implications for the cognitive functioning of males and females. The more restrictive socialization which females tend to receive is expected to foster greater compliance to adults. A principal hypothesis of the present study is that compliance to adults is a central factor in the link between children's socialization and their development of cognitive and problem-solving abilities.

Two studies were conducted on four-year-old children to test the hypothesis that compliance to adults is related negatively to independent problem-solving competence. In the first study it was found that boys and girls who were rated as less compliant to adults were better at solving problems independently than were the

more compliant children. A second study was conducted on a larger sample of four-year-old children to examine the replicability of the findings and to allow an extension of the relation between compliance and different types of problem-solving skills. The results of Study II provided further support for the principal hypothesis, with low compliant children performing better on two measures of independent problem solving.

It was also found that different constellations of factors were associated with competent problem solving for girls than for boys. These results were interpreted as indicating that, counter to general implicit assumptions, the conditions for the optimal cognitive development of girls and boys are not the same. The role which compliance possibly plays in the cognitive development of girls and boys was discussed.

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It has been frequently suggested that girls and boys are reared in different social and psychological contexts and, furthermore, that these differences have decisive implications for the cognitive functioning of males and females (Block, 1979, 1981; Chodorow, 1974; Stein & Bailey, 1973). A great deal of psychological and anthropological research supports this hypothesis. Block (1979) has most clearly stated and elaborated this position, specifying those dimensions of the child's environment provided by adults which differ for the two sexes and which predispose boys and girls toward the use of different cognitive heuristics. In essence, the central thesis of this position is that girls are socialized into a world which is more structured and more controlled by adults than are boys. Block contends that granting children opportunities to confront in an active and independent manner problem situations that are not overwhelming for the child, allows the child to "encounter discrepancies between experience and expectation that cannot be assimilated. Experiencing discrepancies places demands on the child to alter approach, to re-examine earlier understandings, and to modify premises" (Block, 1979, p. 31). It is argued that the development of these skills is not encouraged by socialization practices that are more controlling and intrusive upon the child, which is the socialization approach more likely to be used with girls (Block, 1979). Inasmuch as girls are socialized

into a world that is more restricted and structured by adults than are boys, girls consequently learn to rely more on adults and are given both less opportunity and less pressure to rely on their own independent efforts to control the environment than are boys.

Sex Differences in Proximity Reinforcement

Many studies of sex differences in parental and teacher socialization patterns lend support to this thesis. For example, girls experience more proximity to both parents and home than do boys. During infancy, girls have been observed to play more proximally to their mother than boys (Lewis & Weinraub, 1974; Messer & Lewis, 1972). In a home observation study, Fagot (1978) found that parents gave more positive responses to infant girls when they followed them around the house than when boys did. In addition, parents employed girls to help with tasks while discouraging boys' help. The fathers, in particular, reinforced their daughters' proximity, while the mothers were more encouraging of their daughters' attempts to help. Similar results have been reported for children aged eight to nine by Tauber (1979b), who observed that mothers responded more positively to physical contact seeking from girls than from boys in a free-play session. Thus, girls appear to experience more reinforcement to maintain proximity to their parents than do boys.

Sex Differences in Adult Supervision

Girls' proximity to adults and the home is also encouraged through the type of household chores they are assigned. The socializing function of children's daily activities has been stressed by Edwards and Whiting (1980), whose cross-cultural data indicate that through their task assignments girls display greater proximity and compliance to adults than do boys. In their analysis of six cultures, Whiting and Edwards (1973) suggested that task assignment might be a major factor in the differential socialization of girls and boys. They reported that girls do significantly more domestic chores and take more care of siblings than do boys, resulting in girls interacting more with adults and infants in a dyadic helping context. Similarly, Duncan, Schuman, and Duncan (1973) found that parents assign household chores to older children according to sex-typed roles.

Girls also receive more adult supervision and greater restrictions on exploration. Collard (1964) has found that mothers of four-year-olds are more protective and provide more supervision for girls than boys. Mothers of girls indicated later ages at which they would permit certain behaviour without adult supervision than did mothers of boys, and these differences were particularly strong for middle-class mothers. Parents consistently give boys, starting from middle childhood, more freedom to

explore away from the home and to be without adult supervision than they give girls. Boys are allowed more excursions from home (Saegart & Hart, 1976) and are more often left unsupervised after school by employed mothers (Gold & Andres, 1978) than are girls. Further support for the thesis of differential supervision of boys and girls is provided by a longitudinal study of 700 children (Newson & Newson, 1976). No sex differences in maternal restrictions were found at age four; however, at age seven there was a definite pattern of greater supervision for girls. Girls more than boys were likely to be accompanied to school, be required to come directly home from school, play with friends in their own homes rather than in the street, be within calling distance of their house when playing outside, have restrictive rules about how far they could go from their house, and be allowed less often to go alone to public places. Such differences in supervision are expected to have a persuasive effect on the differential socialization and development of girls and boys. Huston (in press), in a recent review of sex typing, has suggested that children, who are kept under such close supervision may miss opportunities to develop a sense of their own competence and may incorporate their caregivers' fears. Such a possibility is supported by Block's (1978) data, which indicated that mothers were more restrictive and provided greater supervision of daughters than sons and that, as young adults, daughters

perceived such restrictive parental behaviour as indicating that their parents were worried about them. Similarly, parental anxiety about children's capabilities has been suggested by Hoffman (1972) to affect children's sense of competence.

Sex Differences in Adult Help Giving

Girls have been found to receive more help and comfort from parents in problem-solving situations than boys. In a number of studies, parents have been observed to utilize different teaching behaviour according to the sex of their child. In a problem-solving situation, mothers of preschool girls have been found to respond more quickly to requests for help and to mistakes (Rothbart, 1971; Rothbart & Rothbart, 1976) than did mothers of boys. Infant girls were observed to receive more immediate physical comfort from their mother after a frustrating experience than did boys (Lewis, 1972). Block and her associates (Block, Block, & Harrington, 1974) reported greater sex differentiation in the teaching behaviour of fathers than of mothers for preschool children on a battery of four cognitive tasks. Fathers of girls emphasized the interpersonal aspects of the teaching situation and were more protective, and less pressuring, while the fathers of sons stressed the achievement and cognitive aspects of the situation. Thus, when preschool children confront a difficult task, girls appear to

receive more help more quickly than do boys.

Sex Differences in Children's Play Activities

Recently, Huston (in press) has pointed out that children's play activities serve important socializing functions which help prepare children for their adult roles. Consistent and early sex differences have been found in parents' and teachers' encouragement and reinforcement of sex-typed play activities (Fagot, 1974, 1978; Fling & Manosevitz, 1972; Maccoby & Jacklin, 1974; Rheingold & Cook, 1975). Male and female preferred play activities differ starting at an early age and diverge consistently through adulthood (Kagan & Moss, 1962; Lever, 1976). At the preschool age, girls have been reported to spend more of their free-play time in activities highly structured by teacher feedback or availability of adult models in the home (Carpenter & Huston-Stein, 1980). Children were tested from five different classes and the specific activities with high or low levels of teacher feedback differed in each of the five classes. Thus, the sex difference in preferred activity seems to be the result of the adult-imposed structure rather than of other qualities of the particular activities. Similarly, preschool girls have been observed to play at an activity when teachers are present and modelling the activity more than boys do regardless of whether the activity is male or female stereotyped (Serbin, Citron, & Connor, 1976).

Furthermore, preschool girls have been found to receive more instructions than boys during free-play periods (Fagot, 1973). Due to parental and teacher reinforcement, girls' play activities appear to be more structured and adult directed than are boys' play activities.

Overall, girls tend to experience a socialization approach which requires proximity to home and parents, assigns household chores, provides supervision and protection, restricts exploration and active play, gives premature or unnecessary assistance in problem situations, and has more structured play activities; in contrast boys are more likely to be given greater freedom by and from adults. Thus, data from a variety of studies in different spheres of child socialization support the contention that girls are socialized into a world that is more controlled and directed by adults than are boys. This line of evidence suggests that girls will tend to be more reliant on adults in general, as well as in problem-solving situations, and such reliance will not tend to foster independent problem-solving skills, whereas boys will tend to be less reliant on adult help and to develop more independent problem-solving skills.

Sex Differences in Problem Solving with Adults

Block (1979), in her review of socialization practices affecting the cognitive development of children, suggested that boys and girls tend to be socialized to use

different cognitive heuristics when dealing with new experiences. Recently, Gold and her colleagues (Gold, Crombie, Brender, & Mate, in press) investigated the problem-solving approach of preschool children by examining boys' and girls' reliance on an adult model in a problem-solving situation. The problem-solving task was designed to evaluate how effectively a child solves problems in situations where cues are provided by an adult model. The results indicated that when the correct solution required learning to imitate an adult model's response, boys and girls performed equally well, however when the correct solution meant learning to do the opposite of an adult's response, girls performed significantly more poorly than did boys. Girls tended to persist longer in imitating the adult's response even when it did not lead to the solution and found it more difficult to switch to a strategy which required doing the opposite of the adult. These results are similar to earlier work by Mate-Ross (1973), who found that seven-to-nine year old girls were significantly poorer in problem solving than boys in an experimental condition involving a misleading adult model. These results lend support to the argument that girls and boys favor different cognitive styles (Block, 1979, 1981; Kagan, 1964; Lynn, 1969), with girls relying more on imitation, particularly of adults, in that they tend to copy patterns established by others, while boys rely more on independent, analytical problem-

solving techniques.

Sex Differences in Compliance to Adults

A general hypothesis of the present study is that girls' greater reliance on adults reflects girls' greater tendency to comply to adults and that such compliance to adults is expected to be negatively related to the development of independent problem-solving skills. Some support for this reasoning is provided by Maccoby and Jacklin's (1974) well-known review of psychological sex differences, in which they tentatively concluded that girls are more compliant to adults than are boys. Despite the scope of this work, Block (1976) has criticized their review for omitting many relevant studies which, when included, would have provided firm support for the thesis that girls are more compliant to adults than are boys at the younger ages at which compliance to adults has been studied. Minton, Kagan, and Levine (1971) observed that in the home infant girls more often complied with their mothers' first command, whereas boys were more likely to resist initially, requiring the repetition of the directive more often in order to obtain compliance. Similarly, preschool girls have been found to be more compliant to teachers' suggestions and directions (Bell, Weller, & Waldrop, 1971; Serbin, O'Leary, Kent, & Tonick, 1973), while boys have been observed to be more resistive to supervision (Baumrind, 1971). In experimental studies

of young school age children's resistance to temptation, generally girls have been observed to comply for a greater portion of time with an adult experimenter's request not to touch an attractive toy (Parke, 1967; Slaby & Parke, 1971; Stouwie, 1971, 1972; Ward & Furchak, 1968). More recently, in a longitudinal study of mother-infant interaction, Martin (1981) reported that girls were more compliant than boys at 10 months and 22 months, while at 42 months the sex difference was in the expected direction, but did not reach significance. Moreover, a substantial sex difference in the variability of compliance was found at 42 months, with the variance for boys being over nine times greater than the variance for girls. Thus, at the younger ages when compliance to adults has been investigated, there appears to be firm support that girls are more compliant to adults than are boys.

Girls' greater compliance to adults appears to be based, at least in part, on a greater need for adult approval. Caplan (1979), in a review of the literature on sex differences in aggression and achievement striving, suggested that girls have a greater need for the approval of adults than do boys. The presence or absence of an adult appears to have a sex-differentiated effect, in that the achievement and aggressive behaviour of males remained relatively constant, whereas females exhibited higher levels of achievement and lower levels of aggression in

the presence of an adult. Similar results have been reported by Dweck (Dweck, 1976; Dweck & Bush, 1976), who found that when boys' initial performance was negatively evaluated by an adult or peer, their subsequent performance was detrimentally affected by the peer evaluation but not by the adult evaluation, while girls' subsequent performance was negatively affected by the adult evaluation but not by the peer evaluation. It is also noteworthy that boys have been found to be more confident than girls in problem-solving situations and to be less likely to admit anxiety in general, while girls are more willing to admit fears and anxiety (Block, 1979, 1981; Stein & Bailey, 1973). These findings suggest that the greater compliance of girls to adults is linked to their greater expressed anxiety and fear of losing adult approval.

Compliance and Cognitive Competence

A moderate amount of parent-child distance has been found to be conducive to cognitive development in females (Baumrind, 1973; Hoffman, 1972; Maccoby & Jacklin, 1974; Stein & Bailey, 1973). This finding, combined with the data indicating that girls are socialized in a much more proximal and controlling style by parents and teachers, leads to the hypothesis that females experience too much parental rapport for optimal cognitive development. Maternal responsiveness appears to have different

consequences for girls and boys. Crandall, Dewey, Katkovsky, and Preston (1964) reported that maternal nurturance was associated with lower academic achievement for girls in grade school. In the Fels longitudinal study, Kagan and Moss (1962) found that adult achievement behaviour of females was positively related to early maternal hostility. Furthermore, adolescent females who tend to withdraw from achievement situations have been reported to have had highly accepting and affectionate mothers during their younger years (Kagan & Freeman, 1963). More recently with young infants, Martin (1981) has found that maternal responsiveness predicted willingness to explore for boys, while for girls maternal responsiveness predicted unwillingness to explore. In subsequent work, Martin and his colleagues (Martin, Maccoby, & Jacklin, 1981) identified two forms of maternal responsiveness: responsiveness to child's bidding and acceptance of child's nonbidding. They reported that the major source of the differential effect for girls' and boys' willingness to explore was mother's intrusiveness when her child was not bidding for interaction. For boys, mother's cooperative withdrawal during her son's nonbidding was associated with willingness to explore, while for girls mother intrusiveness when her daughter was not bidding for interaction was associated with willingness to explore.

Baumrind (1977, 1979) has reported that different parenting practices are associated with personal agency, that is independent, purposive behavior, for girls than for boys. Parental warmth and encouragement were related to personal agency for boys, while parental abrasiveness, coldness, and argumentativeness were associated with high personal agency for girls. Baumrind has suggested that resistiveness to adult authority and argumentativeness may indicate in girls that they are resisting sex role pressure to undercompete and underachieve. Coates (1972) has reported a positive correlation between aggression and intelligence in preschoool girls and a negative correlation for boys. Furthermore, in a longitudinal study, Sontag, Baker, and Nelson (1958) found that girls whose intelligence increased through childhood tended to be competitive, independent, and dominant. Maccoby and Jacklin (1974) in their review of the research concluded that the more bold, assertive girls showed greater intellectual abilities. The literature does indicate, then, that girls have greater parental rapport and are more compliant to adults than boys and that the more assertive girls, who are also probably less compliant, are intellectually advantaged. Compliance to adults appears to be a central factor in the link between socialization and the development of cognitive and problem-solving ability.

Parental Socialization, Compliance, and Cognitive Competence

Although it is suggested that the socialization girls receive and the compliance they display have decisive implications for their cognitive functioning, there is some evidence that certain aspects of the traditional female socialization pattern are associated with similar behaviour patterns in both boys and girls. In one of the first studies to examine authoritarian parenting and its relation to children's personality development, Baldwin and his colleagues (Baldwin, Kalhorn, & Breese, 1945; Baldwin, 1948, 1949) found that boys and girls of autocratic parents tended to be obedient and not resistive, and to lack curiosity and originality. More recently in longitudinal research, Baumrind (1977, 1979) has reported that for 8-to-9-year-old children authoritarian parenting was related to low cognitive agency for boys. In related research on one aspect of authoritarian parenting, the use of a directive teaching style in contrast to offering suggestions which allow the child more freedom of choice has been found more often among parents of grade-school children with low self-esteem than among parents of high self-esteem children (Loeb, Horst, & Horton, 1980). In a naturalistic observational study, the frequency with which children's activities were directed was significantly related to their performance on a standardized cognitive task, with

the frequently directed children displaying lower cognitive ability (Munroe & Munroe, 1978). Similarly, physical restriction on exploration has been found to be negatively related to the cognitive-intellectual development of infants (Wachs, 1976; White & Watts, 1973). Getzels and Jackson (1961) have reported that parents of children who were classified as highly creative accepted divergence and allowed risk taking in their children more than did families of less creative children. Thus, there is some evidence indicating that a restrictive and controlling socialization by parents, one which fosters compliance and obedience and which mirrors the normative female socialization pattern, has a deleterious effect on the cognitive development of both girls and boys.

Children's Play Activities, Compliance, and Cognitive Competence

In addition to socialization by parents, boys and girls are also socialized by the activities in which they participate (Huston, in press). Sex differences are reported in the choice of activity, with girls being observed more often in structured and directed activities during free play. However, when gender is held constant, relatively structured activities and environments have been found to be associated with similar behaviour patterns in boys and girls. In a recent study, Carpenter and Huston-Stein (1980) suggested that structured

activities may encourage children to follow patterns established by others and may foster compliance and dependence on adults. They reported that, although girls selected more structured activities than boys, preschool children of both sexes showed more compliance and less innovation when they played in highly structured activities. Furthermore, intolerance of ambiguity in preschool children has been found to be related to a more structured environment (Harrington, Block, & Block, 1978). The critical factor, then, is entering the activity, whereas the amount of structure in the activity appears to have a similar influence on both boys and girls. Thus, the more restricted and structured socialization which girls tend to receive and the greater compliance they display should inhibit the cognitive development of children in general, not just girls.

Compliance

Traditionally, children's compliance to adults has been studied within a social learning theory framework and the situational parameters that influence levels of compliant responding have been examined in an experimental setting (e.g., Sears, Rau, & Alpert, 1965). However, as is frequently emphasized, the experimental findings may not necessarily reflect the processes by which children's compliance to adults is socialized. Furthermore, in a recent literature review of socialization in the context

of the family, Maccoby and Martin (in press) suggested that in order to explain some of the inconsistencies in existing findings a distinction should be made between compliance that results from immediate situational pressures and compliance that appears to stem from a more generalized willingness to comply, that is, they distinguished between situational compliance and dispositional compliance. Support for this distinction is provided by research which has shown that preschool children are more compliant to another child's mother than to their own (Landauer, Carlsmith, & Lepper, 1970), that the moment-to-moment correlations between children's compliance and parental control techniques are different from the more long-term correlations (Lytton & Zwirner, 1975; Patterson, 1976), and that the effectiveness of various teaching and disciplinary methods appear to be different for short-term and long-term compliance (Chapman, 1979; Kuczynski, 1983). Thus, there is some indication that there are different processes underlying situational compliance and dispositional compliance which are the result of a long-term parent-child relationship. In his longitudinal research, Martin (1981) has found that by the fourth year a parent-child dyad can be characterized by its pattern of influence attempts and compliance. Through the interactive history of child and parents, children's dispositional compliance develops and patterns of parent-child interaction concerning compliance

become established (Lytton, 1980; Maccoby & Martin, in press; Patterson, 1976). In the present study, because children's general level of compliance and established parent-child socialization patterns are of greater interest, parental report data have been collected rather than an examination of moment-to-moment associations between discrete behaviours.

Studies have revealed associations between parents' specific socialization practices and children's social behaviour, such as compliance. The traditional approach in the socialization literature has been to view the child as a product of the environment, which is largely provided by the parents. However, children are rarely sufficiently obliging as to be so malleable. More recently, the active role of children in their socialization has been recognized, and some researchers (Bell, 1968; Yarrow, Waxler, & Scott, 1971) have argued that children have a major impact on their parents' behaviour. Studies of the correlates of compliance clearly indicate the reciprocal nature of parent-child compliance (Lytton, 1977; Schaffer & Crook, 1980). There is some indication, however, that for compliance the direction of effect is greater from the parent to the child. Lytton (1980) has stated that close observation of parents' interactions with their children revealed that parents' behaviour was more dependent on their own socialization goals and emotions than on the child's compliance behaviour. More recently, Lytton

(1982) reported that in home observations parents' influence outweighs the child's in the area of compliance. Although there is evidence that parents' behaviour influences children's compliance, the question of whether compliance is the product of socialization or whether socialization is partially designed to meet the child's compliance level, which may be determined partially by genetic factors, has not been definitively answered.

Traditionally, compliance has been defined in two ways: doing as one is requested or directed and, secondly, as an indicator of internalization of norms, such as in studies where compliance is observed in the absence of sanctions or authorities. The term compliance, as used in the present study, is intended to convey more than just obedience to adults; rather, it refers to a child's receptivity to and reliance upon all forms of adult influence, including suggestion and request as well as command. The theory of child development guiding this research suggests that, due to a combination of environmental and genetic factors, children learn to differ in their compliance or willingness to be directed by adults. Those children who are more compliant to adults (high compliants) learn to value adult approval more, learn to expect adults to aid them in problem situations, have more practice in solving problems with adults, and have less practice in solving problems independently. Those children who are less compliant to

adults (low compliants) find adult approval less reinforcing, are less attentive to adults in general including in problem situations, have less practice in solving problems with adults, and have more practice in solving problems independently. Thus, it is suggested that compliance to adults is related to the problem-solving competencies of children.

Socialization Model for Problem-Solving Competence

The socialization model which underlies this argument is depicted in Table 1. This model is not unique (Block, 1979, 1981), except for the emphasis on compliance. After a thorough literature search, it was concluded that the central link of compliance to adults and problem-solving skills has not been previously examined.

As summarized above, there is evidence that girls and boys are reared in different social and psychological contexts, with girls receiving less freedom from adult supervision and help than do boys. Research on the relation between parental socialization practices and children's compliance has tended to rely on global constructs of parenting behaviour (Baumrind, 1973; Block & Block, 1980). In the present research, more specific dimensions of parental socialization will be examined, that is, parental socialization practices which are expected to be related specifically to compliance and to the development of problem-solving competence.

Table 1

Socialization Model

Socialization differs for girls and boys.	Sex differences in compliance to adults.	Sex differences in problem solving with adults.	Sex differences in independent general problem solving competence.
Girls get more reinforcement for and practice in being directed by adults.	Girls rely more on adults and value adult approval more.	Girls tend to rely more on adults to solve their problems.	Girls tend to have more difficulty in solving problems independently.
Boys get more reinforcement for and practice in independent behaviour.	Boys rely less on and are less compliant to adults.	Boys tend to rely less on adults to solve their problems.	Boys tend to be better at solving problems independently.

There is also a fair amount of evidence indicating a sex difference in children's compliance to adults, with girls observed to be more compliant than boys as early as three years of age (Maccoby & Jacklin, 1974; Block, 1976). At this young age compliance is frequently considered to be a sign of maturity (Baumrind, 1973; Maccoby & Martin, in press). Due to their relatively greater cognitive maturity at this developmental stage, girls are possibly more attentive and responsive to parents' requests and directions and, thus, perhaps parents make more attempts to influence and have higher expectations for girls than boys at the preschool age. However, as parents' sex-role expectations become more polarized, this sex difference in compliance is expected to increase with age and to change its associations with competence and maturity.

With respect to the remainder of the model, there is some theoretical support (Block, 1979) and recent research findings (Gold et al., in press) which suggest that sex differences in problem solving with adults exist, with girls being more dependent on adult help than are boys. Sex differences in generalized problem solving have frequently been reported after the age of eight (Maccoby & Jacklin, 1974), with males performing better. Males are generally cited as being better than females at solving problems requiring analytical insight and reasoning (Bardwick, 1971; Block, 1976; Kagan, 1964). Amongst preschoolers, however, sex differences in generalized

problem solving are usually not found, although some sex differences in problem-solving performance have been found, with girls' performance being superior to that of boys (Coates, 1974; Garai & Scheinfeld, 1968; Maccoby & Jacklin, 1974). These latter results are usually attributed to girls' relatively greater maturity at this age, to test bias, or possibly, to girls' greater need for adult approval and better motivation. Thus, although the present research is designed to investigate the link between compliance and problem-solving ability, sex differences in problem solving are not expected at the preschool age as more time is required for the differential socialization of boys and girls to affect their problem-solving ability. Both Block (1979) and Huston (in press), in their review articles, have suggested that sex differences and sex differentiation increase with age as the effects of socialization become cumulative and as role-related expectations become more important to parents. However, if there is a link between the socialization of compliance and the development of problem-solving skills, then the investigation of preschoolers should permit the identification of the effect of compliance on individual differences in problem solving, without the confounding effects which are inherent in between-sex research. Consequently, with young children the proposed link of compliance and problem-solving competence can best be tested by using

within-sex comparisons. In summary, this socialization model indicates that to further our understanding of the development of problem-solving ability, the associations between parental socialization practices, compliance to adults, and children's problem-solving abilities should be examined. Two studies have been constructed to test hypotheses based on this line of argument.

STUDY I

In the first study the development of problem-solving competence was investigated by examining the relation between children's problem-solving abilities and their compliance to adults. Researchers have examined the relation between children's cognitive development and the amount of restrictiveness and structure in their socialization (e.g., Carpenter & Huston-Stein, 1980; Epstein & Radin, 1976; Munroe & Munroe, 1978). No studies, however, were found of the relation between children's compliance to adults and their problem-solving performance.

In the present study, assessments of children's compliance were obtained from both mothers and fathers. Earlier research has been criticized (Block, 1979; Maccoby & Jacklin, 1974; Loeb et al., 1980) for primarily investigating patterns of mother-child interaction, implicitly suggesting that fathers play a relatively minor role in children's socialization. Recently, the distinct contribution of fathers has not only been recognized (Block, 1978; Lamb, 1976; Lynn, 1969), but fathers also have been reported to differentiate between girls and boys more than do mothers (Block et al., 1974; Rubin, Provenzano, & Luria, 1974) and to show greater involvement with sons than with daughters, particularly with respect to sex-role and achievement socialization (Block, 1978;

Huston, in press). Thus, in the present study both mother's and father's assessments of their child's compliance were obtained. In addition, a situation-specific experimental measure of compliance was obtained in order to examine the relation between parental compliance ratings and an experimental measure of compliance.

The effect of children's compliance on their problem-solving competence was examined in two tasks. It was hypothesized that high compliant children would be more reliant on adult help in a problem-solving situation than would low compliant children. Children's performance on a task where they had to learn to imitate or to do the opposite of an adult model to reach the solution was examined. The high compliant children were expected to have the most difficulty in a condition which required doing the opposite of the adult. In addition, it was hypothesized that children who were more compliant to adults would have lower performance on a general measure of independent problem solving, one which involved no help from an adult model, than children who were less compliant to adults.

The development of problem-solving competence was also investigated by examining the relation between parental socialization techniques and children's level of compliance. This study was designed to determine if certain parental patterns of socialization, which have

been found to be used differentially with boys and girls (Block, 1979, 1981), were related to children's compliance and problem-solving competence in accordance with the bidirectional effects of parents' socialization patterns outlined earlier. This present study, although an attempt to link parental socialization techniques to children's compliance, is not an attempt to specify causal directions in associations between parental socialization techniques and children's compliance.

METHOD

Design

The design of the study involves two independent variables, children's compliance level and gender. Children's compliance was divided into two levels, thereby resulting in four groups of children. Children's compliance level was assessed by a situation-specific, experimental measure and by mother's and father's ratings of their child's general level of compliance. Mothers' and fathers' compliance ratings were used separately to select two sets of the four groups of children. In addition, the design includes dependent variables which assess children's problem-solving competence and parents' socialization techniques. Children's problem-solving performance was measured on two conditions of an experimental task under a repeated measures design and

also on a general measure of independent problem solving.

Participants

Children were recruited from five nursery and day-care centers located within the vicinity of the city of Montreal. Children were included in the study if they were English-speaking and between the ages of four and five. Parental permission was obtained for all child testing. The return rate for the parent questionnaire was 52% for mothers and 43% for fathers, which resulted in a sample of 66 children for whom maternal data were available, 55 children for whom paternal data were available, and 52 children with data from both parents. Due to matching procedures, ten children were excluded from the sample of children selected by mothers' compliance ratings, while two children were omitted from the sample of children selected by fathers' compliance ratings. In addition, on the owl task measure of problem solving, three children were excluded as they did not reach the task criterion. The resulting samples of children are presented in Table 2 for both sets of four groups of children required by the design of the study. Means are presented for the matching variables of children's age, verbal intelligence (Dunn, 1959), and fathers' socioeconomic level.

The large majority of the children (92%) came from two-parent homes with full-time employed fathers and with most mothers being at home full time (65%). Most

Table 2

Means and Standard Deviations of Matching Variables for Groups Selected by Fathers' and Mothers' Compliance Ratings

		Low Compliant		High Compliant	
		Boys	Girls	Boys	Girls
By Fathers' Compliance Ratings					
Characteristics	n	13	13	12	12
Age (in months)		58.54 (4.52)	57.15 (4.52)	55.08 (4.42)	58.00 (4.07)
PPVT scores		109.85 (18.38)	115.54 (11.18)	122.33 (7.38)	111.42 (9.73)
SES scores		2.31 (0.95)	2.31 (0.95)	2.00 (0.60)	2.50 (1.00)
By Mothers' Compliance Ratings					
Characteristics	n	17	18	10	8
Age (in months)		58.06 (5.04)	56.33 (4.75)	56.70 (4.08)	57.88 (3.94)
PPVT scores		114.47 (9.45)	112.83 (10.34)	119.80 (9.90)	114.75 (8.65)
SES scores		2.40 (.83)	2.25 (.58)	1.89 (.60)	2.25 (.89)

Note. Standard deviations are in parentheses.

families' (71%) socioeconomic status, as assessed by father's occupation, was classified in the highest two of five socioeconomic levels (Blishen & McRoberts, 1976). None of the children were perceived by their teachers as having a serious behaviour problem.

Procedure

The children were examined in three individual sessions by two female examiners, who were trained to interact with the children in a similar fashion. In a recent study, Gold and her colleagues (Gold et al., in press) found that preschool children's problem-solving performance was not affected by the gender of the experimenter. The sessions were spaced at approximately two month intervals, and each experimenter administered different tests to the children.

In the first session, the children received the IT Scale for Children-Neutral Version (Dickstein & Seymour, 1977) and the Peabody Picture Vocabulary Test (Dunn, 1959) to assess sex-role preference and verbal IQ. In the second session, the children were tested on the New Owl Task, which was designed to assess children's compliance in a specific task situation. The children were also given the Think It Through subtest of problem solving ability from the Circus preschool assessment battery (Anderson, Bogatz, Draper, Jungeblut, Sidwell, Ward, & Yates, 1974; Bogatz, 1979). In the last session, the

children's performance on the Old Owl Task (Gold et al., in press) was tested under two conditions in a repeated measures design in order to measure children's ability to solve problems by learning to imitate or to do the opposite of an adult model. Within each session, the order of the tests or conditions of the Old Owl Task was completely counterbalanced.

Questionnaires for the parents were sent home, and the completed forms were returned to the centers by the children. In addition, information about the family background of the children was obtained from school records. The teachers completed evaluations of the children's behaviour in the school.

Measure of sex-role preference. A neutral version of the IT Scale for Children (see Appendix A) was administered to the subjects as a measure of sex-role preference. The original IT Scale for Children (ITSC) was constructed by Brown (1956) as a measure of sex-role preference and consists of 36 picture cards of sex-typed objects and a neutral child named IT. Subjects select items they think IT would prefer. A subject's score is based on three differentially weighted subtests: 8 points for the toy-choice subtest, 64 points for the adult and childhood sex-roles subtest, and 12 points for the child figures subtest. The ITSC is a standardized test with moderate test-retest reliability (i.e., an interval of

approximately one month), .71 and .84 for boys and girls, respectively (Brown, 1956). The test is simple to administer and takes approximately 10 minutes, which is within the attention span of most preschool children.

The ITSC has received some criticism. In particular, Brown's scoring system has been criticized for not taking into consideration the overall order of the child's choice (Edelbrock & Sugawara, 1978; Thompson & McCandless, 1970) and for its seemingly arbitrary assignment of subtest weights, particularly as the lowest subtest weight is assigned to the toy-choice subtest, when the effectiveness of toy choices in discriminating between young boys and girls has been demonstrated (DeLucia, 1963; McCandless, 1965).

In the present study, a neutral version of ITSC was administered. The structure of the original ITSC (Brown, 1956) has been criticized in that the test offers only two extreme choices, items strongly sex-stereotyped feminine or masculine. This test format does not appear to offer a wide enough range, particularly for boys. Dickstein and Seymour (1977) investigated the effect of adding neutral items to the ITSC, and their results indicate that the addition of neutral items broadens the range of choices of boys and thus appears to provide a more valid measure. Thus, in this study, neutral items were added, and the scoring system was adjusted with neutral choices being assigned a value midway between the masculine and feminine

values (Dickstein & Seymour, 1977). Because the assumption that the IT stick figure is gender-ambiguous has been criticized (Brown, 1962; Endsley, 1967; Thompson & McCandless, 1970), the IT was concealed inside an envelope, and the children were asked to imagine IT (Fling & Manosevitz, 1972; Sher & Lansky, 1968). In addition, because the original drawings are not as clear or attractive as one would like, the pictures were redrawn in a more attractive format.

A subject's sex-role preference was scored in the direction of same-sex preference. Subjects' scores were approximately normally distributed with a range between 20.0 and 78.0, a mean of 53.9, and a standard deviation of 11.5.

Measure of verbal intelligence. The Peabody Picture Vocabulary Test (PPVT; see Appendix B) was administered to the subjects as a measure of verbal intelligence. This test was constructed by Dunn (1959) to provide a measure of verbal intelligence through assessing a subject's receptive vocabulary. The PPVT is an untimed individual test, which can be administered in 15 minutes or less. The test is attractive and is interesting to most children. The PPVT has been evaluated as being the best of its kind in its discriminating ability at the lower ages (Piers, 1965). Construct validity has been demonstrated by studies which have correlated the PPVT

with other intelligence tests. The PPVT has been found to correlate most highly with other measures of vocabulary, with a median correlation of .71 and to correlate moderately well with other tests of verbal intelligence, with a median correlation of .71 and .62 for the WAIS and Stanford-Binet, respectively (Dunn & Dunn, 1981).

In the present study, children's PPVT scores were approximately normally distributed and ranged between 76 and 138, with a mean of 113.8.

Measures of compliance. Two approaches were used to assess compliance; a general measure and a situation-specific measure.

General measure of compliance. The general measure was constructed to assess parents' perceptions of their child's general level of compliance. Mothers and fathers independently completed a scale rating how compliant their child was in comparison to other children of the same age (see Appendix C, item 19). The response format was a 5-point, Likert-type scale consisting of the following responses: A Lot More Than Other Children, More Than Other Children, The Same As Other Children, Less Than Other Children, A Lot Less Than Other Children.

The distributions of mothers' and fathers' compliance ratings are displayed in Appendix D. Mothers' ratings were positively skewed, with a heavy grouping of ratings (71%) at the low compliant pole, while fathers' compliance

ratings were more normally distributed. In addition, this differential pattern of mothers' and fathers' distributions was also present when girls and boys were considered separately. Children who were rated by their parents as being above or below the median compliance rating for their own sex were selected for the study. A median division of parents' compliance ratings was chosen to select high and low compliant children because children's general level of compliance is conceptualized as a dichotomous variable. The skewness in the distribution of mothers' compliance ratings supports a median split.

Correlation coefficients were calculated in order to evaluate the extent of agreement between mothers' and fathers' compliance ratings. Parents' compliance ratings were found to be correlated at a low level, $r(50) = .19$, $p < .10$, with the amount of association low and not significant for both girls, $r(23) = .13$, ns, and boys, $r(25) = .25$, ns. Because of the low level of association between parents' compliance ratings, and because previous research findings and conceptualizations have provided support for the suggestion that mothers and fathers have different perceptions of their children (Block, 1978; Lamb, 1976; Huston, in press), mothers' and fathers' compliance ratings were used separately to select two sets of high and low compliant girls and boys.

Test-retest reliability was assessed by having parents complete the parent questionnaire approximately one year later. Since addresses and permission were obtainable for only 45% of the parents, and a return rate of 23% on the mailed questionnaires was achieved, this retest provided only a small sample of 10 parents. The test-retest reliability coefficient, after one year, on this sample was .60, $p<.05$.

Situation-specific measure of compliance. Compliance was also assessed by a situation-specific experimental measure of compliance. An experimental measure of compliance on a choice discrimination task (New Owl Task) was developed based upon the work of Winston & Redd (1976). A diagram of the apparatus for the New Owl Task is presented in Appendix E. The apparatus consisted of a wooden box, .33m by .28m by .40m, with a brightly colored owl painted on the front. Two large levers were located on the front of the box underneath the owl and two small lights were positioned as the owl's eyes. On the New Owl, the children's task was to make the owl's eyes light by pressing one of two buttons. The children were given an initial learning period, during which all children quickly learned that button A always made the owl's eyes light, while button B did not. After children reached the criterion of four consecutive correct button presses, they were reinforced by verbal praise and were told they were

to start again to try to make the owl's eyes light. The adult experimenter suggested that the child press button B this time and then left the room, since previous work indicates that presence of an adult observer reduces noncompliance (Winston & Redd, 1976). The children's responses were automatically recorded. The measure of compliance was the number of trials the child conformed to the adult's suggestion by pressing button B, which continued to not make the owl's eyes light, before switching to button A, which in the child's own experience had made the owl's eyes light and continued to do so. The correlation coefficient between the number of trials to criterion in the learning period and the number of initial conforming trials in the compliance period was not significant, r (126) = .05, ns, thus indicating that the compliance period was measuring more than just a learning process.

Measure of generalized independent problem solving. The Think It Through subtest (see Appendix F) from the Circus preschool assessment battery, Form A, (Anderson et al., 1974; Bogatz, 1979) was used to assess children's generalized ability to solve problems independently. The test has a non-verbal cartoon format, designed to evaluate children's ability to identify problems, to discriminate and classify objects on the basis of their physical properties or functions, to evaluate solutions, and to

identify usual sequences of events or activities. The test consists of two practice and 32 test items. On presenting each item, the examiner asks a question and the subject responds by selecting the correct answer out of a possible three or four answers depicted in cartoon-like pictures. Problem identification (i.e., items 1 to 6) and time sequence (i.e., items 10 to 14) are measured by items in which the examiner asks the child to mark one of three pictures that "has something wrong" or "that shows what happens first". For 14 of the classification items (i.e., items 19 to 32), the examiner shows the child a picture of three things, and then asks them to mark, from three response pictures, "the one they go best with". For three items (i.e., items 7 to 9), the child marks one of four pictures that "does not go with the others". The items which measure solution evaluation (i.e., items 14 to 18), present a picture of a problem, for example, "Clarence wants to get some cookies from a jar on a high shelf but he can't reach it". The child marks, from three pictures of possible solutions, the picture he thinks shows the "best" way to solve Clarence's problem. The test is attractive and the Circus theme has been found to appeal to boys and girls alike. The Think It Through subtest is an untimed test which can be administered individually in approximately 15 minutes or less. Administration and scoring of the test is straightforward and does not require specialized training.

Standardization of the Think It Through subtest from the Circus preschool assessment battery, Form A, was based on a sample of 273 children, who were drawn from 20 nursery school classes (Bogatz, 1979). The standardization sample included children from four regions of the United States. The mean score for the children, who were between the ages of 4.4 years and 5.3 years, was 21.53 with a standard deviation of 5.67. Scores were not reported separately for girls and boys. Based on this standardization sample, alpha coefficients of reliability have been calculated as a measure of the test's internal consistency. For the total 32 items, the alpha coefficient of reliability was moderate at .82, while for the Classification subscale and for the Solution Evaluation and Time Sequence subscale, alpha coefficients were .76 and .63, respectively.

With respect to concurrent validity, the authors report a validity study conducted on 600 kindergarten children in which the teachers were asked to rate each child's ability in the areas that the Circus subtests measured. A significant correlation coefficient of .38 was found between teachers' judgements of the children's problem-solving ability and the Think It Through problem-solving subtest. Support for the validity of the Think It Through subtest as a measure of problem-solving ability is largely based on the theoretical and empirical information about early child development which underlie the item

construction and thus influence the face validity of the test (Anderson et al., 1974).

In the present study, Think It Through scores were approximately normally distributed with a range between 14 and 31, a mean of 21.3, and a standard deviation of 3.7, which is comparable with the standardization sample of four-to-five-year old children (Bogatz, 1979). For all the children in the study, the correlation between Think It Through scores and verbal IQ as measured by children's receptive vocabulary on the PPVT was not significant; however, for low compliant children, a positive correlation coefficient was found for boys, $r(13)=.37$, $p<.10$, while a negative correlation coefficient was found for girls, $r(10)=-.55$, $p<.05$. Within the age range of the present study, a low correlation coefficient occurred between age and Think It Through scores, $r(50)=.30$, $p<.05$.

Measure of problem solving with an adult model. The Old Owl Task, which is based on a task used by Mate-Ross (1973), has been used previously by Gold and her colleagues (Gold et al., in press). The Old Owl Task was used to measure children's problem solving under two conditions: problem solving requiring the direct imitation of an adult model's response and problem solving requiring reverse imitation of an adult's response. A repeated measures design was used, with the children receiving both the direct imitation and reverse imitation

conditions in counterbalanced order.

The task used by Mate-Ross (1973) was developed to determine if prior observation of an adult's response produced greater interference on subsequent learning of an alternate response than that produced by the child learning an initially correct response which then became incorrect through their own direct experience with the task. Children's learning of the alternate response, without any prior observation of or experience with an interfering response, was also measured. The subjects were between seven and nine years of age, and after an initial introduction to the task they worked independently, except for the condition when the subjects observed the adult model. The task was designed such that the initial response was a press-reward contingency, an active response, while the subsequent, alternate response was a no press-reward contingency, an inactive response.

On the Old Owl Task (Gold et al., in press), the condition of problem solving requiring reverse imitation of an adult's response was based on Mate-Ross's condition of the child learning the alternate response after observing an adult perform successfully with an initial response. On the Old Owl Task, a second condition was constructed which was problem solving requiring the direct imitation of an adult's response. Pilot work indicated that the mastering of the no-press contingency, an inactive response, was too difficult for most preschool

children, thus, the procedures were simplified to make them more appropriate for children at the preschool level.

The owl apparatus was described in detail in an earlier section (see Appendix E). The child was given the problem of making the owl's eyes light by choosing and learning the correct sequence of three lever presses. The child was reinforced for succeeding in the task by the owl's eyes lighting, by verbal praise from the adult model at each turn, and by being allowed to choose a brightly colored sticker from a wide selection at the end of the task. Pilot work with a sample of 35 four-year-old boys and girls had indicated that from a group of potential stimuli, the owl picture was equally selected by both as suitable for a boy and girl. Consequently, the Old Owl Task can be regarded as sex-role neutral.

The Old Owl Task was introduced to the subjects using a standardized set of instructions which were the same for both conditions (see Appendix G). The children were instructed as follows. "Let's go play the Owl Game. To play the game, you want to get the owl's eyes to light up. How do we get the eyes to light up? Well, you press these buttons three times. Now there are three different ways you can press these buttons three times and the eyes will light up. I am going to show you the three different ways." The adult model then demonstrated three different sequences of three lever presses which varied direction of movement from right to left levers and number of presses

(one or two) on each lever (see Appendix G). The model continued, "So there are three different ways you can press the buttons three times and the eyes will light up. Sometimes one way works, and sometimes another way works. I'll go first." The adult model always chose the second sequence. "Now it's your turn and remember there are three different ways you can press the buttons three times."

The model took the first turn and, using the second demonstrated sequence of lever pressing, succeeded in lighting the owl's eyes in one trial. The next turn, which contained four consecutive trials, was the child's. If the child did not succeed on these four trials, the instructions were repeated, the adult model demonstrated another successful trial using the same sequence she had previously used, and the child had another turn of four trials. The procedure was repeated until the child reached the criterion of four successful consecutive trials or until the whole procedure had been repeated six times without the child reaching criterion. At that point, the child was reinforced on the next four trials regardless of the sequence of presses performed, thanked, and returned to the classroom.

In the direct imitation condition, the child was reinforced by verbal praise and the owl's eyes lighting whenever she or he imitated the model's sequence. The reverse imitation condition required that to succeed the

child had to learn to do either of the two sequences, other than the one made by the adult model. In both conditions after every four unsuccessful trials by the child, the model consistently repeated the instructions, performed the same sequence of presses, and reminded the child that there were three different ways to cause the owl's eyes to light, but did not give the child any further cues. Sequences of lever presses other than the three sequences repeatedly demonstrated by the model were not considered as appropriate responses.

Children's scores for the direct imitation condition ranged from 4 to 24, with a mean of 9.1 and a standard deviation of 4.9. For reverse imitation, the scores ranged from 4 to 24, with a mean of 12.1 and a standard deviation of 6.3.

In both the New Owl measure of compliance and the Old Owl measure of problem-solving with an adult model, the children were presented with a goal to be achieved via a choice discrimination task. However, in the compliance measure (New Owl), the task was relatively easy since the children were given an explicit suggestion with which to comply, and a specific course of action was indicated. In the problem-solving measure (Old Owl), the task was much more difficult, no explicit directive to comply was given, and instead of a specified course of action being indicated to the children, they had to learn to use the cues provided by the adult model in different ways.

Measure of parental socialization techniques. Mothers and fathers independently completed questionnaires (see Appendix C) based on the work of Fagot (1978) and Block (1979, 1981). The questionnaire was designed to indicate parents' use of the following four socialization techniques: reinforcement of children for proximity, reinforcement of children for compliance, the giving of assistance to children when they are having difficulty in doing activities, and demonstration and modelling by the parents to children of how to perform certain activiites. The individual items which assessed parents' socialization techniques are displayed separately for each of the four socialization techniques in Appendix H. The response format was a 5-point, Likert-type scale consisting of the following responses: Very Often, Often, Sometimes, Seldom, Not At All. The return rate for the parent questionnaires was 52% for mothers and 43% for fathers.

Test-retest reliability was assessed by having parents complete the parent questionnaire approximately one year later. Test-retest reliability coefficients on the socialization items, for the sample of 10 parents, ranged from .89 to .26 with a median correlation coefficient of .48.

RESULTS

Four groups of children, high and low compliant girls and boys, were required by the design of the study. Compliance was assessed by two methods, using an experimental situation-specific measure and a general measure of parents' ratings of their child's level of compliance. The situation-specific experimental measure of compliance did not correlate significantly with fathers' ratings of compliance, had a low negative association with mothers' ratings of compliance, $r(64) = -.20$, $p<.10$, and did not correlate with other child measures. In contrast, mothers' and fathers' ratings of compliance did show a number of significant associations with child measures. Due to these empirical results, and since a general measure of compliance is of greater theoretical interest, parents' ratings of their child's general level of compliance were used in the subsequent analyses. As mentioned above, mothers' and fathers' compliance ratings had different patterns of distributions and were correlated at a low level (i.e., $r=.19$); consequently, their ratings were used separately to select two sets of four groups of high and low compliant girls and boys. Those children who were rated as above or below the median for their own sex were selected for the study. Interestingly, there were no significant differences between girls and boys on fathers' or mothers' ratings of

compliance.

The analysis of the data for the four groups of subjects selected by the fathers' ratings is reported first, followed by the analysis of the data for the four groups selected by the mothers' ratings.

A 2x2 analysis of variance for the factors of compliance (low, high) and sex (male, female) was performed on the Think It Through scores of problem solving (see Appendix I). As predicted, there was a main effect of compliance, $F(1,47) = 7.42$, $p<.01$, with the less compliant children scoring significantly higher than the more compliant children (see Table 3).

A 2x2x2 analysis of variance for the factors of compliance (low, high) and sex (male, female), with repeated measures on the factor of condition of imitation (direct, reverse) was performed on the number of trials to criterion on the Old Owl Task of problem solving with an adult model (see Appendix I). The expected main effect of condition of imitation was significant, $F(1,46) = 10.30$, $p<.005$, with the reverse imitation condition requiring more trials than the direct imitation condition (see Table 3). The interaction of sex and compliance also reached significance $F(1,46) = 4.09$, $p<.05$, with the high compliant girls performing better overall on the two conditions of imitation than the high compliant boys, Scheffé, $p<.10$. The data were examined for possible effects due to presentation order of the two conditions of

Table 3

Problem-Solving Means and Standard Deviations for Groups Selected by Fathers' Compliance Ratings

	Low Compliant		High Compliant	
	Boys	Girls	Boys	Girls
Problem-Solving Scores[a] n	13	13	12	12
Old Owl, direct imitation	9.85 (3.51)	8.62 (4.57)	10.67 (3.55)	6.33 (3.17)
Old Owl, reverse imitation	10.46 (5.78)	12.92 (5.92)	13.33 (5.21)	11.00 (5.69)
Think It Through[b]	21.67 (3.46)	23.83 (3.51)	19.75 (3.55)	20.42 (3.20)

Note. Standard deviations are in parentheses.

[a] Higher scores on Old Owl indicate poorer performance, while higher scores on Think It Through indicate better performance.

[b] Analyses of Think It Through scores were conducted on a slightly different sample due to the requirement of having both mother and father data on subjects for subsequent discrimination function analyses and due to the retention of three subjects who did not reach criterion on the Old Owl Task (n = 15, 12, 12, 12, for the low compliant boys and girls and for the high compliant boys and girls, respectively).

imitation, direct and reverse. A 2X2X2 analysis of variance for the factors of compliance, sex, and order of presentation was conducted on children's scores for both conditions of imitation. Neither the order of presentation, nor its interaction with sex or compliance had significant effects upon children's performance (see Appendix J).

The parents' reported socialization techniques were examined for the children selected according to their fathers' ratings of compliance. A 2x2 multivariate analysis of variance for the factors of compliance and sex was performed on the fathers' use of four socialization techniques: reinforcement of proximity, reinforcement of compliance, help giving, and use of modelling (see Appendix K). The multivariate effects were not significant; however, as the Bartlett test of sphericity indicated that the four variables were not intercorrelated significantly, $\underline{X}^2(6) = 3.81$, $\underline{p}=.71$, the univariate effects were examined (Hummel & Sligo, 1971). The sex and compliance interaction for the scale assessing use of modelling by the fathers was significant, $\underline{F}(1,47)=4.05$, $\underline{p}<.05$. Fathers reported greater use of modelling (e.g., demonstrating and helping the child in activities) with the boys they perceived as high compliant and less use with the low compliant boys and the high compliant girls, Scheffé, $\underline{p}<.10$ (see Table 4).

Table 4

Socialization Means and Standard Deviations for Groups Selected by Fathers' Compliance Ratings

	Low Compliant		High Compliant	
	Boys	Girls	Boys	Girls
Paternal Scores n	15	12	12	12
R. of Proximity	9.33 (1.84)	10.00 (1.54)	10.00 (1.76)	9.33 (1.97)
R. of Compliance	10.40 (1.24)	10.92 (1.00)	11.25 (1.29)	10.92 (1.68)
Help Giving	5.93 (.96)	5.83 (.83)	5.58 (1.44)	6.00 (1.41)
Use of Modelling	15.93 (1.71)	16.67 (1.15)	17.17 (2.44)	15.75 (2.09)
Maternal Scores				
R. of Proximity	9.47 (2.36)	9.00 (2.22)	8.67 (1.92)	9.25 (1.06)
R. of Compliance	11.13 (1.19)	11.75 (1.42)	8.67 (1.51)	9.25 (.85)
Help Giving	6.80 (1.01)	6.58 (.79)	5.75 (1.48)	6.33 (.89)
Use of Modelling	16.40 (2.06)	17.50 (2.28)	16.00 (1.65)	16.50 (1.57)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

The analysis of the mothers' socialization scores for the boys and girls selected according to their father's compliance evaluations, showed a consistent pattern (see Appendix K). The factor of compliance had a significant multivariate main effect, $F(4,44)=4.26$, $p<.005$, with mothers' giving assistance when their child is having some difficulty with a task, $F(1,47)=4.94$, $p<.05$, and reinforcement of compliance, $F(1,47)=9.94$, $p<.005$, attaining statistical significance. Mothers reported giving more assistance to and reinforcing compliance with the less compliant children, regardless of the sex of the child (see Table 4).

The analysis of the data for the four groups of children, selected according to their mothers' evaluations of their compliance, showed fewer results. The analysis of variance for the Think It Through test of problem solving failed to reveal significant effects for compliance level or for gender of child (see Appendix L). The repeated measures analysis of variance on the Old Owl Task of problem solving with an adult model (see Appendix L) demonstrated a significant effect only for the factor of condition, $F(1,49)=9.13$, $p<.005$, with the reverse condition being more difficult for the subjects (see Table 5). Neither compliance, sex, nor their interaction had significant effects on the maternal or paternal socialization scores for these four groups (see Table 6) (see Appendix K).

Table 5

Problem-Solving Means and Standard Deviations for Groups Selected by Mothers' Compliance Ratings

		Low Compliant Boys	Low Compliant Girls	High Compliant Boys	High Compliant Girls
Problem-Solving Scores[a]	n	17	18	10	8
Old Owl, direct imitation		10.12 (4.27)	7.56 (4.31)	10.00 (3.40)	6.50 (2.98)
Old Owl, reverse imitation		13.18 (6.13)	10.67 (5.13)	9.20 (4.64)	12.50 (5.83)
Think It Through[b]		21.33 (3.44)	22.00 (4.07)	19.71 (3.04)	22.83 (3.54)

Note. Standard deviations are in parentheses.

[a] Higher scores on Old Owl indicate poorer performance, while higher scores on Think It Through indicate better performance.

[b] Analyses of Think It Through scores were conducted on a slightly reduced sample due to the requirement of having both mother and father data on subjects for subsequent discrimination function analyses. Three subjects who did not reach criterion on the Old Owl Task were retained (n = 15, 16, 7, 6 for the low compliant boys and girls and for the high compliant boys and girls, respectively).

Table 6

Socialization Means and Standard Deviations for Groups Selected by Mothers' Compliance Ratings

		Low Compliant		High Compliant	
		Boys	Girls	Boys	Girls
Paternal Scores	n	15	16	7	6
R. of Proximity		9.13 (1.81)	9.75 (1.29)	10.71 (1.11)	9.50 (2.59)
R. of Compliance		10.53 (1.25)	11.00 (1.03)	11.14 (1.57)	11.00 (2.19)
Help Giving		5.93 (1.22)	6.19 (1.05)	5.57 (1.40)	5.83 (.75)
Use of Modelling		16.93 (1.91)	16.06 (1.73)	17.00 (2.45)	16.83 (1.72)
Maternal Scores					
R. of Proximity		9.27 (2.60)	9.44 (1.86)	8.71 (1.38)	8.50 (1.38)
R. of Compliance		10.73 (1.53)	10.88 (1.54)	11.00 (1.00)	11.00 (1.26)
Help Giving		6.40 (1.24)	6.31 (.70)	5.86 (1.77)	6.83 (1.17)
Use of Modelling		16.27 (1.53)	16.69 (2.27)	16.00 (1.41)	17.83 (.98)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

In order to determine what variables best identify children who are competent problem solvers, a stepwise discriminant function analysis was conducted on fourteen variables of the study. A stepwise discriminant analysis is considered to be preferable to the standard method of including all the variables at once when the number of predictor variables is large, especially if the sample sizes are not commensurately large (Tatsuoka, 1976). Because of the relatively small sample size of 52 subjects for whom both mothers' and fathers' data were available, the girls' and boys' data were analyzed together. Both mothers' and fathers' compliance ratings and socialization practices were examined to assess their relative power in discriminating between high and low problem solvers as measured by the Circus Think It Through scale of general problem solving. Children were selected as high or low problem solvers if their problem-solving score was above or below the median for their own sex. Since no effect of the order of entry of the variables was predicted, an empirical investigation of the possible effects of different entry orders on group classification results was conducted. The matching variables were always entered first, while the remaining variables were combined into four groups of variables: mothers' socialization variables, fathers' socialization variables, mothers' compliance ratings, and fathers' compliance ratings. The order of entry of these four groups of variables was

varied. The percent of correct classification ranged between 70.6% and 72.6% for the 24 entry orders considered, indicating that one order of entry was not significantly better than the others. Thus, the order of entry of variables was only partially controlled, with four matching variables (i.e., age, IQ, SES, ITSC) being considered first and then parents' eight socialization variables and two compliance ratings entering individually in the order in which they met the criterion of largest increase in Rao's V. The discriminant analysis resulted in a significant function composed of six variables, $\underline{V}(6)=16.68$, $\underline{p}<.01$. Of these six variables, only the addition of fathers' compliance rating produced a significant change in Rao's V (see Table 7). Inspection of the standardized canonical discriminant function coefficients revealed that fathers' compliance ratings contributed the largest weight to the discriminant function. When the group centroids were examined in conjunction with these coefficients, the results indicated that high problem solvers were maximally distinguished from low problem solvers on the basis of being considered as less compliant by their father. This function correctly classified 70.6% of the children as high or low problem solvers, with 73% of the high problem solvers classified successfully as compared to 68% of the low problem solvers.

Table 7

Changes in Rao's V, Standardized Discriminant Function Coefficients and Group Centroids for Function Discriminating High and Low Problem Solvers

Variables	Change in Rao's V	Standardized Canonical Discriminant Function Coefficients	Function Evaluated at Group Means (Group Centroids)
Age	3.51	-.5991	
SES	3.24	.4124	
Fathers' Compliance Ratings	6.67*	.9559	Group
Mothers' Help Giving	3.21	.7269	High Problem Solvers -.6354
Mothers' Compliance Reinforcement	1.89	.5459	Low Problem Solvers .6608
Mothers' Use of Modelling	2.90	-.4571	

* $p < .01$

DISCUSSION

The results of the study lend some support to the hypothesis that in girls and boys without apparent behaviour problems, compliance is negatively related to independent problem-solving performance. However, although the data support the hypothesis that children who are less likely to defer to adult authority are more likely to be able to solve problems on their own, the data also force a reconsideration of another hypothesis of the study. It had been predicted that on the Old Owl problem-solving task with an adult model, a compliance X condition of imitation interaction would emerge, with the high compliant children doing most poorly when required to do the opposite of an adult model. Such a result would have occurred if greater compliance was the factor responsible for the poorer performance of girls in this condition in the Gold et al. study (in press). However, girls' performance was not poorer in this condition in the present study. The use of a repeated measures design for the conditions of direct and reverse imitation on the Owl Task differentiate the present study from the previous one. Although no significant effects were found for the presentation order of the two conditions (see Appendix J), girls' performance in the present study under a repeated measures design was better in both conditions than in the Gold et al. study, regardless of the sex of the model,

while boys' scores tended to be lower (see Appendix M). For both girls and boys, these effects were particularly evident for the high compliant children. It appears that girls' and boys' performances are affected differentially by whether the design of the study is a repeated or non-repeated measures design, with the girls, particularly the high compliant girls, benefiting from repeated test opportunities. The repeated measures design might allow the importance of the adult model's role to become more evident, something to which girls might be more receptive, especially high compliant girls. Furthermore, the children in this study had prior experience with the owl apparatus when they were assessed on the experimental measure of compliance. This measure preceded the examination of children's problem solving on the Old Owl Task and provided another opportunity for the children to recognize the possible relevance of the adult's role. Thus, in the present study employing a repeated measures design girls did not do more poorly than boys in the reverse imitation condition.

A second difference between the two studies is that compliance was not measured in the Gold et al. study. In the present research, girls and boys appear to be equal in compliance, in that they were not found to differ on compliance level as rated by mothers or fathers. It is possible that in the previous study girls and boys did differ in compliance, with the girls being more compliant

and that this difference was responsible for the poorer performance of the girls in the condition which required that they do the opposite of an adult model. However, since compliance was not assessed directly in the Gold et al. study, firm conclusions cannot be made concerning the possible mediating role of compliance.

In the present research, compliance as assessed by fathers did have an effect on children's problem-solving performance with an adult. There was a sex X compliance interaction, with the high compliant girls performing better than the high compliant boys as measured by their overall performance in the two conditions of imitation. The high compliant girls' better performance in the reverse imitation condition was not expected. In a repeated measures design, as mentioned above, compliance seems to help girls' problem solving with an adult, whereas for boys, high compliance appears to have a detrimental effect on performance. It is interesting that it was the high compliant boys who received more use of modelling from fathers, a fact which might account for why they had more difficulty doing the reverse of a successful adult model. Thus, high compliance appears to affect differentially girls' and boys' problem solving with an adult.

The results of the present study can be interpreted as suggesting that compliance is not simply negatively related to problem-solving competence. It is possible

that, in girls at least, high and low levels of compliance are linked to specialization in problem-solving skills, with low compliant girls becoming better at solving problems by themselves while high compliant girls become more adept at solving problems with other people. Girls who are highly compliant to adults are most likely better at utilizing cues the adult provides. Ausubel (1958) has pointed out that the ability to use adults as resources appears to facilitate development, and Baruch and Barnett (1981) found that adult orientation emerged as the strongest factor in their study of the competence-related behaviour of preschool girls. It is possible that these girls expect adult behaviour to be a guide to their own behaviour to a greater extent than do other children, and so are more attentive to this behaviour and therefore have a more receptive set to the cues provided by adult behaviour in problem situations. Such attentiveness to and reliance upon other people is frequently considered to be typically feminine (Birns, 1976). The high compliant boys have not, as yet, developed this ability to observe and utilize cues provided by adults, and, lacking both skill and practice in independent activity, do most poorly. It should be mentioned that there are other differences between the Old Owl Task and the Think It Through test besides the presence or absence of adult help. Consequently, due to these differences and the possible effects of the repeated measures design, firm

conclusions cannot be reached on the basis of the present data regarding the possible link between compliance and specialization in skill at solving problems alone or with adults, but rather these results generate an hypothesis for further testing in the following study.

The question arises as to why the fathers' evaluations of children's compliance predicted problem-solving scores, while the mothers' ratings and the experimental task did not. As indicated in the method section, the mothers' ratings were heavily grouped at the low compliant pole, while the fathers' ratings were more normally distributed. This was probably caused by two different factors. The fact that these mothers, most of whom were at home full time, spent much more time with their children than did the fathers, who were employed full time, probably predisposed the mothers to see their children as less compliant. The mothers undoubtedly gave many more directives each day to the children than did the fathers, which may have led to the child's becoming relatively satiated with the mother's commands and becoming noncompliant to her. Landauer, Carlsmith, and Lepper (1970) found that 85% of the preschool children in their study were less obedient to their own mother than to other mothers and suggested the possible explanation that "familiarity breeds contempt". The fathers would benefit from their lesser amounts of contact with the child by having more novelty attached to their directives. Lytton

and Zwirner (1975) also found that fathers obtained more compliance and less noncompliance than did mothers, which was also attributed to the mothers' greater number of interventions with the children. Furthermore, sex stereotypes held by children at this young age have sometimes been found in the direction of regarding males as more authoritative than females (Kohlberg, 1966). This may be particularly salient if the mother uses the strategy of setting up the father as the authoritarian figure by threatening the children with "Wait till your father gets home".

In addition, some of these effects are possibly due to the psychometric qualities of the compliance measure. Parents rated their child's general level of compliance on one item with a 5-point, Likert-type scale response choice. A scale made up of one item might not provide sufficient range and discriminability to tap mothers' conceptions of their child's level of compliance. Mothers, because of their greater familiarity with their child, might need a scale composed of a greater number of items in order to make meaningful and predictive discriminations on their child's level of compliance. Whatever processes were in effect here, the mothers' ratings of compliance differentiated less among the children.

It is noteworthy that the more compliant the mothers rated their children, the less compliant the children were

on the experimental measure of compliance. Fathers' ratings of compliance did show a positive but insignificant association with the children's compliance on the experimental task. Lytton (1980) has also reported nonsignificant correlations between an experimental measure of compliance and compliance measures based on home observations and interviews. These findings indicate that situation-specific experimental measures of compliance are not sampling to any great extent the same behaviour that parents describe when they report children's compliance.

The parental socialization data indicate that the use of modelling by fathers differed significantly for low and high compliant boys and girls. It is interesting that it is the high compliant boys, who are not in accordance with sex-role stereotypes of male independence, who received more paternal socialization in the form of greater demonstration of how to do tasks, while the low compliant boys and high compliant girls, who are in agreement with sex-role stereotypes, received less. This suggests that boys who do not conform to conventional sex roles receive more socialization emphasis from fathers, a finding similar to other reports in the literature (Birns, 1976; Block, 1979). In contrast, the mothers, who bear the major responsibility for the children, consistently exerted more socialization pressure in the form of giving more help to and reinforcing compliance more with the less

compliant children, presumably reflecting a pragmatic bias.

The hypothesis that compliance can be both a facilitator and a hindrance in developing skills in solving problems alone or with other people needs to be examined further. It is necessary to obtain additional support for the suggestion that high compliant girls are better at using adult help, regardless of whether the help is to be copied or reversed, in order to shed light on the possible effects due to the use of a repeated measures rather than a single-test design.

STUDY II

The purpose of Study II was to further our understanding of the socialization of problem-solving skills by assessing the replicability of the results of Study I and by examining whether compliance could be both advantageous and disadvantageous for the development of different types of problem-solving skills. The results of Study I indicated that low compliance was related to good performance in independent problem-solving situations for both boys and girls, while high compliance was associated with good performance in solving problems with adult help (i.e., direct and reverse imitation) for girls but not for boys. High compliant boys tended to do most poorly on both independent problem solving and problem solving with adult help. At this early age, there is some evidence that girls' problem solving is superior to that of boys, with this sex difference being generally attributed to girls' relatively greater maturity (Coates, 1974; Maccoby & Jacklin, 1974). The results of Study I led to the revised hypothesis that children of different compliance levels specialize in developing different kinds of problem-solving skills, with low compliant children performing best in independent problem-solving situations, while high compliant children perform best at solving problems with adult help. However, in Study I there were other differences between the task on which independent

problem solving was measured (i.e., Think It Through) and the task on which problem solving with adult help was assessed (i.e., Old Owl Task; direct and reverse imitation) besides the absence or presence of adult help. Thus, in Study II the specialization hypothesis was examined by measuring children's independent problem solving and also their problem solving with adult help (both direct and reverse imitation) on a single problem-solving task to ensure that the problem-solving situations differed only in whether the adult modelled or did not model the behaviour.

The first hypothesis of Study II was that low compliant children, both girls and boys, would perform better on independent problem solving. In this study, independent problem solving was assessed in two tasks; the Circus Think It Through and a condition of the Owl Task requiring independent problem solving, that is, problem solving without any help from an adult model. A replication of the results of Study I was expected on the Circus Think It Through with low compliant children expected to perform better. Measurement of independent problem solving on the Owl Task permitted examination of the specialization hypothesis. The second hypothesis was that, in accordance with the specialization hypothesis, high compliant children would be more adept at solving problems with adult help and thus would perform better on the remaining two conditions of the Owl Task, problem

solving requiring either direct imitation or reverse imitation of an adult. Due to the possible developmental lag of boys at this age level (Maccoby & Jacklin, 1974), this hypothesis was expected to be true for girls but possibly not for boys.

The development of problem-solving skills was also investigated by examining the relation among parental socialization patterns, children's compliance to adults, and children's problem-solving competence. As summarized above, sex differences in the socialization patterns applied to young children are frequently reported (Block, 1981), with girls appearing to receive more direction and control in their socialization, while boys are encouraged to be more independent. In Study II an examination was made of parents' use of the following socialization techniques: reinforcement of children for compliance, reinforcement of children for proximity, demonstration and modelling by parents to children of how to perform certain activities, and reinforcement of children for independence. A third hypothesis was that differential parental reinforcement patterns would be related to different levels of children's compliance and problem-solving competence.

METHOD

Design

In general, the design of Study II is similar to the design of Study I. In Study II, however, children's problem-solving performance was measured on three conditions of the Owl Task rather than on two conditions as in Study I and a single-test design was used in contrast to the repeated-measures design which was utilized in Study I.

Participants

Children were recruited from 34 nursery and daycare centers located within the vicinity of the city of Montreal and were considered for the study if their parents had granted permission and if both parents had returned completed parent questionnaires. The return rate for the parent questionnaires was 50% for mothers and 43% for fathers. Children were included in the study if they were English-speaking and between the ages of four and five. Four children were assessed by their teachers as presenting a serious behaviour problem and thus were not included. Of the 314 remaining children, 28 had either moved or were absent for the second testing session, 15 were assessed by the experimenter as not being on task (e.g., alternating back and forth between two responses, responding without observing which lever they pressed), six declined to participate, and five were eliminated due

to administrative errors, resulting in 260 children. Forty-nine subjects did not reach criterion on the Owl Task, thus providing a sample of 211 subjects for the study.

Due to matching procedures, three children were excluded from the sample of children selected by mothers' compliance ratings, while eight children were omitted from the sample of children selected by fathers' compliance ratings. The resulting samples of children are presented in Appendix N for both sets of the four groups of children required by the design of the study. Means are presented for the matching variables of children's age, verbal intelligence (Dunn & Dunn, 1981), fathers' socioeconomic level (Blishen & McRoberts, 1976), and mothers' and fathers' educational level.

Almost all of the children (93%) came from two-parent, English-speaking homes with full-time employed fathers and with the majority of mothers (65%) being at home full time, although 20% of the mothers did work full time. Almost all the parents had finished high school, while 36% of the mothers and 55% of the fathers had obtained at least one university degree. With respect to socioeconomic status, 68% of the fathers were classified in the highest two socioeconomic levels (Blishen & McRoberts, 1976).

Procedure

In general, the procedure and measures are similar for the two studies, however, because the procedure in Study II does differ somewhat from Study I, it will be outlined. When the same measure is used in the two studies, the reader will be referred to Study I.

The children were examined in two individual sessions by four female examiners, who were trained to interact with the children in a similar fashion. The sessions were approximately one month apart. The children were seen in the first session by one of three experimenters, while the fourth experimenter tested the children in the second session.

In the first session, the children received the Think It Through subtest of problem-solving ability from the Circus preschool assessment battery (Anderson et al., 1974; Bogatz, 1979), followed by the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981) to assess verbal IQ. In the second session, children's problem-solving performance on the Owl Task (Gold et al., in press) was tested under one of three conditions; independent problem solving, direct imitation, or reverse imitation of an adult model. The children were randomly assigned to one of the three conditions with the limitation that within each school the number of boys and girls assigned to each condition was as equal as possible. After completion of the Owl Task, children received the It Scale for Children,

Neutral Version (Dickstein & Seymour, 1977) to measure their sex-role preference.

Questionnaires (see Appendix O) for the parents were sent home, and the completed forms were returned to the centers by the children. In addition, the teachers completed evaluations of the children's behaviour in the school. Test-retest reliability of parents' questionnaire data was assessed by having a subsample of the parents complete the questionnaire approximately six months later. Twenty-five percent of the parents were solicited by telephone to participate in a follow-up study and responded with a return rate of 72% on the mailed questionnaires.

Measure of generalized independent problem solving. The Think It Through subtest (see Appendix F) from the Circus preschool assessment battery, Form A, (Anderson et al., 1974; Bogatz, 1979) was used to assess children's generalized ability to solve problems independently. This measure was used in Study I, to which reference can be made for further information on this test.

In the present study, Think It Through scores were approximately normally distributed with a range between 11 and 30, a mean of 22.4, and a standard deviation of 3.8, which is comparable to the standardization sample of the same age (Bogatz, 1979). Girls scored significantly higher than boys, $t(209)=2.61$, $p<.01$. A moderate

association was found between Think It Through scores and verbal IQ, $r(209)=.40$, $p<.001$, and when the four groups of children required by the design of the study, low and high compliant girls and boys, were examined separately, correlation coefficients ranged between .49 and .29. For the present age range, low correlations occurred between age and Think It Through scores, $r(209)=.16$, $p<.01$.

Measure of verbal intelligence. The revised version of the Peabody Picture Vocabulary Test (PPVT-R; Dunn & Dunn, 1981) was administered to the subjects as a measure of verbal intelligence (see Appendix P). The PPVT-R is similar in format, construction, and administration to the original PPVT (Dunn, 1959), which was used and described in Study I. The revised version has increased the test sensitivity by adding 25 items to each form and has provided better racial, ethnic, and sex balance in all test plates.

In the present study, children's PPVT-R scores were approximately normally distributed and ranged between 70 and 141, with a mean of 105.6, which is comparable with the standardization sample of four-to-five-year old children (Dunn & Dunn, 1981).

Measures of problem solving using the Owl Task. The Owl Task, which was used in Study I to assess children's problem solving under two conditions, was extended in the

present study to measure children's problem solving under three conditions: problem solving without adult help (i.e., independent problem solving) problem solving requiring the direct imitation of an adult model's response, or problem solving requiring reverse imitation of an adult's response. The Owl Task, in general, and specifically, the two conditions of problem solving requiring direct imitation and reverse imitation of an adult model's response are described in detail in Study I. In the present study, a third condition, problem solving without adult help (independent problem solving) was also administered, with the three conditions of problem solving being assessed within a nonrepeated measures design.

In the independent problem-solving condition, the experimenter did not participate in the Owl Task except to introduce the Owl Task to the subjects and to repeat the standardized set of instructions, which were the same for all three conditions (see Appendix G) and are outlined in Study I. In this condition, in contrast to the direct imitation and reverse imitation conditions in Study I, the experimenter did not have a turn in which she modelled a successful performance on the Owl Task. After the experimenter had repeated the standardized instructions, the subjects were directed to take their first turn, which consisted of four consecutive trials. If the child did not succeed on these four trials, the instructions were repeated and the child had another turn of four trials.

This procedure was repeated until the child reached the criterion of four successful consecutive trials or until the whole procedure had been repeated six times without the child reaching criterion. At that point, as in the other two conditions, the child was reinforced on the next four trials regardless of the sequence of presses performed, thanked, and returned to the classroom. In all conditions, the child was reinforced by verbal praise and the owl's eyes lighting whenever she or he performed the second demonstrated sequence of lever pressing.

In the present study, children's scores ranged from 4 to 24 for all three conditions. For the independent problem-solving condition, there was a mean of 11.8 and a standard deviation of 5.7, while for direct imitation the mean was 10.1 and the standard deviation was 5.8. For reverse imitation, children's mean score was 12.4, with a standard deviation of 5.9.

Measure of sex-role preference. A neutral version (Dickstein & Seymour, 1977) of the IT Scale for Children (see Appendix A) was administered to the subjects as a measure of sex-role preference. This measure was used in Study I and is described in detail in an earlier section of this thesis. As in Study I, a subject's sex-role preference was scored in the direction of same-sex preference. Subjects' scores were approximately normally distributed with a range between 4.0 and 83.5, a mean of

56.2 and a standard deviation of 15.0.

Measure of compliance. The children's general level of compliance was assessed on the basis of factor analysis of mothers' and fathers' independent ratings of 12 items on the parent questionnaire. As the one-item compliance scale used in Study I did not appear to provide sufficient range and variability, the number of items used to assess compliance was expanded from one item to 12 items. Item selection was based on three sources. A pilot study was conducted to collect data from a new sample of parents of four- and five-year old day care children on an expanded compliance scale consisting of 10 items. A return rate of 45% provided a sample size of 25 parents. Factor analyses, using the principal-components method and varimax rotation, identified two factors which accounted for 60% and 27% of the variance, respectively. The first factor appeared to be a compliance, obedience measure, composed principally of three items, while the second factor seemed to be measuring independence based on factor loadings of three items. These six items were included in the parent questionnaire in the present study. Two items from the Study I parent questionnaire which correlated with the original compliance item, were retained. In addition, four items were newly constructed items which were based on empirical findings from compliance research (Block, 1981; Maccoby & Jacklin, 1974). Thus, items

selected from these three sources provided 12 items on the parent questionnaire which were used to asses compliance. The response format for each item was a 7-point, Likert-type scale.

To assess the factor structure of these 12 compliance items, data on the 211 subjects selected for the study were entered into principal-components varimax rotation factor analyses. Mothers' and fathers' compliance ratings were analyzed separately, and factor structures were measured for the children in general, as well as separately for girls and boys. Factors were retained if their eigenvalues or factor contributions met the Kaiser criterion of being greater than one (Weiss, 1976). Items from these factors were included in the subsequently constructed scales if they had factor loadings of .40 or higher on one factor and less than .40 on the other factor and if they correlated with the total of the remaining items at a level of .40 or higher. In addition, Cronbach's alpha reliability coefficient for the items of the constructed scales had to be significant.

The same two factors emerged for both mothers' and fathers' compliance ratings, and this occurred whether responses were analyzed together or separately by sex of subject, although there were slight differences in factor loadings. These two factors accounted for 45.2% and 17.3% of the variance in mothers' compliance ratings (see Appendix Q) and 40.6% and 17.1% of the variance in

fathers' ratings (see Appendix R). The first factor was identified as a compliance, obedience factor and was similar to the first factor which emerged in pilot work. In the present study, this factor was composed of nine items (see Appendix S), and this composition supports the selection of these nine items for consideration based on the previously mentioned three sources. The second factor appeared to be measuring independence and was constructed from the same three items (see Appendix S) as was the second factor in the pilot study. The similarity in factor structure of the data from the pilot work and present study provides some support for the generalizability of the two factors. Thus, on the basis of factor analysis of the data on the 211 subjects, the nine items of the compliance, obedience factor were retained and a compliance scale was constructed with equal weighting for each of the nine items. This nine-item compliance scale was used in the present study to assess parents' perceptions of their child's general level of compliance.

In order to assess the comparability of the compliance scales used in the two studies, the correlation between the one item used in the first study and the nine-item scale was calculated for the children in the present study. An inspection of the data indicates that in this study using a 7-point, Likert-type scale, mothers' ratings on the one compliance item are symmetrical rather than

positively skewed as they were in the first study. The two scales were correlated at a moderate level for mothers' compliance ratings, for both girls, $r(102) = .76$, $p<.001$, and boys, $r(105) = .68$, $p<.001$. Similar results were found for fathers' compliance ratings, for both girls, $r(102) = .78$, $p<.001$, and boys, $r(105) = .71$, $p<.001$. The amount of association between the two scales was slightly higher when girls were being rated, whether by mothers or fathers. These results provide an indication that the two scales are at least moderately comparable.

Means, standard deviations, and frequency distributions of mothers' and fathers' compliance ratings on this scale are displayed in Appendix T, for children in general and separately for girls and boys. There were no significant differences between girls' and boys' compliance level, whether rated by their mother or father. Inspection of these data indicate that parental ratings of children's level of compliance deviate somewhat from a normal distribution. Furthermore, as compliance has been consistently conceptualized as a dichotomous variable in this research, children were selected for the study on the basis of being above or below the median for their own sex.

In order to evaluate the amount of agreement between mothers' and fathers' compliance ratings, Pearson correlation coefficients were calculated. Parents'

compliance ratings were found to be correlated at a moderate level, $r(209) = .57$, $p<.001$. The correlation is significantly higher ($Z=1.84$, $p<.05$), for girls, $r(102)=.66$, $p<.001$, than for boys, $r(105)=.49$, $p<.001$. The percent of agreement between mothers' and fathers' classification of their child as a high or low complier (i.e., above or below the median) was also moderate with a 69% rate of agreement; 74% agreement for girls and 64% agreement for boys. Since parents' ratings of their child's compliance are only moderately correlated, have less than 70% agreement on classification of their child as a high or low complier, and differ significantly in the extent of association according to the gender of the child, mothers' and fathers' ratings were used separately to select two sets of four groups of high and low compliant girls and boys. These moderate associations are in agreement with previous research findings and conceptualizations of mothers' and fathers' differential perceptions and interactions with their children (Block, 1978; Lamb, 1976; Huston, in press). However, in order to investigate empirically the predictive value of a composite rating, an additional compliance measure was constructed by combining parents' compliance classifications. Children were selected as high or low compliers only if they were classified as such by both their mother's and father's ratings. Thus, 140 children were included in the analyses with the four groups of

children, low compliant boys and girls and high compliant boys and girls, consisting of 31, 39, 33, and 37 children, respectively.

Test-retest reliability was assessed by having 25% of the parents complete the parent questionnaire approximately six months later. Twenty-five percent of the parents were solicited by telephone to participate in a follow-up study. A return rate of 72% on the mailed questionnaires provided a sample of 38 mothers and 37 fathers of 21 boys and 17 girls. Incomplete data occurred on five questionnaires. The test-retest reliability coefficients varied according to the sex of the parent and the sex of the child. Mothers' test-retest reliability was lowest for girls at a moderate level, $r(14) = .66$, $p < .005$, and higher for boys, $r(19) = .78$, $p < .001$. In contrast, fathers' test-retest reliability was highest for girls, $r(12) = .91$, $p < .001$, and somewhat lower for boys but still at a moderate level, $r(17) = .77$, $p < .001$. Test-retest reliability coefficients for girls were significantly higher for fathers than for mothers, $Z = 1.80$, $p < .05$.

Measure of parental socialization techniques. Mothers and fathers independently completed questionnaires which were designed to assess parents' use of the following socialization techniques: reinforcement of children for compliance, reinforcement of children for

proximity and supervision of children, helpful contact and assistance given to children, and reinforcement of independence in children (see Appendix O). The parent questionnaire contained 24 items which assessed parental socialization techniques and the response format for each item was a 7-point, Likert-type scale. There were three different response options which were necessitated by the different phraseology of the items, however, each of the three response sets were similar in meaning. The most frequently used set consisted of the following responses: Very Often, Often, Slightly More Than Sometimes, Sometimes, Slightly Less Than Sometimes, Seldom, and Very Seldom.

Item selection for this measure was based on two sources. Factor analyses, using the principal-components method and varimax rotation, of the parent questionnaire used in Study I indicated that two items loaded significantly on a compliance factor, two items did not load significantly on any of the principal factors for either the fathers' or mothers' scores, while the remaining ten items assessing parental socialization techniques did load significantly. Thus, ten items on the present questionnaire were retained from the original parent questionnaire used in Study I. In order to provide a larger number of items for each of the four socialization techniques assessed, fourteen new items were added on the basis of empirical research on the effect of

differential socialization techniques (Baumrind & Black, 1967; Birns, 1976; Block, 1981; Fagot, 1978; Tauber, 1979a). Thus, the present questionnaire consisted of three items which were designed to assess reinforcement of children for compliance, four items measuring reinforcement of children for proximity and supervision of children, ten items assessing helpful contact and assistance given to children, and seven items measuring reinforcement of independence in children.

In order to assess the factor structure of the 24 socialization items, data for the subjects selected for the study were entered into principal-components varimax rotation factor analyses. Mothers' and fathers' socialization scores were analyzed separately, and factor structures were identified for the children in general, as well as separately for girls and boys. Factors and items were retained if they met the same criteria as outlined previously for the compliance measure. Since the sample of children selected according to mothers' ratings of compliance and the sample based on fathers' compliance ratings differed in size, 208 and 203 respectively, because of matching procedures for the four groups of high and low compliant girls and boys, factors and their related items were retained if they met the additional criterion of occurring in both samples.

When mothers' socialization scores were factor analyzed for girls and boys combined, three factors

emerged. Three maternal socialization scales were constructed of equally weighted items with factor loadings greater than .40 (see Appendix U). The three scales were Reinforcement of Children for Helping with Tasks, Reinforcement of Requests for Assistance with Easy Tasks, and Reinforcement of Child Compliance.

When mothers' socialization scores were factor analyzed separately for boys, four factors were suggested from which socialization scales were constructed (see Appendix V). The four scales were Reinforcement of Children for Helping with Tasks, Reinforcement of Requests for Assistance with Easy Tasks, Reinforcement of Child Compliance, and Reinforcement of Exploring Outside.

When mothers' socialization scores were factor analyzed separately for girls, five factors emerged from which five socialization scales were constructed (see Appendix W). The five scales were Reinforcement of Children for Helping with Tasks, Reinforcement of Child Compliance, Giving of Overhelp, Reinforcement of Requests for Assistance with Easy Tasks, and Reinforcement of Independence.

On the basis of factor analysis, mothers' socialization data indicated the presence of three socialization techniques for children in general, four male socialization scales and five female socialization scales. When fathers' socialization data were examined partially similar results occurred, however, there were

also significant differences. Factor analysis of fathers' socialization data for girls and boys combined resulted in the emergence of three factors. Scales were constructed of equally weighted items with factor loadings of greater than .40 (see Appendix X). The three scales were Reinforcement of Children for Helping with Tasks, Giving of Overhelp and Reinforcement of Requests for Assistance with Easy Tasks.

When fathers' socialization scores were factor analyzed separately for boys, four factors emerged from which scales were constructed (see Appendix Y). The four factors were Reinforcement of Children for Helping with Tasks, Giving of Overhelp, Reinforcement of Compliance, and Reinforcement of Requests for Assistance with Easy Tasks.

When fathers' socialization scores were factor analyzed separately for girls, five factors emerged from which scales were constructed (see Appendix Z). The five scales were Reinforcement of Children for Helping with Tasks, Reinforcement of Attempting Difficult Tasks, Giving of Overhelp, Reinforcement of Proximity, and Reinforcement of Child Compliance.

On the basis of factor analysis, fathers' socialization data indicated the presence of three socialization techniques for children in general, four male socialization scales, and five female socialization scales. When the factors for mothers and fathers are

compared, the first two factors, which are the ones that account for the largest portion of the variance, tended to be similar, while the remaining factors which emerged were more dissimilar.

It should be noted that 67% of the constructed scales are made up of only two items, while the remaining scales are composed of three or four items. The fact that the scales are based on a small number of items limits their psychometric strengths, particularly their reliability and replicability. However, the majority of the first three factors that emerged in each analysis occurred on both mothers' and fathers' data and for girls and boys, giving some evidence of the reliability of these scales.

Test-retest reliability was assessed by having a subsample of the parents complete the parent questionnaire a second time approximately six months later. Test-retest reliability coefficients were calculated on mothers' and fathers' three socialization scales for children in general and on their four male and five female socialization scales. For the 24 socialization scales, reliability coefficients were above .59 for 15 scales; however, the coefficients varied according to the sex of the parent and the sex of the child (see Appendix AA). Both mothers and fathers had higher overall reliability coefficients for boys than for girls. Mothers' reliability coefficients for boys ranged from .46 to .78, while fathers' reliability coefficients ranged from .56 to

.80. In contrast, for girls, mothers' reliability coefficients for two of the five scales were particularly low (i.e., .04 and .13), while the reliability on the remaining three scales ranged from .48 to .71. Similarly, fathers' reliability coefficients for girls were low on two of the five scales (i.e., .30 and .38), while the other three scales ranged from .53 to .77.

RESULTS

In order to investigate the effects of children's gender and level of compliance on their problem-solving performance, four groups of children, girls and boys who were high or low compliant to adults, were chosen for the study. As indicated above, parents' compliance ratings were not correlated at a high level; consequently, mothers' and fathers' ratings were used separately to select two sets of four groups of children.

The analysis of the data for the four groups of subjects selected by the mothers' compliance ratings is reported first, followed by the analysis of the data for the four groups selected by the fathers' ratings. Subsequently, analysis of the data for the four groups of subjects selected by the composite compliance measure based on both parents' compliance ratings is presented.

In order to test the hypothesis that low compliers are better on generalized, independent problem solving, a 2x2 analysis of variance for the variables of sex of child and level of compliance was performed on children's scores on the Think It Through general problem-solving measure (see Appendix BB). As predicted, there was a main effect of compliance, $F(1,204)=4.63$, $p<.05$, with the children who were rated by the mother as being less compliant performing significantly better than the more compliant children. In addition, sex of child had a

significant main effect, $F(1,204) = 6.78$, $p<.05$, with girls scoring higher than boys (see Table 8).

The specialization hypothesis which suggests that while low compliers should be better at independent problem solving, high compliant children should be more proficient at problem solving with adult help regardless of whether that help is to be copied or reversed, was investigated by examining children's performance under these three conditions on the Owl problem-solving task. A 2x2x3 analysis of variance for the variables of sex of child (male, female), level of compliance (low, high), and condition of problem solving (independent, direct imitation, reverse imitation) was conducted on children's problem-solving scores on the Owl Task (see Appendix BB). The expected main effect of condition was significant, $F(2,196)=3.44$, $p<.05$, with the reverse condition being significantly more difficult than the imitation condition, Scheffé, $p<.05$. A significant main effect for the factor of compliance level was found, $F(1,196)=4.36$, $p<.05$, with low compliant children performing best overall on the task (see Table 8). There was no main effect for sex of child, nor did sex of child interact significantly with any other variable.

Parents' socialization data were examined for differences in socialization patterns for the children selected as being low or high compliant according to their mothers' ratings. The factors based on factor analyses

Table 8

Problem-Solving Means and Standard Deviations for Groups Selected by Mothers' Compliance Ratings

Group	Think it Through[a]	Owl Task[a]		
		Independent	Direct Imitation	Reverse Imitation
Low Compliant				
Boys	22.39(3.62) (51)	9.11(4.91) (18)	9.41(4.23) (17)	12.00(5.84) (16)
Girls	23.53(3.29) (53)	11.43(5.17) (14)	9.88(5.31) (17)	11.64(5.08) (22)
High Compliant				
Boys	21.06(4.37) (53)	13.04(6.18) (23)	10.50(7.28) (16)	11.71(5.97) (14)
Girls	22.63(3.62) (51)	13.50(5.82) (16)	9.88(6.50) (17)	14.22(6.75) (18)

Note. Standard deviations are in parentheses adjacent to the means, while the number of subjects in each group are in parentheses below the means.

[a] Higher scores on the Think It Through indicate better performance, while higher scores on the Owl Task indicate poorer performance.

using varimax rotation of mothers' and fathers' socialization data were assessed for children in general and also separately for girls and boys. The extracted factors will tend to be orthogonal; however, in each set of analyses the extent of intercorrelation among the socialization variables was assessed, and the Bartlett test of sphericity was examined to determine whether multivariate or univariate analysis of variance was the appropriate technique to use (Hummel & Sligo, 1971). As mothers' socialization variables were correlated at a low level, separate univariate analyses of variance were conducted on each of mothers' socialization techniques (see Appendix CC). A series of 2x2 analyses of variance for the variables of sex of child and compliance level was performed on each of mothers' three socialization techniques derived from the factor analysis for both males and females. The factor of compliance had a marginally significant main effect for the scale assessing mothers' approval and tolerance of child disagreement, $F(1,204) = 2.77$, $p<.10$. Mothers who rated their child as being more compliant tended to be more disapproving of their child's disagreeing or questioning their decisions or rules than did mothers who rated their child as being less compliant. The factor analysis of mothers' socialization data resulted in four male socialization factors when males were considered separately. One-way analyses of variance for the variable of compliance (low, high) for each of

these four socialization techniques for males revealed no significant effects. However, when the five socialization factors which emerged when females were considered separately were analyzed, a main effect of compliance occurred for the scale measuring mothers' approval of child disagreement, $F(1,102) = 4.92$, $p<.05$. Mothers who rated their daughters as being compliant did not allow their daughters to question their decisions or rules (see Table 9).

Fathers' socialization variables were intercorrelated at a low level; however, the significant results of the Bartlett test of sphericity indicate that a multivariate approach would be appropriate, $\chi^2(3)=14.40$, $p<.005$. A 2x2 multivariate analysis of variance for the variables of sex of child and compliance level as selected according to mothers' ratings was performed on fathers' three socialization techniques (see Appendix DD). The multivariate main effect for sex of child was marginally significant, $F(3,202) = 2.27$, $p<.10$. A univariate effect was found for only one of the three variables, the scale assessing parents' tendency to give overhelp, $F(1,204) = 3.68$, $p<.10$. Fathers reported that they helped sons more than daughters with difficult tasks for which their help had not been asked. Although the sex of child x compliance multivariate F failed to reach significance, the one scale to indicate a marginal effect on the univariate analyses was the scale measuring the giving of

Table 9

Mothers' Socialization Means and Standard Deviations for Groups Selected by Mothers' Compliance Ratings

	Low Compliant Boys	Low Compliant Girls	High Compliant Boys	High Compliant Girls
General Soc. Scales n	51	53	53	51
R. for Helping	16.06 (2.73)	15.64 (2.66)	15.06 (3.04)	15.88 (2.72)
R. of Easy Requests	7.45 (2.21)	7.81 (2.26)	7.92 (2.47)	7.41 (2.20)
R. of Compliance	6.98 (2.75)	6.85 (2.29)	7.19 (2.97)	7.90 (2.87)
Male Soc. Scales				
R. for Helping	21.65 (3.45)		20.66 (3.68)	
R. of Easy Requests	7.45 (2.21)		7.92 (2.47)	
R. of Compliance	6.98 (2.75)		7.19 (2.97)	
R. of Exploration	11.49 (2.72)		12.34 (1.98)	
Female Soc. Scales				
R. for Helping		15.64 (2.66)		15.88 (2.72)
R. of Easy Requests		7.81 (2.26)		7.41 (2.20)
R. of Compliance		10.57 (3.18)		12.14 (4.01)
Giving of Overhelp		8.02 (2.02)		8.25 (2.14)
R. of Independence		11.47 (1.55)		11.73 (1.64)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

overhelp, $F(1,204) = 3.43$, $p<.10$. Inspection of the data indicated that the above mentioned main effect of sex of child was almost totally due to a difference between high compliant boys and girls, with fathers giving more overhelp to the high compliant boys than the high compliant girls (see Table 10). No significant effects of compliance level were found when multivariate analyses of variance were conducted on fathers' four male socialization factors and on fathers' five female socialization factors (see Appendix DD).

The analysis of the data for the four groups of children selected according to fathers' ratings of their compliance is presented next. The 2x2 analysis of variance for the Think It Through test of generalized problem solving revealed a significant effect for sex of child, $F(1,199) = 6.58$, $p<.05$, with girls scoring better than boys (see Table 11) (see Appendix EE). The 2x2x3 analysis of variance on children's problem-solving scores on the Owl Task demonstrated no significant effects except for a marginal effect for the factor of condition, $F(2,191) = 2.97$, $p<.10$, with the reverse condition requiring more trials than the imitation condition, Scheffé, $p<.10$ (see Table 11) (see Appendix EE).

Parents' socialization techniques were examined for differences in socialization patterns for children assessed as being low or high compliant by their fathers' ratings. As mothers' socialization variables were

Table 10

Fathers' Socialization Means and Standard Deviations for Groups Selected by Mothers' Compliance Ratings

	Low Compliant		High Compliant	
	Boys	Girls	Boys	Girls
General Soc. Scales n	51	53	53	51
R. for Helping	9.69 (2.57)	9.30 (2.39)	9.42 (2.18)	9.25 (2.58)
R. of Easy Requests	7.08 (2.31)	7.51 (2.25)	7.53 (2.52)	7.67 (2.26)
Giving of Overhelp	8.00 (2.16)	7.98 (1.98)	8.47 (1.80)	7.41 (2.15)
Male Soc. Scales				
R. for Helping	14.51 (3.33)		14.45 (2.74)	
R. of Easy Requests	7.08 (2.31)		7.53 (2.52)	
Giving of Overhelp	13.04 (2.90)		13.74 (2.83)	
R. of Compliance	7.84 (2.87)		8.00 (2.91)	
Female Soc. Scales				
R. for Helping		14.13 (3.02)		13.84 (3.34)
Giving of Overhelp		13.04 (2.75)		12.18 (3.08)
R. for Difficult Tasks		9.75 (2.39)		10.08 (2.39)
R. of Compliance		8.06 (2.42)		8.06 (2.78)
R. of Proximity		5.15 (1.85)		5.55 (2.14)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

Table 11

Problem-Solving Means and Standard Deviations for Groups Selected by Fathers' Compliance Ratings

Group	Think It Through[a]	Owl Task[a]		
		Independent	Direct Imitation	Reverse Imitation
Low Compliant				
Boys	21.80(3.92) (50)	9.71(5.14) (14)	8.67(5.70) (18)	11.78(6.21) (18)
Girls	23.25(3.43) (51)	12.31(5.53) (13)	10.12(5.68) (17)	12.38(5.20) (21)
High Compliant				
Boys	21.67(4.30) (51)	12.15(6.22) (27)	12.[illegible]0(5.89) (13)	12.73(5.00) (11)
Girls	22.92(3.32) (51)	12.71(5.70) (17)	9.87(6.39) (15)	13.26(6.81) (19)

Note. Standard deviations are in parentheses adjacent to the means, while the number of subjects in each group are in parentheses below the means.

[a] Higher scores on the Think It Through indicate better performance, while higher scores on the Owl Task indicate poorer performance.

correlated at a low level, univariate analyses of variance were performed on mothers' socialization factors. No significant effects were found when mothers' three general socialization techniques were considered, nor when mothers' four male socialization factors were examined. However, when females were considered separately and univariate analyses of variance were conducted on the five female socialization factors, two of the five scales revealed a significant main effect for compliance level (see Appendix FF). Both scales showed the same pattern of results, with mothers reporting more of a tendency to have their daughter help them with tasks, $F(1,100) = 5.78$, $p<.05$, and to let them do things independently, $F(1,100) = 5.12$, $p<.05$, if the daughter was classified as being more compliant by fathers' ratings than if the daughter was rated as being less compliant by fathers (see Table 12). In contrast, when multivariate analyses of variance were conducted on fathers' socialization techniques, no significant effects were found for the four groups of children selected according to their fathers' evaluation of their compliance (see Table 13) (see Appendix GG).

In order to investigate the predictive value of a composite rating of compliance, children were categorized as being high or low compliers only if they were classified as such by both their mother's and father's ratings. Since mothers' and fathers' classification of their child's compliance level agreed only moderately

Table 12

Mothers' Socialization Means and Standard Deviations for Groups Selected by Fathers' Compliance Ratings

		Low Compliant		High Compliant	
		Boys	Girls	Boys	Girls
General Soc. Scales	n	50	51	51	51
R. for Helping		15.56 (2.98)	15.14 (2.69)	15.57 (2.89)	16.39 (2.58)
R. of Easy Requests		7.64 (2.20)	7.75 (2.22)	7.73 (2.47)	7.53 (2.29)
R. of Compliance		6.94 (2.52)	7.14 (2.68)	7.24 (3.23)	7.49 (2.60)
Male Soc. Scales					
R. for Helping		21.28 (3.67)		21.00 (3.57)	
R. of Easy Requests		7.64 (2.20)		7.73 (2.47)	
R. of Compliance		6.94 (2.52)		7.24 (3.23)	
R. of Exploration		11.72 (2.70)		12.25 (2.04)	
Female Soc. Scales					
R. for Helping			15.14 (2.69)		16.39 (2.58)
R. of Easy Requests			7.75 (2.22)		7.53 (2.29)
R. of Compliance			11.12 (3.63)		11.51 (3.82)
Giving of Overhelp			8.14 (1.95)		8.00 (2.13)
R. of Independence			11.24 (1.72)		11.94 (1.42)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

Table 13

Fathers' Socialization Means and Standard Deviations for Groups Selected by Fathers' Compliance Ratings

	Low Compliant Boys	Low Compliant Girls	High Compliant Boys	High Compliant Girls
General Soc. Scales n	50	51	51	51
R. for Helping	9.54 (2.57)	8.98 (2.30)	9.53 (2.23)	9.53 (2.66)
R. of Easy Requests	7.40 (2.59)	7.41 (1.92)	7.10 (2.26)	7.75 (2.54)
Giving of Overhelp	8.02 (1.95)	7.88 (1.89)	8.29 (1.94)	7.53 (2.22)
Male Soc. Scales				
R. for Helping	14.56 (3.26)		14.37 (2.90)	
R. of Easy Requests	7.40 (2.59)		7.10 (2.26)	
Giving of Overhelp	13.08 (2.65)		13.55 (3.04)	
R. of Compliance	7.62 (2.84)		8.29 (2.95)	
Female Soc. Scales				
R. for Helping		13.49 (3.06)		14.41 (3.26)
Giving of Overhelp		12.71 (2.49)		12.53 (3.37)
R. for Difficult Tasks		9.71 (2.04)		10.16 (2.69)
R. of Compliance		8.06 (2.58)		8.06 (2.67)
R. of Proximity		5.14 (1.93)		5.61 (2.07)

Note. Reinforcement is abbreviated to R. Standard deviations are in parentheses. Higher scores indicate greater socialization emphasis.

(i.e., r = .57), 63 of the 203 subjects were not included in the analyses. No significant differences were found among the four groups of children on the matching variables (see Appendix HH). A 2x2 analysis of variance for the variables sex of child and level of compliance was conducted on the Think It Through general problem-solving measure (see Appendix II). The main effect of compliance was marginally significant, $F(1,136)=2.65$, $p=.10$, with the children who were rated by both their mother and father as being less compliant performing better than the more compliant children (see Table 14). Sex of child also had an effect, $F(1,136)=7.83$, $p<.01$, with the girls scoring higher than the boys. In addition, a 2x2x3 analysis of variance for the variables of sex of child, level of compliance, and condition of problem solving was conducted on children's scores on the Owl Task (see Appendix II). The factor of compliance had a significant main effect, $F(1,128) = 5.57$, $p<.05$, with children who were classified as low compliant by both their mother and father performing best overall on the task (see Table 14).

In order to identify which group of variables best distinguishes between the high and low problem solvers, stepwise discriminant function analyses were performed. Because different constellations of factors are expected to be associated with competent problem solving in the two sexes (Baumrind, 1973; Hoffman, 1972) and because the sample sizes were of sufficient size to permit separate

Table 14

Problem-Solving Means and Standard Deviations for Groups Selected by Parents' Composite Compliance Ratings

Group	Think It Through[a]	Owl Task[a]		
		Independent	Direct Imitation	Reverse Imitation
Low Compliant				
Boys	22.10 (3.55) (31)	8.44 (4.67) (9)	8.00 (4.00) (9)	12.00 (5.89) (13)
Girls	23.62 (3.02) (39)	10.67 (4.90) (9)	11.00 (5.15) (12)	12.22 (5.22) (18)
High Compliant				
Boys	20.97 (4.39) (33)	13.33 (6.44) (18)	12.00 (7.66) (7)	13.00 (4.66) (8)
Girls	22.78 (3.04) (37)	12.67 (5.87) (12)	11.20 (6.75) (10)	14.40 (7.06) (15)

Note. Standard deviations are in parentheses adjacent to the means, while the number of subjects in each group are in parentheses below the means.

[a] Higher scores on the Think It Through indicate better performance, while higher scores on the Owl Task indicate poorer performance.

analyses by sex (Tatsuoka, 1976), girls' and boys' data were analyzed separately. Parents' four socialization factors for boys, their five socialization factors for girls, as well as their compliance ratings were examined to determine their relative power in identifying high and low problem solvers as measured by the Think It Through scale of general problem solving. Children were selected as high or low problem solvers if their problem-solving score was above or below the median for their own sex. An investigation of the possible effects of the order of entry of the variables was conducted. The matching variables were always entered first, while the remaining variables were combined into four groups of variables: mothers' socialization variables, fathers' socialization variables, mothers' compliance ratings, and fathers' compliance ratings. The order of entry of these four groups of variables was varied and resulted in 24 different entry orders which varied only between 76.9% and 81.7% in correct classification of problem solvers, indicating that one order of entry was not more appropriate than another. Thus, the order of entry of variables was only partially controlled, with six matching variables (i.e., age, IQ, SES, mothers' and fathers' education, ITSC) being considered first and then parents' socialization and compliance variables entering individually, using the amount of change in Rao's V as the stepwise criterion.

The stepwise discriminant analysis for boys employing 16 variables resulted in a significant 10 variable function, $\underline{V}(10) = 58.29$, $\underline{p}<.0001$, which correctly classified 81.7% of the boys. This function classified high and low problem solvers equally well. As shown in Table 15, only the addition of IQ, age, mothers' compliance ratings, two mothers' and one fathers' socialization factors resulted in significant increments in Rao's V. Inspection of the standardized canonical discriminant function coefficients along with the group centroids indicated that boys who are competent problem solvers are maximally distinguished from poor problem solvers on the basis of being the brighter, older boys who are considered to be less compliant by their mother, whose mother approved of them exploring outside and responded positively to their requests for help with easy tasks, and whose father tended to not allow disagreement.

The stepwise discriminant analysis conducted for females employed 18 variables and resulted in a significant function composed of eight variables, $\underline{V}(8) = 39.85$, $\underline{p}<.0001$, which correctly classified 79.8% of the girls. Eighty-six percent of the competent problem solvers were correctly classified compared to 75% of the poor problem solvers. As shown in Table 16, only the addition of IQ, mothers' compliance ratings, and three mothers' socialization factors resulted in significant increments in Rao's V. An examination of the group

Table 15

Changes in Rao's V, Standardized Discriminant Function Coefficients and Group Centroids for Function Discriminating High and Low Problem Solvers for Males

Variables	Change in Rao's V	Standardized Canonical Discriminant Function Coefficients	Function Evaluated at Group Means (Group Centroids)
IQ	24.15***	.7613	
Age	12.32***	.6692	
Mothers' Education	1.70	.1744	Group
SES	2.92	.1227	High Problem Solvers
Mothers' R. of Exploration	11.28***	.5148	.8484
Mothers' R. of Easy Requests	9.23**	.3948	Low Problem Solvers
Mothers' Compliance Ratings	12.49***	-.4565	-.9523
Mothers' R. of Compliance	2.82	-.2913	
Fathers' R. of Compliance	4.17*	.2737	
Fathers' Giving of Overhelp	3.56	.2201	

Note. Reinforcement is abbreviated to R.

* $p < .05$
** $p < .005$
*** $p < .001$

Table 16

Changes in Rao's V, Standardized Discriminant Function Coefficients and Group Centroids for Function Discriminating High and Low Problem Solvers for Females

Variables	Change in Rao's V	Standardized Canonical Discriminant Function Coefficients	Function Evaluated at Group Means (Group Centroids)
IQ	17.61***	.7962	
ITSC	1.55	.3294	
Mothers' R. of Compliance	9.48**	.5531	Group
Mothers' R. of Easy Requests	6.40*	-.4114	High Problem Solvers .7433
Mothers' Compliance Ratings	4.54*	-.3035	Low Problem Solvers -.6622
Mothers' R. of Independence	3.65	-.4109	
Mothers' R. for Helping	4.80*	.3768	
Fathers' R. Proximity	3.16	-.2605	

Note. Reinforcement is abbreviated to R.

* $p < .05$
** $p < .005$
*** $p < .001$

centroids in conjunction with the standardized canonical discriminant function coefficients, indicated that girls who are good problem solvers are maximally distinguished from poor problem solvers on the basis of being the brighter girls who are rated as less compliant by their mother and whose mother tended to be less tolerant of disagreement and not to respond positively to bids for help with easy tasks, and had their daughter help them with tasks around the house.

DISCUSSION

The results of Study II provide further support for the hypothesis that for girls and boys without observable behaviour problems, compliance is negatively related to independent problem-solving competence. This finding is in agreement with the results of Study I, with both studies providing evidence that children who are less inclined to defer to adult authority are more likely to be capable of solving problems by themselves. In Study II, low compliant children were found to perform better on both measures of independent problem solving, the Circus Think It Through measure of general problem solving (Anderson et al., 1974; Bogatz, 1979) as was found in Study I, and also the independent problem-solving condition on the Owl Task. Thus, in the present research the hypothesis that compliance is negatively related to independent problem solving has received strong support; first, through the replication in Study II of less compliant children's better performance on the Circus Think It Through measure of general problem solving, and, second, through the provision of convergent validation as indicated by the better performance of less compliant children on the independent problem-solving condition of the Owl Task.

The specialization hypothesis, which was proposed as one possible interpretation of the data from Study I, was

that low and high compliant children specialize in developing different types of problem-solving skills. Low compliant children should become better at independent problem solving and high compliant children, particularly high compliant girls at this young age, should have better performance on problem solving with an adult model. In Study II, this hypothesis was tested directly on children's performance under three conditions on the same Owl Task using a non-repeated measures design. Although the specialization hypothesis was put forward as one explanation of the results of Study I, the possibility of confounding effects of a repeated measures design and prior testing with the owl apparatus on the experimental compliance measure affecting the children's performance was recognized. Such a confounding effect was held to be more salient for girls, particularly high compliant girls, inasmuch as their sensitivity to the importance of the adult model's role was expected to be heightened under these conditions.

In Study II support was found only for the first half of the specialization hypothesis with low compliant children, both girls and boys, having better performance on independent problem solving, whereas no support was found for the prediction that high compliant girls should be better overall in utilizing cues from an adult model. There is some evidence for the argument that girls' performance on problem solving with an adult is affected

by whether the study has a repeated or single-test design, with better scores occurring under a repeated measures design where the role of the adult model is perhaps more salient. Girls' performance, as measured by trials to criterion, was better in Study I, in which a repeated measures design was used than in the Gold et al. study or in Study II, both of which were conducted using a non-repeated measures design (see Appendix M). Repeated test opportunities seem to facilitate girls' problem solving with an adult. Therefore, the hypothesis that high compliant girls should perform better overall on problem solving with an adult model could perhaps be revised to argue that such facilitation occurs only in conditions where the salience of the model is increased. Certainly, the results of Study II indicate that high compliance, by itself, does not facilitate either girls' or boys' problem-solving skills.

A second issue addressed in Study II concerned the possible mediating role of compliance in the poorer problem-solving performance of girls when required to do the opposite of an adult model, as found in two studies by Gold and her colleagues (Gold et al., in press). In Study II, children's performance was tested under similar conditions as in the Gold et al. study, that is with a non-repeated measures design, to permit an examination of the effect of compliance without the possible confounding effects of a repeated measures design as found in Study I.

Compliance did have a main effect on children's problem-solving performance, as measured by their overall performance in the three conditions of the Owl Task, with the low compliant children performing better than the high compliers. Although in the Gold et al. study girls performed more poorly than boys in the condition which required doing the opposite of an adult model, in the present study girls' poorer performance in this condition appeared largely due to the high compliant girls' poor performance (see Appendix M). Furthermore, high compliant girls' difficulty was found regardless of whether the girls were classified as high compliant by their mothers' or fathers' ratings. In fact, when comparisons are made between subjects' scores in the Gold et al. study and Study II (see Appendix M), girls' performance in the reverse imitation condition in the Gold et al. study with a female experimenter matches the performance in the same condition of girls who were rated as high compliant by their mothers in Study II, which was conducted by a female experimenter. These results provide some indication that girls' poor performance in the Gold et al. study, when required to do the opposite of an adult, was possibly due to the mediating role of compliance on girls' poorer performance.

The design of the present investigation differs from that of the Gold et al. study in that children were only tested if their parents returned completed questionnaires.

Such a procedure could possibly result in a more selective sample, with the parents of excessively timid girls, who would be expected to be more compliant, self-selecting their daughters out of the sample by not returning the parent questionnaire. Indeed, in the present two studies, this procedure resulted in samples of girls and boys who were matched on compliance according to their mothers' and fathers' ratings. It is possible that in the Gold et al. study, in which almost all of the children in each of the classes were tested, elimination of the more timid girls by protective parents did not occur and the resulting sample of girls was more compliant than the sample of boys. This might account for the poorer performance of girls when required to do the opposite of an adult model in the Gold et al. study and also for the similarity of their scores to those of the high compliant girls in Study II. Thus, there is some evidence that the greater difficulty the girls experienced in doing the reverse of an adult in the Gold et al. study is associated with their greater compliance to adults. High compliant children, both girls and boys, appear to have developed a pattern of relying on adults rather than relying on their own independent efforts, and this seems to have affected their problem-solving competence, not only when required to do the reverse of an adult, but also on a general measure of problem solving.

The question arises as to why mothers' ratings of children's compliance predicted problem-solving competence in Study II and fathers' ratings did not, while in Study I the reverse pattern occurred. There is some evidence of a moderate amount of overlap in mothers' and fathers' compliance ratings with their composite compliance rating predicting children's problem-solving performance, however, it is possible that the mothers' compliance ratings are more predictive. In Study I, mothers' compliance ratings were not related to children's problem-solving competence, but this result appears to be largely due to the psychometric qualities of the compliance measure used in this study. The compliance measure consisted of only one item and did not allow the mothers, who generally have more contact and are more familiar with their children, sufficient range to provide meaningful and predictive discriminations. This possibility is suggested by the skewed distribution of mothers' compliance ratings and by their lack of correlations with mothers' socialization scores. Neither of these results occurred in Study II, which employed a nine-item compliance scale. Previous research has indicated that mothers are more sensitive to their children's behaviour concerning issues of compliance than are fathers. Lytton (1979) has found that mothers are more responsive to variations in young children's compliance behaviours than are fathers. Furthermore, Mulhern and Passman (1981) have reported that

mothers' discipline behaviour was affected more by child's noncompliance than was fathers' behaviour. Thus, Study I does not provide a valid assessment of the predictive power of mothers' compliance ratings for children's problem-solving competence.

In Study II, mothers' evaluations of children's compliance predicted problem-solving performance on both a general and experimental measure of independent problem solving. Moreover, mothers' compliance and socialization measures were found to discriminate between high and low problem solvers for both girls and boys, while fathers' socialization factors were not related to either mothers' or fathers' compliance ratings. Thus, fathers' socialization practices do not seem to be linked to children's compliance behaviour as much as those of mothers. The stronger relation for mothers may be due to their more frequent interactions with their children as the majority of the mothers in this study were at home full time. Their frequent experiences with their children would allow more opportunities for the mothers to become sensitive to their children's compliance behaviour and probably would necessitate such greater responsiveness by mothers. In comparison, fathers have been reported to respond less frequently to their children's compliance (Heterington, Cox, & Cox, 1978; Lytton, 1980) and less to their children's unresponsiveness (Mulhern & Passman, 1981). In fact, fathers appear to leave the major portion

of their children's discipline to mothers, while mothers tend to feel more responsible for their children's compliance behaviour and to intervene more often (Lytton, 1980). Compliance behaviour may therefore be a more salient socialization domain for mothers than for fathers.

Fathers have frequently been reported to emphasize the socialization of conventional sex-role development in their children, particularly in their sons, more so than do mothers (Block, 1978; Huston, in press). The parental socialization data in the present study substantiate this finding, in that fathers tended to provide more socialization in the form of overhelp to the high compliant boys, who are not in accordance with sex-role norms, while the high compliant girls, who are in agreement with sex-role stereotypes, received less. In Study I, similar results were also found for fathers' socialization emphasis, providing further evidence that children's traditional sex-role development is an important socialization area for fathers.

Although there is some indication that mothers' ratings are more predictive, fathers' compliance ratings are also to some extent predictive of their children's problem-solving performance. Such an interpretation is suggested by fathers' compliance ratings being predictive in Study I and approaching predictive significance for problem-solving performance on the Owl Task in Study II. It is possible that in Study I the fathers were partially

responsible for self-selecting their participation in the study and thus were more conscientious and sensitive in their completion of the parent questionnaire. In Study II the parents were drawn principally from parent co-operative nursery schools. It is likely that more of the fathers were included in the study through the efforts of the mothers who tended to be involved with the co-operative schools. This possibility is suggested by the fact that in Study II, there were a number of occurrences of mothers' questionnaire being returned first, followed by the fathers' questionnaire two or three weeks later. In addition, almost all of the critical comments written in on the questionnaires in Study II were from fathers. Thus, perhaps the lower predictive power of fathers' compliance ratings in Study II was partially due to the sample of fathers included in the study.

Children's compliance appears to be a more salient socialization domain for mothers; however, the research evidence supporting the hypothesis that mothers are better able to evaluate the compliance of their children than are fathers is not definitive. In order to further our understanding of the predictive power of mothers' and fathers' compliance ratings for their children's problem-solving competence, it would be more fruitful at the present time to continue to examine separately mothers' and fathers' compliance ratings.

Girls are generally reported to be more compliant to adults than are boys, with a trend toward increasing sex differences from the preschool to elementary school years being reported by some researchers (Block, 1976; Block & Block, 1980; Huston, in press). Although in the present research both mothers and fathers assessed daughters as more compliant than sons, significant sex differences were not obtained. Apart from age, there are other possible factors affecting the limited differences found on parents' ratings of girls' and boys' compliance. The range of compliance for subjects included in the study was most likely constrained at either extreme. Furthermore, such constraints were likely to be imposed differentially for girls and boys, with parents and teachers selecting out the more acting-out boys and the more timid girls. In fact, some teachers provided unsolicited statements attesting to this occurrence. In addition, in almost all of the schools there was a greater proportion of boys to girls, which might limit the sample tested. The suggestion has been made that mothers tend to keep the more compliant and timid girls at home. Thus, although the hypothesized association between high compliance and poor problem-solving performance was obtained in the present study, it is suggested that, with a possibly limited range of compliance, one which is not only restricted but differentially so for girls and boys, the full predictive power of compliance has not been observed.

In addition, studies in which sex differences in compliance have been reported have tended to be observational studies, while in the present study parent self-report compliance ratings were collected. Parents might have used different subjective reference points when rating girls' and boys' compliance. For example, three of the nine items included in the compliance scale asked parents to rate their child in comparison to other children. It is possible that parents compared their child's behaviour to a same-sex reference point, as is indicated by a few parents who crossed out "children" and wrote in the same gender as their child on the questionnaire. Thus, in order to allow a better understanding of the gender distinctions which mothers, fathers, and individual parents might make, parents' ratings of children's compliance should be made for boys and girls separately, rather than for children in general.

In the present research, a consistent sex difference favoring girls was found in both studies for children's performance on the Circus Think It Through subtest of problem solving. In previous research using different measures of problem-solving competence (Coates, 1972, 1974), a similar sex difference has been reported at this preschool age. The observed sex difference in the present study, therefore, provides further support for the Think It Through subtest as a measure of young children's problem-solving performance.

A major purpose of the present research was to identify factors that distinguish between high and low problem solvers among preschool children. Separate discriminate function analyses were conducted for girls and boys, and two different constellations of factors were identified, a finding similar to other reports on the correlates of boys' and girls' intellectual performance (Hoffman, 1972; Maccoby & Jacklin, 1974; Stein & Bailey, 1973). Low compliance, however, was associated with competent problem solving for both boys and girls. Thus, noncompliance, within normal limits, appears to benefit the development of children's problem-solving competence, possibly through the occurrence of a certain amount of parent-child distance. Sigel and his associates (McGillicuddy-De Lisi, Sigel, & Johnson, 1979; Sigel & Cocking, 1977) have contended that insufficient parental distancing does not allow children to experience discrepancies which tend to propel children toward cognitive growth and competence.

Age was found to be a significant and principal factor in distinguishing between high and low problem solvers for boys, but not for girls, possibly reflecting girls' relatively greater level of maturity at this age and boys' greater variability. As would be predicted from previous research findings (Wachs, 1976; White & Watts, 1973), maternal socialization practices which permit exploration outside of the home provided additional

discriminative power for boys. It is noteworthy that boys who were competent at problem solving were perceived as being less compliant and were encouraged to explore their environment by their mother. However, the reinforcement of such activity for boys was made within the context of an accepting mother, who accepted her son's requests for help on easy tasks. In contrast, for girls who were competent problem solvers, mothers were less accepting of their daughters' requests for such help. The differential effect of maternal responsiveness for girls' and boys' cognitive development has been noted by other researchers (Crandall et al., 1964; Kagan & Moss, 1962; Martin, 1981).

Female competent problem solvers were characterized by a somewhat different constellation of variables. Female problem solvers appear to benefit from less maternal responsiveness and more distance, as evidenced by the fact that these females were identified as being less compliant and as having mothers who did not tolerate disagreement and questioning of their decisions or rules. A certain amount of mother-daughter conflict would be expected to occur in these dyads. The importance of moderate mother-daughter conflict for female cognitive development has previously been suggested (Baumrind, 1973; Hoffman, 1972; Lynn, 1969). In addition, mothers' tendency not to respond positively to girls' requests for assistance with easy tasks provided additional discriminative power. A similar finding has been reported

by Baruch and Barnett (1981) in their examination of competence-related behaviour of preschool girls, in that daughters of mothers who did not meet their requests for help on an easy puzzle were highly task oriented as opposed to being adult oriented. Parents' tendency to provide daughters with too much, often unnecessary, help has frequently been reported as having deleterious effects on females' intellectual functioning (Block, 1979, 1981). Although girls' low compliance and mothers' lack of help with easy tasks discriminated between high and low problem solvers, the mothers of competent problem solvers did tend to be involved with their daughters as shown by the factor measuring mothers' tendency to have their daughters help them with tasks. Such requirements possibly provide the girls with a sense of responsibility. Thus, for girls, competent problem solvers are identified as females who are low in compliance and have mothers who are involved with them but not in an over-protective manner.

Conclusions

The purpose of the present research was to further our understanding of the effects of sex-role socialization by examining the relation between children's compliance to adults and their problem-solving ability. The results of two studies provided evidence that, between the ages of four and five, children who are less compliant to adults are more likely to be competent problem solvers. Although

noncompliance has generally been viewed as a negative characteristic, low compliance appears to play a positive role in the development of problem-solving competence, at least for children without apparent behaviour problems. Within a developmental perspective, children are conceptualized as first establishing a secure base from which they can then strive for autonomy. The years between one and three are generally considered to be important for the development of children's sense of autonomy and competence (Erikson, 1959; White, 1960). By the ages of four and five, it is the children who are rated as being less compliant by their parents who are more likely to be competent problem solvers.

In order to understand the role of low compliance, it might be worthwhile to consider both the factors of compliance and dependence. Baumrind (1973) has observed that children can be both very obedient and very independent and in the present research, factor analyses revealed the identification of the two separate factors of compliance and independence. Although early theorizing (McClelland, Atkinson, Clark, & Lowell, 1953) emphasized the relation between independence and achievement, the results of research on independence training have produced somewhat inconsistent results, especially for females (Stein & Bailey, 1973). One reason for the inconsistent results may be that the important distinction between instrumental and emotional independence frequently has not

been made. Emotional independence appears to be the more critical and predictive variable (Hoffman, 1972; Stein & Bailey, 1973), that is, emotional independence as defined by children's ability to move away from their parents emotionally and to establish a separate self. Establishing a separate self is considered to be more difficult for females (Lynn, 1969), as the primary caretaker is generally the mother and, thus, of the same sex. A certain amount of parent-child distance appears to be necessary for the establishment of a separate self and emotional independence. It is possible that one function which low compliance plays is that of providing children with more opportunities to be emotionally independent, and thus affects the development of their problem-solving competence.

The finding that children who are assessed by their parents as being low compliant are more competent problem solvers would appear to be contradictory to the widely held notion that firm parental control promotes the development of autonomous, competent behaviour (Baumrind, 1967, 1971, 1973; Mussen, Conger, & Kagan, 1974). Baumrind (1973) has summarized her research findings by concluding that firm parental control is an important predictor of competence in early childhood. More recently, however, Lewis (1981) has proposed a reinterpretation of Baumrind's research by suggesting that Baumrind's variable of firm parental control may be

measuring either the parent's control, the child's willingness to obey, or even the absence of parent-child conflict. Moreover, Baumrind's definition of firm parental control suggests that salient external control promotes self-control, which is contradictory to the theory and research findings of the attribution literature (Lepper, 1981). Lewis (1981) stated that one could reverse Baumrind's interpretation of the measure of firm parental control and conclude that competent children may be those who feel in control of their parents. Although Baumrind has suggested that the benefits of firm parental control are the result of providing opportunities for the child to learn to dissent from clear boundaries, Lewis stated that it is more faithful to the data to suggest that it is the experience of influencing standards (e.g., "respect child's decision") which promotes independence and autonomy. In the present research, low compliance also cannot be identified as being predominantly due either to parental or to child behaviour, but rather should be viewed as a description of the parent-child dyad. The results, however, do indicate that low rather than high compliance is beneficial to the development of problem-solving competence. The question is still left unanswered as to whether parent-child conflict is necessary for the development of competence or whether the important factor is the child's sense of influence over family rules and discipline, whether this occurs

harmoniously or with conflict. An important direction of future research would be to investigate the role which a child's sense of control over parental socialization plays in the development of competence, in general, and of problem-solving ability, in particular. Both a child's perception of and actual influence should be considered. Thus, a change in the direction of research is warranted, with the socialization process being conceptualized and measured from the child's side of the interaction, by examining such constructs as child control, child influence, and parent compliance.

Although the results of the present research indicated that girls and boys who are less compliant to adults are better at problem solving, there is some suggestion that the low compliant girls will be discriminated against. The low compliant girls do not behave according to the norm of traditionally compliant feminine behaviour, and thus, their behaviour possibly will be perceived more negatively by parents and teachers. In related research by Crombie, Gold, and Noble (1983), teachers' perceptions of girls' compliance were found to have more of an influence on teachers' judgements of girls' intellectual competence than the girls' actual vocabulary or problem-solving scores had, with the more compliant girls perceived as being more competent. For boys, level of compliance was not observed to affect teachers' perceptions of their competence. Teachers

judged the less compliant girls as less competent, when actually those girls were more likely to be capable of successful, independent behaviour. Thus, low compliant girls will probably have more problems in school, in that their independent problem-solving efforts and low compliance are likely to be misinterpreted and negatively perceived and reinforced by teachers and parents. Although low compliance was found to be beneficial for the cognitive functioning of both girls and boys, the low compliant girls are expected to receive more socialization emphasis to change their behaviour than are the low compliant boys.

High compliance was found to be associated with poor problem-solving performance for girls and boys. If girls, however, continue to receive more direction and control in their socialization, then females as a group will tend to become more compliant to adults and less competent at problem solving. In contrast, the increasing emphasis on sex-role socialization for boys would be expected to decrease boys' compliance and to stress independent problem solving. Although high compliance is associated with low problem-solving competence for both boys and girls at this young age, the cumulative and increasing polarization of sex-role socialization would be expected to result in girls becoming more compliant and less competent at problem solving. In research on the problem-solving abilities of adults, females have generally shown

inferior performance relative to males unless the woman is employed at an occupational level equal to that of the adult male against whom she is being compared (Berger & Gold, 1979). Possibly employment outside of the home, especially at the professional level, is correlated with low compliance. Thus, the traditional feminine sex-role stereotype of compliance appears to have detrimental effects on the cognitive development of females.

The results of the present research indicated that different constellations of factors are associated with competent problem solving for boys and girls. Conditions for the optimal cognitive development of girls and boys do not appear to be necessarily the same, as is frequently assumed. A number of factors contribute to this difference, such as mothers' and fathers' overall differing patterns of socialization practices. Mothers and fathers have been reported to vary not only according to whether the child is the same- or opposite-sex as the parent, but also in the socialization domains they tend to emphasize. More specifically, mothers and fathers have been found to have different baselines for girls and boys in terms of a number of behaviours, such as the extent of emotional closeness the parent encourages in the child. Furthermore, the traditional sex-role stereotypes which are emphasized in our society differ significantly for girls and boys and generally are perceived to be more detrimental for females' cognitive development while being

more conducive for males' cognitive development. Thus, it is not reasonable to expect that the same pattern of interacting processes would facilitate cognitive competence in both girls and boys. To date, the socialization literature has not emphasized sufficiently the fact that females' and males' socialization should differ in order to provide the most favorable conditions for their cognitive development. Research should be conducted specifically to identify and compare the optimal parenting conditions for the development of cognitive competence in girls and boys. It would also be interesting to compare the parent-child interactions of males and females with two patterns of behaviour: the low compliant, competent problem solvers and the high compliant, poor problem solvers. In addition, future research would benefit from a more thorough investigation of age-related shifts in parents' and culture's socialization emphases for females and males, as opposed to the tendency of most research to be conducted utilizing a static socialization model. To conclude, this research has provided a better understanding of the effects of sex-role socialization for the cognitive development of both girls and boys.

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Appendix A

IT Scale for Children

Neutral Version

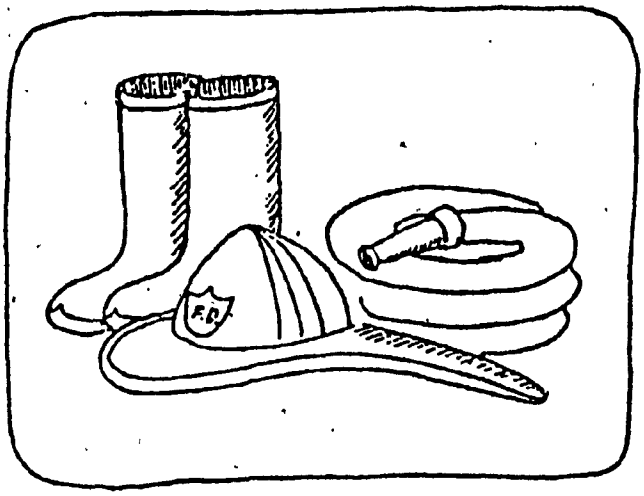
Instructions:

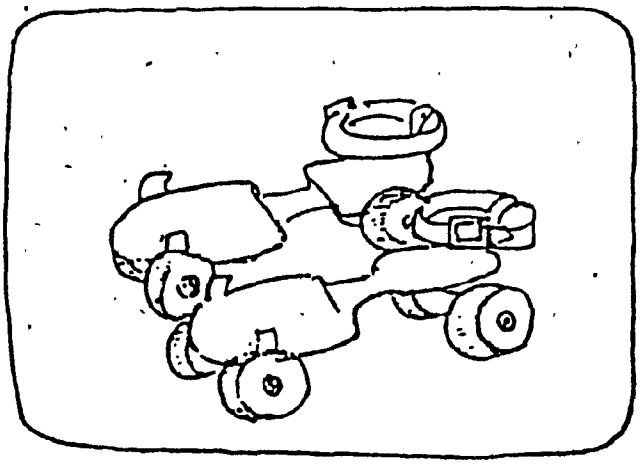
We are going to play a game. In this envelope we have a picture of a child and we are going to call this child IT. Let's play like the name of this child is IT. O.K? So this game will be about IT. Now we are going to show this child, whose name is IT, some cards with pictures on them.

The remainder of the instructions are as according to Brown (1956). As indicated in the text, neutral items were added and the pictures were redrawn in a more attractive format. Sample items are included from the toy-choice, adult and childhood sex-roles, and child figures subtests.

Appendix A (continued)

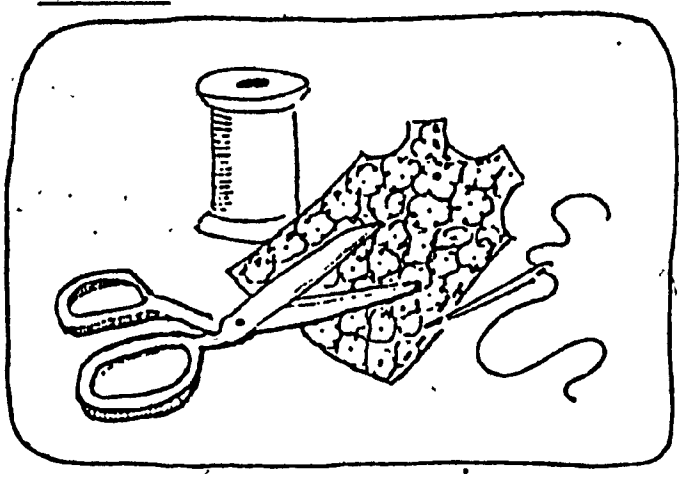
Sample items from the toy-choice subtest

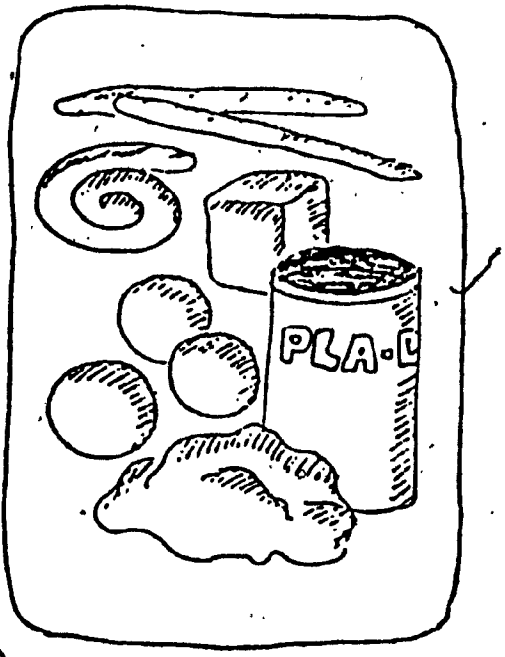


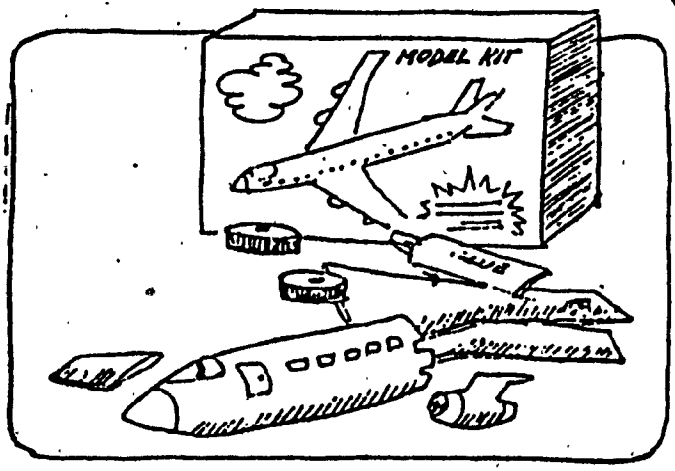


Appendix A (continued)

Sample items from the adult and childhood sex-roles subtest

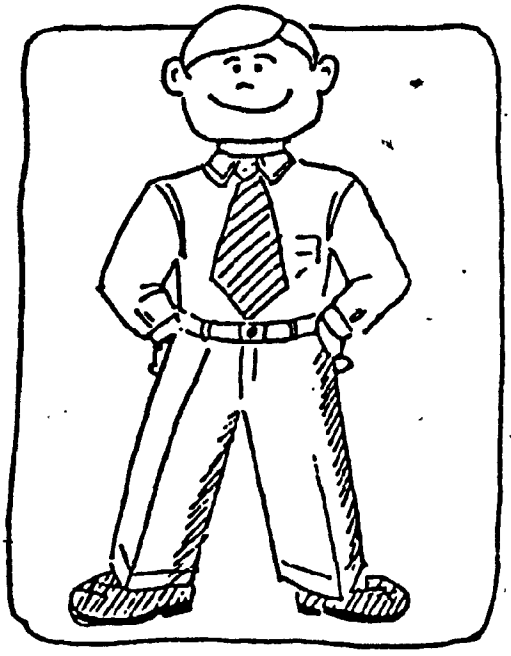


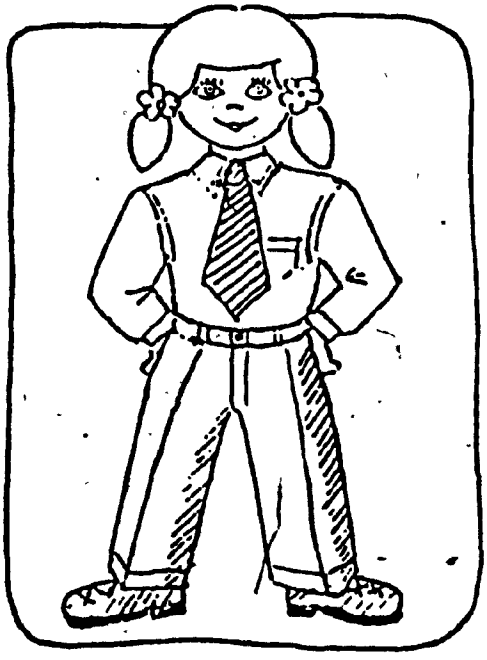


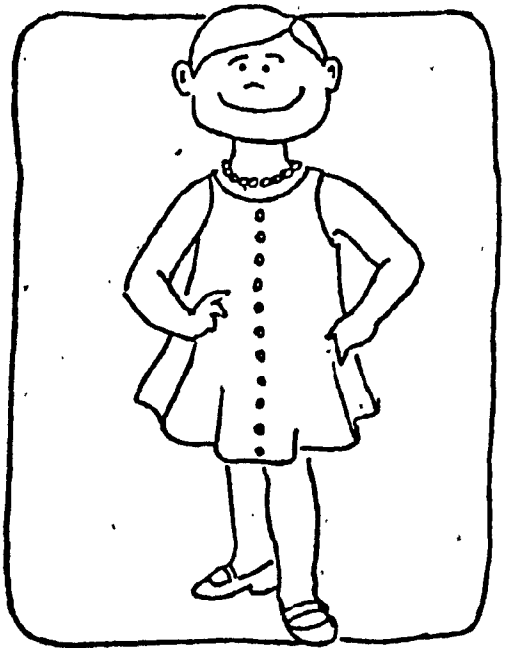


Appendix A (continued)

Items from the child figures subtest







Appendix B

Peabody Picture Vocabulary Test (1959)

Instructions:

This is a picture game. I am going to show you some pictures and read some words. You point to the best picture for the words. Some of the words will be very easy and some will be harder. If I read a word you don't know, you can guess.

Testing:

1. Practice with the three examples:

   A. bed B. fish C. butterfly

2.

Age Category:	Begin with:
Below 4-2	Plate No. 25
4-3 to 5-5	Plate No. 35

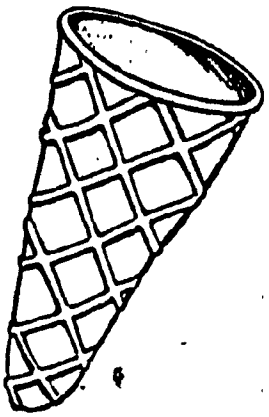
3. If the child does not score the first eight items correctly drop back 10 items. If there is another failure within the first eight items drop back to plate number 1.
4. Continue testing until the child fails 6 out of 8 consecutive items.

Appendix B (continued)

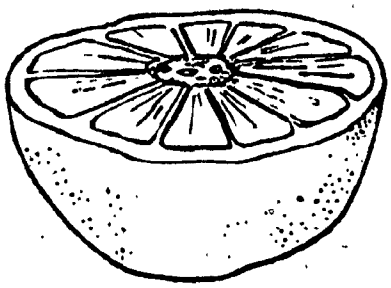
Item 25 - Grapefruit

25

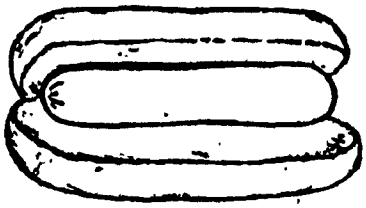
1



2



3



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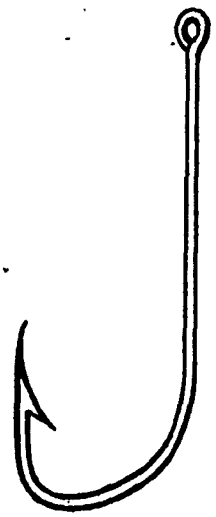
Appendix B (continued)

Item 35 - Badge

35

1



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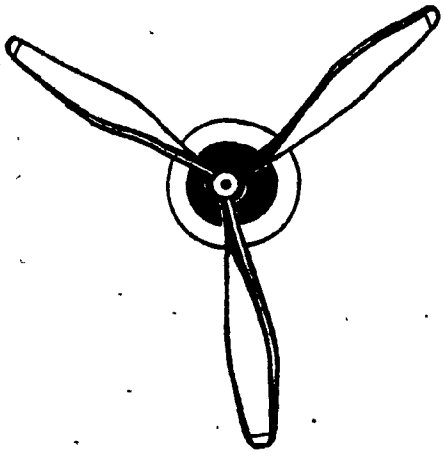
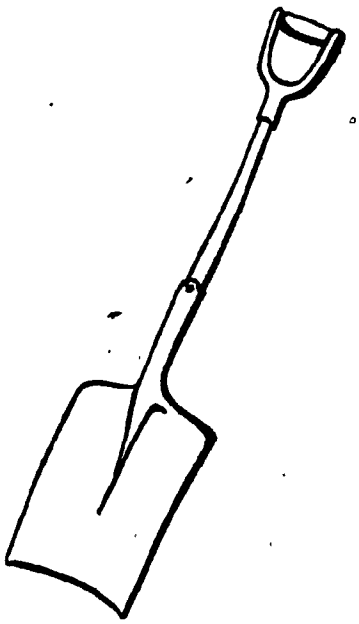


3



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Appendix C

Parent Questionnaire, Study I

INSTRUCTIONS: Circle the word that best represents your opinion.

(1) Does your child start playing on his or her own initiative?

Very often Often Sometimes Seldom Not at all

(2) When your child is trying to do something, do you usually show him or her how to do it?

Very often Often Sometimes Seldom Not at all

(3) Outside of school hours, do you encourage your child to play outside the house with other children?

Very often Often Sometimes Seldom Not at all

(4) Do you think your child learns how to do things by watching you do them?

Very often Often Sometimes Seldom Not at all

(5) Do you think that your child is too active?

Very often Often Sometimes Seldom Not at all

(6) When your child asks you for assistance to do something do you help immediately?

Very often Often Sometimes Seldom Not at all

(7) Do you encourage your child to try difficult activities or tasks?

Very often Often Sometimes Seldom Not at all

(8) Do you encourage your child to help you with tasks around the house?

Very often Often Sometimes Seldom Not at all

(9) Other than at school, does your child play in a group of four or more children?

Very often Often Sometimes Seldom Not at all

Appendix C (continued)

(10) Do you encourage your child to stay close to you and to follow you around the house?

Very often Often Sometimes Seldom Not at all

(11) When your child is trying to do something, do you encourage him or her to do it by him or herself?

Very often Often Sometimes Seldom Not at all

(12) How much do you insist that your child obeys your requests?

Very often Often Sometimes Seldom Not at all

(13) Do you encourage your child to explore on his or her own away from you?

Very often Often Sometimes Seldom Not at all

(14) When your child is frustrated by a difficult task, do you provide physical comfort?

Very often Often Sometimes Seldom Not at all

(15) Does your child like to play alone?

Very often Often Sometimes Seldom Not at all

(16) Do you think your child obeys your instructions?

Very often Often Sometimes Seldom Not at all

(17) Do you encourage your child to spend time playing or working with you?

Very often Often Sometimes Seldom Not at all

(18) Do you sometimes wish your child was more obedient?

Very often Often Sometimes Seldom Not at all

(19) If you were comparing your child to other children his or her own age, how would you rate your child's compliance?

A lot more than other children | More than other children | The same as other children | Less than other children | A lot less than other children

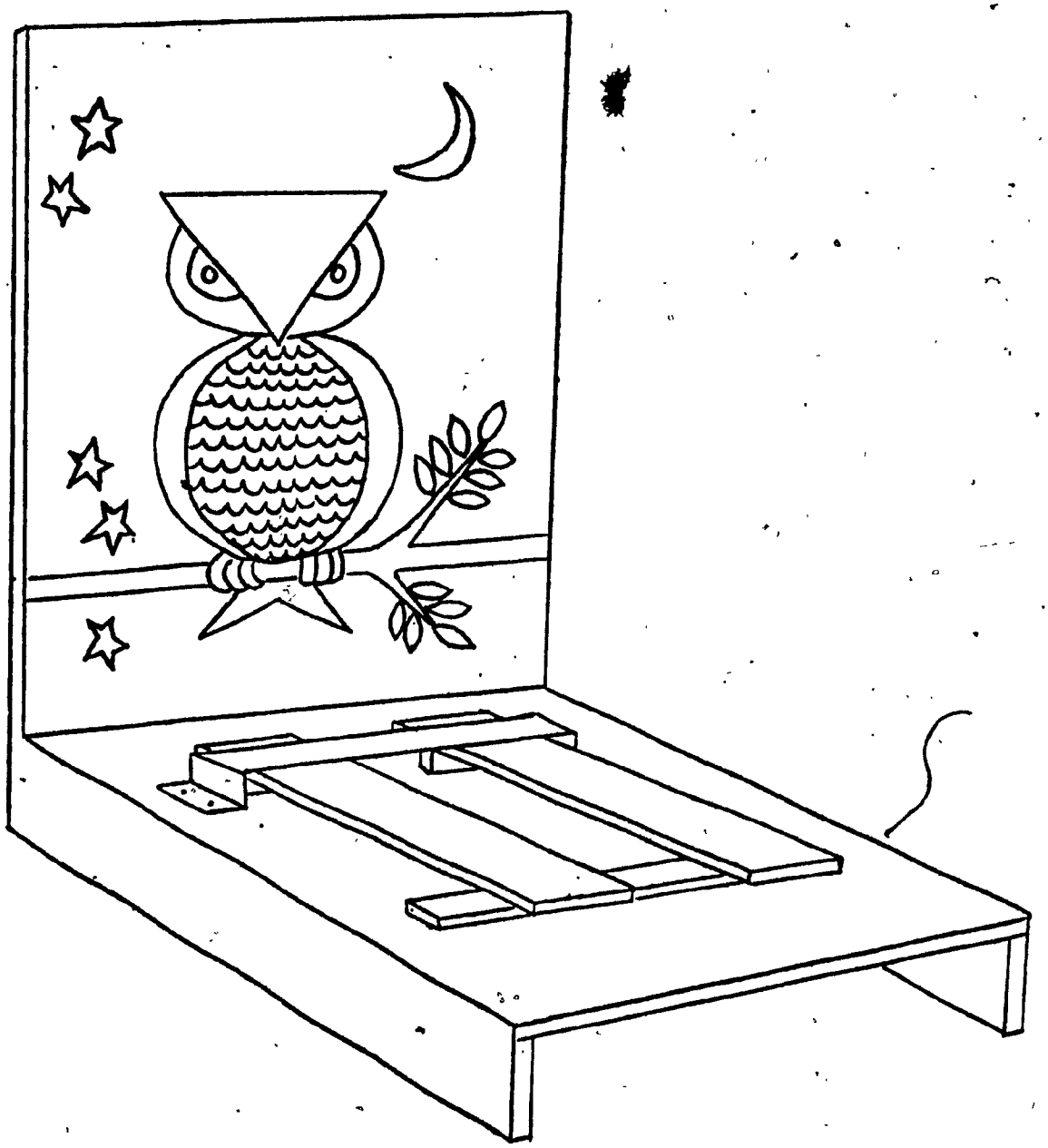
Appendix D

Frequency Distributions, Means, and Standard Deviations of Mothers' and Fathers' Compliance Ratings in Study I

Compliance Ratings	1	2	3	4	5	M	SD
Mothers' Compliance Ratings							
Both Boys and Girls	0	3	34	10	5	3.33	.73
Only Boys	0	2	16	7	2	3.33	.73
Only Girls	0	1	18	3	3	3.32	.75
Fathers' Compliance Ratings							
Both Boys and Girls	0	4	23	24	1	3.42	.67
Only Boys	0	2	13	11	1	3.41	.69
Only Girls	0	2	10	13	0	3.44	.63

Appendix E

Diagram of the Owl Task Apparatus



Appendix F

Circus Think It Through Subtest of Problem-Solving

Problem Identification - see Items 1 and 2.

Time Sequence - see Items 10 and 11.

Solution Evaluation - see Item 15.

Classification of Objects - see Item 19.

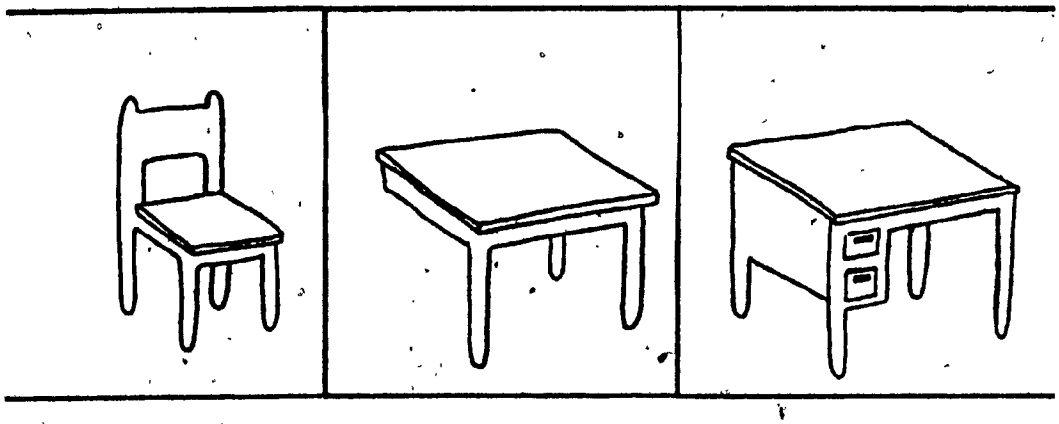
Appendix F (continued)

Problem Identification - Item 1 and 2

Now look at these pictures.

(From this point on, do not assist the child in marking the right answer. All responses must now be the child's alone.)

One of these pictures has something wrong.
Mark the picture that has something wrong.

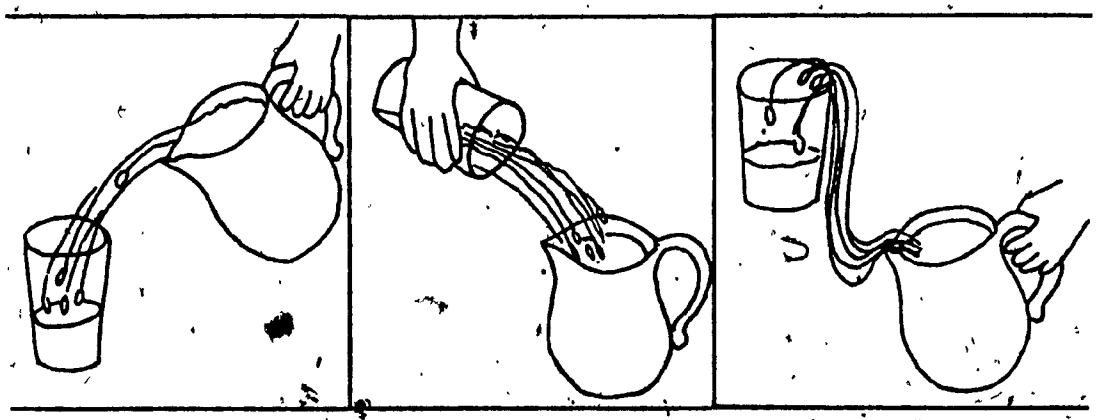


Allow time. Then indicate Item 2.

Say:

Go on to here.

One of these pictures has something wrong.
Mark the picture that has something wrong.



Appendix F (continued)

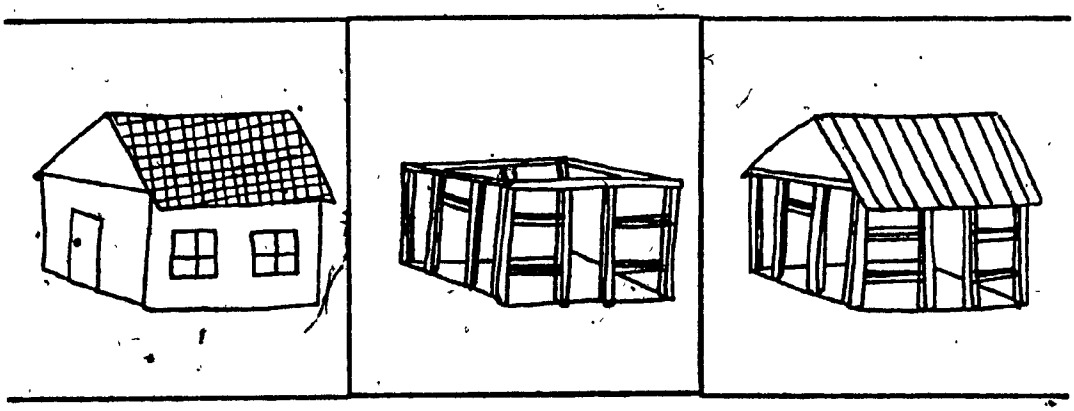
Time Sequence - Items 10 and 11

Indicate Item 10 and say:

> Look at these pictures. They tell a story. Mark the one that shows what happens FIRST. What happens FIRST.

Proceed with items 11-13 in similar fashion, observing all points previously emphasized, Say:

> Mark the picture that shows what happens FIRST.

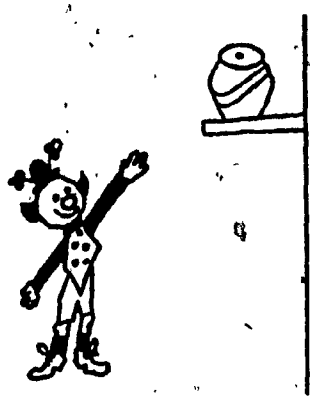


Appendix F (continued)

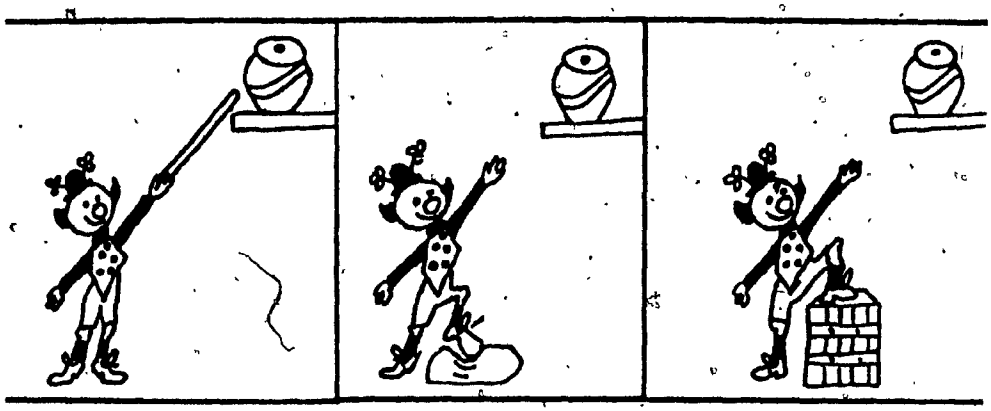
Solution Evaluation - Item 15

Then indicate Item 15 and say:

> Look at this picture. Now Clarence wants to get some cookies from a jar on a high shelf but he can't reach it.



> Mark the picture that shows the BEST way for Clarence to get the cookie jar.



Allow time. Then turn the page and indicate Item 16 and follow the same procedure.

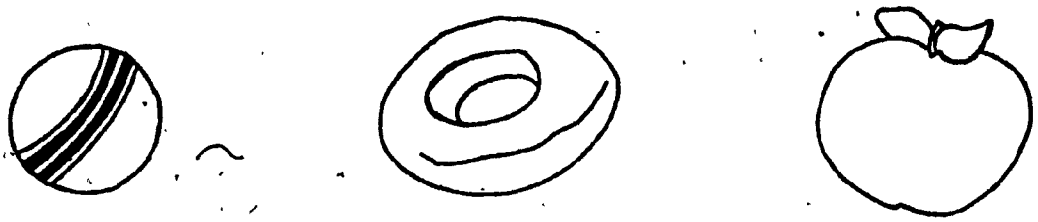
Appendix F (continued)

Classification of Objects - Item 19

Now go on to here. This is another kind.

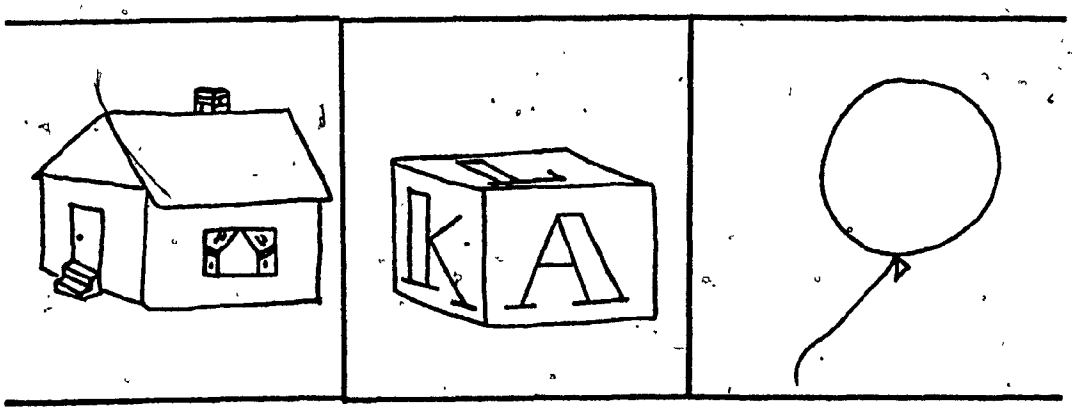
Indicate Item 19 and say:

Look at these carefully.



Indicate pictures at foot of page. Say:

They go with one of these. Mark the one here they go best with.



Allow time.

Turn the page.

Appendix G

Owl Task Instructions

Instructions:

Let's go play the Owl Game. To play the game, you want to get the eyes to light up. How do we get the eyes to light up? Well, you press these buttons three times. Now there are three different ways you can press these buttons three times and the eyes will light up. I am going to show you the three different ways. You can do it this way and the eyes light up - 3 1,2. See. Or you can do it this way - 1,2 3. See, the eyes light up. Or you can do it this way - 1 2,3. See. So there are three different ways you can press the buttons three times and the eyes will light up. Sometimes one way works, sometimes another way works. I'll go first - 1,2 3. Well, the eyes lit up. Now it's your turn and remember there are three different ways you can press the buttons three times.

Appendix H

Parents' Socialization Scales in Study I

Reinforcement of Proximity

(3) Outside of school hours, do you encourage your child to play outside the house with other children?

(10) Do you encourage your child to stay close to you and to follow you around the house?

(13) Do you encourage your child to explore on his or her own away from you?

(17) Do you encourage your child to spend time playing or working with you?

Reinforcement of Compliance

(12) How much do you insist that your child obeys your requests?

(16) Do you think your child obeys your instructions?

(18) Do you sometimes wish your child was more obedient?

Help Giving

(7) Do you encourage your child to try difficult activities or tasks?

(14) When your child is frustrated by a difficult task, do you provide physical comfort?

Use of Modelling

(2) When your child is trying to do something, do you usually show him or her how to do it?

(4) Do you think your child learns how to do things by watching you do them?

(6) When your child asks you for assistance to do something do you help immediately?

(8) Do you encourage your child to help you with tasks around the house?

(11) When your child is trying to do something, do you encourage him or her to do it by him or herself?

Appendix I

Summary of Analyses of Variance on Problem-Solving Scores for Groups Selected by Fathers' Compliance Ratings in Study I

Source of Variance	df	SS	MS	F
		Circus Think It Through		
Sex (A)	1	26.86	26.86	2.28
Compliance (B)	1	87.43	87.43	7.42**
A x B	1	7.11	7.11	.60
Error	47	554.17	11.79	
		Old Owl Task		
Between Subjects				
Sex (A)	1	40.96	40.96	1.72
Compliance (B)	1	.41	.41	.02
A x B	1	97.30	97.30	4.09*
Error	46	1,093.33	23.77	
Within Subjects				
Condition (C)	1	231.04	231.04	10.30***
A x C	1	51.84	51.84	2.31
B x C	1	9.06	9.06	.40
A x B x C	1	4.47	4.47	.20
Error	46	1,031.59	22.43	

* $p < .05$
** $p < .01$
*** $p < .005$

Appendix J

Summary of Analyses of Variance for Order of Presentation Effects on Owl Task Scores for Groups Selected by Fathers' Compliance Ratings in Study I

Source of Variance	df	SS	MS	F
		Direct Imitation Condition		
Sex (A)	1	156.95	156.95	6.68
Compliance (B)	1	7.73	7.73	.33
Order of Presentation (C)	1	13.76	13.76	.59
A x B	1	10.42	10.42	.44
A x C	1	8.46	8.46	.36
B x C	1	16.05	16.05	.68
A x B x C	1	2.28	2.28	.10
Error	43	1,011.12	23.51	
		Reverse Imitation Condition		
Sex (A)	1	9.64	9.64	.22
Compliance (B)	1	8.88	8.88	.20
Order of Presentation (C)	1	3.93	3.93	.09
A x B	1	47.46	47.46	1.09
A x C	1	.74	.74	.02
B x C	1	6.18	6.18	.14
A x B x C	1	43.57	43.57	1.00
Error	43	1,878.09	43.68	

Appendix K

Univariate F Values for Socialization Scores for Groups Selected by Fathers' and Mothers' Compliance Ratings in Study I

Socialization Factors	Reinf. of Proximity	Reinf. of Compliance	Help Giving	Use of Modelling
For Groups Selected by Fathers' Compliance Ratings				
Paternal Scores				
Sex	.01	.14	.18	.26
Compliance	.01	1.46	.10	.16
Sex x Compliance	1.76	1.31	.60	4.05*
Maternal Scores				
Sex	.01	.01	.17	2.08
Compliance	.30	9.94**	4.94*	1.61
Sex x Compliance	.89	2.85	1.75	.31
For Groups Selected by Mothers' Compliance Ratings				
Paternal Scores				
Sex	.01	.43	.63	1.39
Compliance	1.63	.48	.90	.40
Sex x Compliance	2.74	.44	.01	.31
Maternal Scores				
Sex	.02	.04	.42	2.32
Compliance	1.18	.18	.01	.48
Sex x Compliance	.08	.02	1.89	1.43

* $p < .05$
** $p < .005$

Appendix L

Summary of Analysis of Variance on Problem-Solving Scores for Groups Selected by Mothers' Compliance Ratings in Study I

Source of Variance	df	SS	MS	F
		Circus Think It Through		
Sex (A)	1	25.68	25.68	1.93
Compliance (B)	1	1.08	1.08	.08
A x B	1	11.56	11.56	.87
Error	40	532.00	13.30	
		Old Owl Task		
Between Subjects				
Sex (A)	1	40.95	40.95	1.63
Compliance (B)	1	16.20	16.20	.64
A x B	1	34.97	34.97	1.39
Error	49	1,232.12	25.15	
Within Subjects				
Condition (C)	1	190.46	190.46	9.13*
A x C	1	69.18	69.18	3.32
B x C	1	1.39	1.39	.07
A x B x C	1	67.08	67.08	3.22
Error	49	1,022.16	20.86	

* $p < .005$

Appendix M

Comparisons of Performance on the Owl Task among the Gold et al. Study, Study I, and Study II

	Boys		Girls	
	Imitate	Reverse	Imitate	Reverse
Gold et al. Study[a]				
Male Exp.	9.11(5.28)	10.22(6.32)	8.17(6.29)	15.05(5.50)
Female Exp.	8.98(4.96)	10.86(4.92)	8.41(5.05)	14.22(7.54)
Study I[b]				
Overall	10.24(3.48)	11.84(5.60)	7.52(4.05)	12.00(5.77)
Mothers' Ratings				
Low C.	10.12(4.27)	13.18(6.13)	7.56(4.31)	10.67(5.13)
High C.	10.00(3.40)	9.20(4.64)	6.50(2.98)	12.50(5.83)
Fathers' Ratings				
Low C.	9.85(3.51)	10.46(5.78)	8.62(4.57)	12.92(5.92)
High C.	10.67(3.55)	13.33(5.21)	6.33(3.17)	11.00(5.69)
Study II[c]				
Overall	9.94(5.84)	11.87(5.80)	9.88(5.85)	12.80(5.95)
Mothers' Ratings				
Low C.	9.41(4.23)	12.00(5.84)	9.88(5.31)	11.64(5.08)
High C.	10.50(7.28)	11.71(5.97)	9.88(6.50)	14.22(6.75)
Fathers' Ratings				
Low C.	8.67(5.70)	11.78(6.21)	10.12(5.68)	12.38(5.20)
High C.	12.00(5.89)	12.73(5.00)	9.87(6.39)	13.26(6.81)

Note. Standard deviations are in parentheses.

[a] Gold et al. Study: non-repeated measures design with a male and female experimenter and compliance not measured.

[b] Study I: repeated measures design with a female experimenter and subjects classified as low or high compliers based either on fathers' or mothers' compliance ratings.

[c] Study II: non-repeated measures design with a female experimenter and subjects classified as low or high compliers based either on fathers' or mothers' compliance ratings.

Appendix N

Means and Standard Deviations of Matching Variables for Groups Selected by Mothers' and Fathers' Compliance Ratings in Study II

	Low Compliant		High Compliant	
	Boys	Girls	Boys	Girls
By Mothers' Compliance Ratings				
Characteristics n	51	53	53	51
Age (in months)	59.51 (3.83)	58.64 (4.02)	59.28 (4.37)	59.43 (4.21)
PPVT scores	104.82 (12.37)	105.79 (8.51)	105.70 (13.55)	105.20 (12.35)
SES scores	2.33 (.77)	2.42 (1.06)	2.25 (.90)	2.18 (.84)
Fathers' Ed. level	15.29 (3.15)	15.81 (3.77)	15.51 (3.33)	15.63 (3.77)
Mothers' Ed. level	14.41 (2.99)	14.28 (2.48)	14.02 (2.82)	13.67 (2.40)
By Fathers' Compliance Ratings				
Characteristics n	50	51	51	51
Age (in months)	58.94 (4.33)	58.31 (4.06)	59.67 (3.89)	59.59 (3.99)
PPVT scores	107.42 (12.90)	105.65 (8.84)	103.18 (13.02)	105.45 (12.03)
SES scores	2.40 (.86)	2.31 (.93)	2.20 (.80)	2.33 (.99)
Fathers' Ed. level	15.52 (2.99)	15.84 (3.26)	15.22 (3.04)	15.49 (4.24)
Mothers' Ed. level	14.42 (2.52)	14.00 (2.40)	14.00 (2.62)	14.00 (2.48)

Note. Standard deviations are in parentheses.

Appendix O

Parent Questionnaire - Study II

(On the original Parent Questionnaire the seven response choices were more widely spaced.)

INSTRUCTIONS: CIRCLE THE WORD THAT BEST REPRESENTS YOUR OPINION.

1. WHEN YOUR CHILD IS TRYING TO DO SOMETHING, DO YOU SHOW HIM OR HER HOW TO DO IT?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

2. OUTSIDE OF SCHOOL HOURS, DO YOU DISAPPROVE OF YOUR CHILD PLAYING OUTSIDE THE HOUSE?

Disapprove Strongly	Disapprove Moderately	Disapprove Slightly	Unsure	Approve Slightly	Approve Moderately	Approve Strongly

3. DOES YOUR CHILD LEARN HOW TO DO THINGS BY WATCHING YOU DO THEM?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

4. WHEN YOUR CHILD ASKS FOR ASSISTANCE TO DO SOMETHING, DO YOU HELP IMMEDIATELY?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly More Than Sometimes	Seldom	Very Seldom

5. DO YOU ENCOURAGE YOUR CHILD TO TRY DIFFICULT ACTIVITIES OR TASKS?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

6. DO YOU ENCOURAGE YOUR CHILD TO HELP YOU WITH TASKS AROUND THE HOUSE?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

Appendix O (continued)

7. WHEN MY CHILD IS TRYING TO DO SOMETHING, I LET HIM OR HER DO IT BY HIM OR HERSELF.

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

8. DOES YOUR CHILD OBEY YOUR INSTRUCTIONS?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

9. PRESCHOOL CHILDREN SHOULD BE ALLOWED TO EXPLORE OUTDOORS NEAR THEIR HOMES.

Agree Strongly	Agree Moderately	Agree Slightly	Unsure	Disagree Slightly	Disagree Moderately	Disagree Strongly

10. WHEN YOUR CHILD IS FRUSTRATED BY A DIFFICULT TASK, DO YOU PROVIDE PHYSICAL COMFORT?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

11. HOW OFTEN DO YOU SPEND TIME PLAYING OR WORKING WITH YOUR CHILD?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

12. HOW OFTEN DO YOU WISH YOUR CHILD WAS MORE OBEDIENT?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

13. IN THE HOME, HOW OFTEN DO YOU LET YOUR CHILD PLAY AWAY FROM ADULTS?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

Appendix O (continued)

14. HOW OFTEN TO YOU ACCEPT YOUR CHILD'S REQUESTS FOR HELP WITH SOMETHING WHICH HE OR SHE IS ABLE TO DO ON HIS OR HER OWN?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

15. PRESCHOOL CHILDREN SHOULD TRY AND PLEASE ADULTS.

Agree Strongly	Agree Moderately	Agree Slightly	Unsure	Disagree Slightly	Disagree Moderately	Disagree Strongly

16. WHEN YOU ARE AT HOME, HOW OFTEN ARE YOUR CHILD'S ACTIVITIES CONTROLLED BY YOU?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

17. HOW OFTEN DO YOU ALLOW YOUR CHILD TO QUESTION YOUR DECISIONS OR RULES?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

18. DOES YOUR CHILD COMPLY IMMEDIATELY WITH YOUR FIRST DIRECTIVE TO STOP OR CHANGE HIS OR HER BEHAVIOUR?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

19. DO YOU GIVE YOUR CHILD HELP WHEN HE OR SHE IS DOING A DIFFICULT TASK, EVEN IF HE OR SHE HAS NOT ASKED FOR HELP?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

20. I DISAPPROVE OF PRESCHOOL CHILDREN MAKING DECISIONS FOR THEMSELVES.

Disapprove Slightly	Disapprove Moderately	Disapprove Slightly	Unsure	Approve Slightly	Approve Moderately	Approve Strongly

Appendix O (continued)

21. DO YOU TRY TO GET YOUR CHILD TO RELY ON HIS OR HER OWN EFFORTS TO GET WHAT HE OR SHE NEEDS?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

22. DO YOU APPROVE OF YOUR CHILD EXPRESSING DISAGREEMENT WITH YOUR DECISIONS OR RULES?

Disapprove Strongly	Disapprove Moderately	Disapprove Slightly	Unsure	Approve Slightly	Approve Moderately	Approve Strongly

23. WHEN MY CHILD IS PLAYING AT HOME; I HAVE HIM OR HER PLAY IN THE SAME VICINITY AS ME.

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

24. HOW OFTEN IS YOUR CHILD WILLING TO RISK YOUR DISAPPROVAL BY NOT COMPLYING WITH YOUR DIRECTIONS.

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

25. DO YOU RESPOND POSITIVELY TO YOUR CHILD'S REQUESTS FOR HELP WITH AN EASY TASK?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

26. HOW OFTEN DOES YOUR CHILD CONFORM WHEN YOU TELL HIM OR HER WHAT TO DO?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

27. PRESCHOOL CHILDREN CAN BE TOO CAUTIOUS.

Agree Strongly	Agree Moderately	Agree Slightly	Unsure	Disagree Slightly	Disagree Moderately	Disagree Strongly

Appendix Q (continued)

28. IN GENERAL, DO YOU HAVE TO REPEAT YOUR DIRECTIONS OR INCREASE THE PRESSURE TO GET YOUR CHILD'S COMPLIANCE?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

29. HOW OFTEN DO YOU EMPLOY YOUR CHILD TO HELP WITH TASKS?

Very Often	Often	Slightly More Than Sometimes	Sometimes	Slightly Less Than Sometimes	Seldom	Very Seldom

30. I DISAPPROVE OF MY CHILD PLAYING WITHOUT SUPERVISION.

Disapprove Slightly	Disapprove Moderately	Disapprove Strongly	Unsure	Approve Slightly	Approve Moderately	Approve Strongly

31. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, HOW WOULD YOU RATE YOUR CHILD'S COMPLIANCE?

A Lot More Than Other Children	More Than Other Children	Slightly More Than Other Children	The Same As Other Children
Slightly Less Than Other Children	Less Than Other Children	A Lot Less Than Other Children	

32. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, WHEN YOUR CHILD IS WORKING ON A TASK, HOW MUCH DOES YOUR CHILD TEND TO SEEK HELP?

33. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, HOW DISOBEDIENT IS YOUR CHILD?

34. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, WHEN YOUR CHILD IS TRYING TO DO SOMETHING HOW MUCH DOES HE OR SHE DO IT BY HIM OR HERSELF?

35. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, HOW WOULD YOU RATE YOUR CHILD'S UNQUESTIONED OBEDIENCE OF YOUR REQUESTS?

36. IF YOU WERE COMPARING YOUR CHILD TO OTHER CHILDREN HIS OR HER OWN AGE, HOW INDEPENDENT IS YOUR CHILD?

(The response choices for items 31 to 36 are identical. Due to space constraints they are presented only once.)

Appendix P

Peabody Picture Vocabulary Test - Revised (1981)

Instructions:

I want you to look at some pictures with me. See all the pictures on this page. I will say a word; then I want you to put your finger on the picture of the word I have said. Let's try one. Put your finger on _____. That's fine. Now put your finger on _____. Good! Show me _____. You made a good try, but this is the correct answer. Fine! Now I am going to show you some other pictures. Each time I say a word, you find the best picture of it. When we get further along in the book, you may not be sure you know the meaning of the word, but I want you to look carefully at all of the pictures anyway, and choose the one you think is right. Point to _____.

Testing:

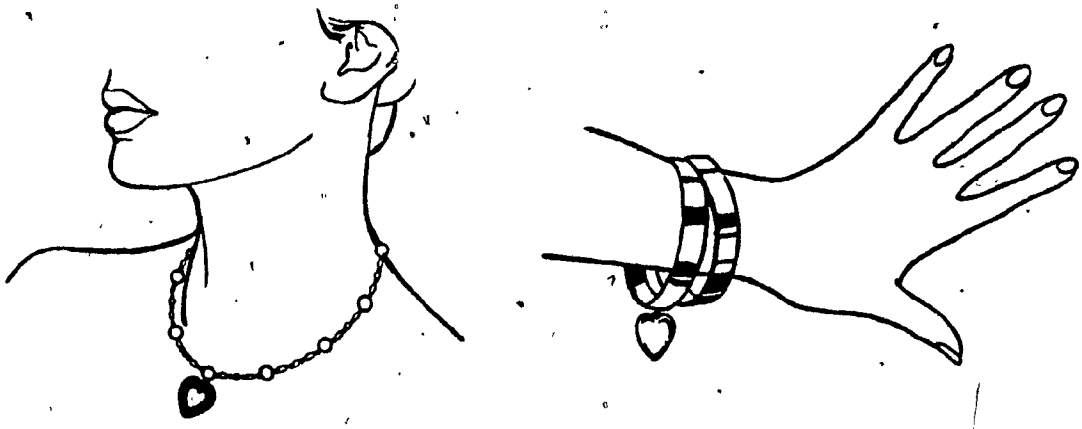
1. Practice with the five examples.
2.

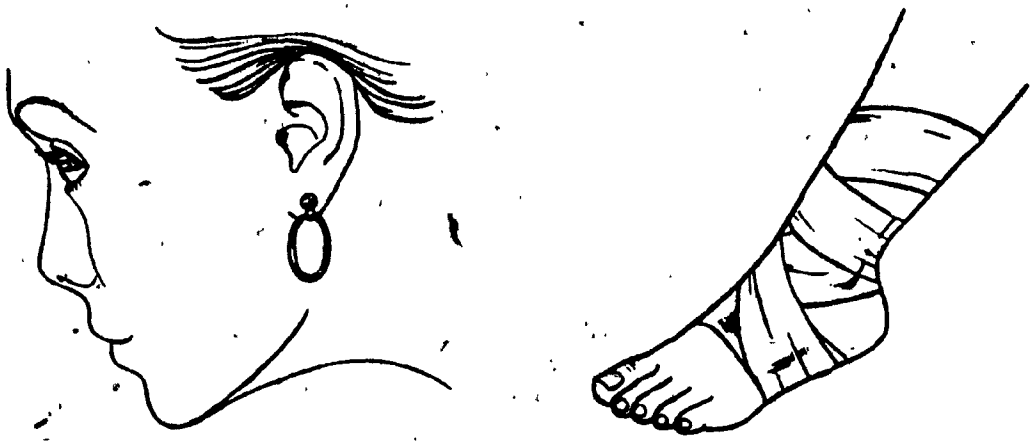
Age Category:	Begin with:
4 years	Plate Number 15.
4 years, 6 months	Plate Number 20.
5 years	Plate Number 30.

3. If the child does not score the first eight items correctly drop back 10 items. If there is another failure within the first eight items drop back to plate number 1.
4. Continue testing until the child fails 6 out of 8 consecutive items.

Appendix P (continued)

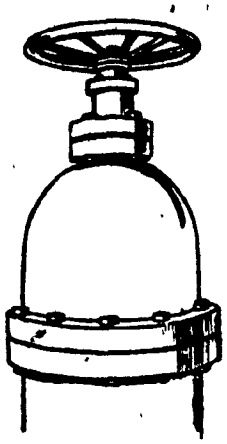
Item 15 - Bandage

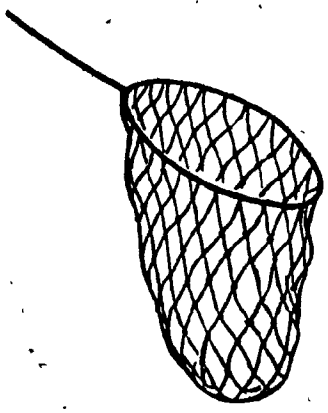


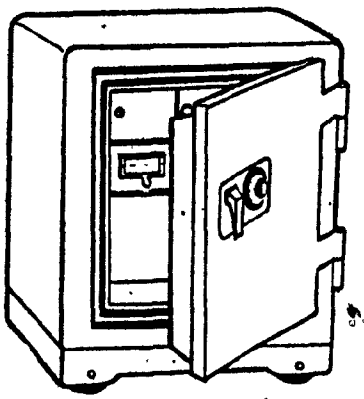


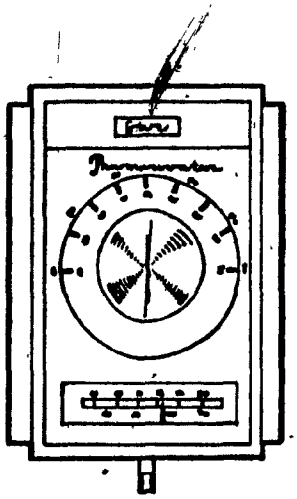
Appendix P (continued)

Item 20 - Net









Appendix Q

Factor Loadings and Correlation Coefficients for Mothers' Scores on the Twelve Compliance Items in Study II

	Factor Loadings		Item-Scale Correlation Coefficients[b]
	Factor 1	Factor 2	
Compliance Scale[a]			
Item 8	.7646	-.0429	.72
Item 12	.6571	-.1505	.64
Item 18	.7986	-.1489	.77
Item 24	.6565	-.2490	.65
Item 26	.7204	-.2202	.70
Item 28	.6982	-.0026	.67
Item 31	.7050	.0287	.65
Item 33	.7297	.0582	.67
Item 35	.7840	-.0867	.74
Independence Scale[a]			
Item 32	.3680	.6773	.65
Item 34	.3092	.8306	.72
Item 36	.1214	.6070	.53
Eigenvalue	5.42	2.08	
% of Variance	45.20	17.30	

[a] Cronbach's alpha reliability coefficients for the constructed scales of compliance and independence were .91 and .79, respectively.

[b] Item-scale correlation coefficients were calculated between an individual item and the total of the remaining items on the constructed scale.

Appendix R

Factor Loadings and Correlation Coefficients for Fathers' Scores on the Twelve Compliance Items in Study II

	Factor Loadings		Item-Scale Correlation Coefficients[b]
	Factor 1	Factor 2	
Compliance Scale[a]			
Item 8	.7086	-.1374	.67
Item 12	.6111	-.0375	.58
Item 18	.8032	-.0995	.75
Item 24	.6636	-.0726	.63
Item 26	.6939	-.1326	.65
Item 28	.6539	-.1007	.63
Item 31	.7345	.1159	.67
Item 33	.6343	.1058	.58
Item 35	.7078	-.0427	.66
Independence Scale[a]			
Item 32	.1633	.6518	.58
Item 34	.1602	.8553	.64
Item 36	.0715	.5965	.54
Eigenvalue	4.87	2.05	
% of Variance	40.60	17.10	

[a] Cronbach's alpha reliability coefficients for the constructed scales of compliance and independence were .89 and .76, respectively.

[b] Item-scale correlation coefficients were calculated between individual item and the total of the remaining items on the constructed scale.

Appendix S

The Compliance Scale and the Independence Scale: Items Retained on the Constructed Scales in Study II

Compliance Scale

(8) Does your child obey your instructions?

(12) How often do you wish your child was more obedient?

(18) Does your child comply immediately with your first directive to stop or change his or her behaviour?

(24) How often is your child willing to risk your disapproval by not complying with your directions?

(26) How often does your child conform when you tell him or her what to do?

(28) In general, do you have to repeat your directions or increase the pressure to get your child's compliance?

(31) If you were comparing your child to other children his or her own age, how would you rate your child's compliance?

(33) If you were comparing your child to other children his or her own age, how disobedient is your child?

(35) If you were comparing your child to other children his or her own age, how would you rate your child's unquestioned obedience of your requests?

Independence Scale

(32) If you were comparing your child to other children his or her own age, when your child is working on a task, how much does your child tend to seek help?

(34) If you were comparing your child to other children his or her own age, when your child is trying to do something how much does he or she do it by him or herself?

(36) If you were comparing your child to other children his or her own age, how independent is your child?

Appendix T

Frequency Distributions, Means, and Standard Deviations of Mothers' and Fathers' Compliance Ratings in Study II

Compliance Level	Mothers' Compliance Ratings			Fathers' Compliance Ratings		
	Both Boys and Girls	Only Boys	Only Girls	Both Boys and Girls	Only Boys	Only Girls
1- 5	0	0	0	0	0	0
6-10	0	0	0	0	0	0
11-15	1	1	0	0	0	0
16-20	5	4	1	0	0	0
21-25	5	2	3	7	3	4
26-30	16	10	6	20	14	6
31-35	40	21	19	43	21	22
36-40	47	23	24	40	20	20
41-45	48	25	23	41	20	21
46-50	24	10	14	35	15	20
51-55	20	10	10	20	10	10
56-60	4	1	3	4	4	0
61-65	1	0	1	1	0	1
Means	39.56	38.64	40.52	40.15	39.84	40.47
Standard Deviations	8.73	9.00	8.37	8.45	8.80	8.11

Appendix U

Mothers' Socialization Scales for Boys and Girls Combined: Factor Loadings for Items[a] Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
	(6) Encourages child to help with tasks around the house.	.8577
	(29) Employs child to help with tasks.	.7027
	(11) Spends time playing or working with child.	.4927
Factor 1[b] eigenvalue = 2.53, variance accounted for = 26%, alpha reliability coefficient = .74.		
Reinforcement of Requests for Assistance with Easy Tasks		
	(14) Accepts child's request for help with something the child is able to do on his or her own.	.9090
	(25) Responds positively to child's requests for help with an easy task.	.5398
Factor 2, eigenvalue = 1.80, variance accounted for = 18%, alpha reliability coefficient = .65.		
Reinforcement of Child Compliance		
	(22) Disapproves of child expressing disagreement with decisions or rules.	.7174
	(17) Seldom allows child to question decisions or rules.	.5119
Factor 3, eigenvalue = 1.01, variance accounted for = 10%, alpha reliability coefficient = .61.		

[a] The individual items which make up each of the constructed scales are identified by the numbers in parentheses which correspond with the actual item numbers on the parent questionnaire (see Appendix O).

[b] The numbering of the factors is based on their order of extraction and thus their importance.

Appendix V

Mothers' Socialization Scales for Boys: Factor Loadings for Items[a] Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
(6)[a]	Encourages child to help with tasks around the house.	.8540
(29)	Employs child to help with tasks.	.7570
(3)	Child learns how to do things by watching parent do them.	.5112
(11)	Spends time playing or working with child.	.4873
Factor 1[b], eigenvalue = 2.77, variance accounted for = 25%, alpha reliability coefficient = .74.		
Reinforcement of Requests For Assistance with Easy Tasks		
(14)	Accepts child's request for help with something the child is able to do on his or her own.	.8965
(25)	Responds positively to child's requests for help with an easy task.	.5196
Factor 2, eigenvalue = 2.17, variance accounted for = 19%, alpha reliability coefficient = .68.		
Reinforcement of Child Compliance		
(22)	Disapproves of child expressing disagreement with decisions or rules.	.6321
(17)	Seldom allows child to question decisions or rules.	.5614
Factor 4[c], eigenvalue = 1.26, variance accounted for = 11%, alpha reliability coefficient = .63.		
Reinforcement of Exploring Outside		
(9)	Children should be allowed to explore outdoors near their homes.	.7698
(2)	Approves of child playing outside the house.	.6408
Factor 5, eigenvalue = 1.04, variance accounted for = 9%, alpha reliability coefficient = .65.		

[a] See notation [a] on Appendix U.

[b] See notation [b] on Appendix U.

[c] A scale was not constructed for Factor 3 because of low inter-item correlation coefficients.

Appendix W

Mothers' Socialization Scales for Girls: Factor Loadings for Items Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
	(6) Encourages child to help with tasks around the house.	.8885
	(29) Employs child to help with tasks.	.6630
	(11) Spends time playing or working with child.	.5436
Factor 1, eigenvalue = 2.56, variance accounted for = 23%, alpha reliability coefficient = .73.		
Reinforcement of Child Compliance		
	(15) Agrees that children should try and please adults.	.7442
	(22) Disapproves of child expressing disagreement with decisions or rules.	.6587
	(17) Seldom allows child to question decisions or rules.	.5274
Factor 2, eigenvalue = 1.93, variance accounted for = 17%, alpha reliability coefficient = .66.		
Giving of Overhelp		
	(1) Shows child how to do something, when the child is trying to do something.	.7087
	(19) Gives child help with a difficult task, even if the child has not asked for help.	.6151
Factor 3, eigenvalue = 1.75, variance accounted for = 16%, alpha reliability coefficient = .54.		
Reinforcement of Requests for Assistance with Easy Tasks		
	(25) Responds positively to child's requests for help with an easy task.	.6593
	(14) Accepts child's request for help with some-thing the child is able to do on his or her own.	.6281
Factor 4, eigenvalue = 1.16, variance accounted for = 10%, alpha reliability coefficient = .62.		
Reinforcement of Independence		
	(13) Seldom lets child play away from adults.	-.5584
	(7) Lets child do it on his or her own when the child is trying to do something.	.5430
Factor 5, eigenvalue = 1.05, variance accounted for = 9%, alpha reliability coefficient = .50.		

Appendix X

Fathers' Socialization Scales for Boys and Girls Combined: Factor Loadings for Items[a] Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
	(29)[a] Employs child to help with tasks.	.8286
	(6) Encourages child to help with tasks around the house.	.7300
Factor 1[b], eigenvalue = 2.82, variance accounted for = 27%, alpha reliability coefficient = .77.		
Giving of Overhelp		
	(19) Gives child help with a difficult task, even if the child has not asked for help.	.8071
	(1) Shows child how to do something, when the child is trying to do something.	.4681
Factor 2, eigenvalue = 2.08, variance accounted for = 20%, alpha reliability coefficient = .57.		
Reinforcement of Requests For Assistance with Easy Tasks		
	(25) Responds positively to child's requests for help with an easy task.	.6526
	(14) Accepts child's request for help with something the child is able to do on his or her own.	.5823
Factor 3, eigenvalue = 1.26, variance accounted for = 20%, alpha reliability coefficient = :61.		

[a] The individual items which make up each of the constructed scales are identified by the numbers in parentheses which correspond with the actual item numbers on the parent questionnaire (see Appendix O).

[b] The numbering of the factors is based on their order of extraction and thus their importance.

Appendix Y

Fathers' Socialization Scales for Boys: Factor Loadings for Items[a] Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
	(29) Employs child to help with tasks.	.8773
	(6) Encourages child to help with tasks around the house.	.6608
	(5) Encourages child to try difficult activities or tasks.	.4237
Factor 1[b], eigenvalue = 2.88, variable accounted for = 24%, alpha reliability coefficient = .70.		
Giving of Overhelp		
	(19) Gives child help with a difficult task, even if the child has not asked for help.	.6526
	(4) Helps immediately when child requests assistance.	.6466
	(1) Shows child how to do something, when the child is trying to do something.	.4878
Factor 2, eigenvalue = 2.50, variable accounted for = 21%, alpha reliability coefficient = .61.		
Reinforcement of Compliance		
	(22) Disapproves of child expressing disagreement with decisions or rules.	.8413
	(17) Seldom allows child to question decisions or rules.	.6149
Factor 3, eigenvalue = 1.55, variance accounted for = 13%, alpha reliability coefficient = .70.		
Reinforcement of Requests for Assistance with Easy Tasks		
	(14) Accepts child's request for help with something the child is able to do on his or her own.	.7543
	(25) Responds positively to child's requests for help with an easy task.	.6148
Factor 4, eigenvalue = 1.12, variable accounted for = 10%, alpha reliability coefficient = .70.		

[a] See notation [a] on Appendix W.

[b] The numbering of the factors is based on their order of extraction and thus their importance.

Appendix Z

Fathers' Socialization Scales for Girls: Factor Loadings for Items Retained on the Constructed Scales in Study II

Scale	Item	Factor Loadings
Reinforcement of Children for Helping with Tasks		
	(29) Employs child to help with tasks.	.9214
	(6) Encourages child to help with tasks around the house.	.6778
	(11) Spends time playing or working with child.	.5301
	Factor 1, eigenvalue = 3.18, variance accounted for = 25%, alpha reliability coefficient = .72.	
Reinforcement of Attempting Difficult Tasks		
	(10) Provides physical comfort when child is frustrated by a difficult task.	.8016
	(5) Encourages child to try difficult activities or tasks.	.5526
	Factor 2, eigenvalue = 1.96, variance accounted for = 16%, alpha reliability coefficient = .64.	
Giving of Overhelp		
	(1) Shows child how to do something, when the child is trying to do something.	.7045
	(19) Gives child help with a difficult task, even if the child has not asked for help.	.6168
	(3) Child learns how to do things by watching parent do them.	.5379
	Factor 3, eigenvalue = 1.45, variance accounted for = 11%, alpha reliability coefficient = .65.	
Reinforcement of Proximity		
	(13) Seldom lets child play away from adults.	.7538
	(23) Has child play in the same vicinity as the parent, when the child is playing at home.	.4595
	Factor 4, eigenvalue = 1.37, variable accounted for = 11%, alpha reliability coefficient = .46.	
Reinforcement of Child Compliance		
	(22) Disapproves of child expressing disagreement with decisions or rules.	.7139
	(17) Seldom allows child to question decisions or rules.	.5065
	Factor 5, eigenvalue = 1.10, variable accounted for = 9%, alpha reliability coefficient = .56.	

Appendix AA

Test-Retest Reliability Coefficients for Mothers' and Fathers' Socialization Scales in Study II

Mothers' Soc. Scales	r	Fathers' Soc. Scales	r
General Soc. Scales		**General Soc. Scales**	
R. for Helping	.65	R. for Helping	.66
R. of Easy Requests	.65	R. of Easy Requests	.59
R. of Compliance	.60	Giving of Overhelp	.67
Male Soc. Scales		**Male Soc. Scales**	
R. for Helping	.70	R. for Helping	.68
R. of Easy Requests	.78	R. of Easy Requests	.58
R. of Compliance	.59	Giving of Overhelp	.56
R. of Exploration	.46	R. of Compliance	.80
Female Soc. Scales		**Female Soc. Scales**	
R. for Helping	.71	R. for Helping	.53
R. of Easy Requests	.48	Giving of Overhelp	.71
R. of Compliance	.71	R. of Difficult Task	.30
Giving of Overhelp	.13	R. of Compliance	.77
R. of Independence	.04	R. of Proximity	.38

Note. Reinforcement is abbreviated to R.

Appendix BB

Summary of Analysis of Variance on Problem-Solving Scores for Groups Selected by Mothers' Compliance Ratings in Study II

Source of Variance	df	SS	MS	F
		Circus Think It Through		
Sex (A)	1	95.23	95.23	6.78*
Compliance (B)	1	65.00	65.00	4.63*
A x B	1	2.46	2.46	.18
Error	204	2,866.11	14.05	
		Owl Task		
Sex (A)	1	26.69	26.69	.79
Compliance (B)	1	146.79	146.79	4.36*
Condition (C)	2	231.62	115.81	3.44*
A x B	1	.01	.01	.01
A x C	2	17.15	8.57	.25
B x C	2	60.70	30.35	.90
A x B x C	2	54.91	27.46	.82
Error	196	6,604.87	33.70	

* $p < .05$

Appendix CC

Univariate F Values for Mothers' Socialization Scores for Groups Selected by Mothers' Compliance Ratings in Study II

	Sex(A)	Compliance(B)	A x B
General Soc. Scales			
R. for Helping	.30	.97	2.57
R. of Easy Tasks	.06	.01	1.89
R. of Compliance	.54	2.77*	1.24
Male Soc. Scales			
R. for Helping		1.99	
R. of Easy Requests		1.06	
R. of Compliance		.14	
R. of Exploration		3.33	
Female Soc. Scales			
R. for Helping		.21	
R. of Easy Requests		.83	
R. of Compliance		4.92**	
Giving of Overhelp		.33	
R. of Independence		.66	

Note. Reinforcement is abbreviated to R.

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

Appendix DD

Univariate F Values for Fathers' Socialization Scores for Groups Selected by Mothers' Compliance Ratings in Study II

	Sex(A)	Compliance(B)	A x B
General Soc. Scales			
R. for Helping	.64	.22	.11
R. of Easy Requests	.74	.88	.20
Giving of Overhelp	3.68*	.03	3.43*
Male Soc. Scales			
R. for Helping		.01	
R. of Easy Requests		.90	
Giving of Overhelp		1.53	
R. of Compliance		.08	
Female Soc. Scales			
R. for Helping		.21	
Giving of Overhelp		2.28	
R. of Difficult Tasks		.48	
R. of Compliance		.01	
R. of Proximity		1.03	

Note. Reinforcement is abbreviated to R.

* $p < .10$

Appendix EE

Summary of Analysis of Variance on Problem-Solving Scores for Groups Selected by Fathers' Compliance Ratings in Study II

Source of Variance	df	SS	MS	F
		Circus Think It Through		
Sex (A)	1	93.09	93.09	6.58**
Compliance (B)	1	2.78	2.78	.20
A x B	1	.51	.51	.04
Error	199	2,816.71	14.15	
		Owl Task		
Sex (A)	1	18.25	18.25	.53
Compliance (B)	1	79.09	19.09	2.30
Condition (C)	2	204.16	102.08	2.97*
A x B	1	42.11	42.11	1.22
A x C	2	26.86	13.43	.39
B x C	2	1.69	.85	.03
A x B x C	2	24.68	12.34	.36
Error	191	6,571.99	34.41	

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

Appendix FF

Univariate F Values for Mothers' Socialization Scores for Groups Selected by Fathers' Compliance Ratings in Study II

	Sex(A)	Compliance(B)	A x B
General Soc. Scales			
R. for Helping	.26	2.63	2.53
R. of Easy Requests	.02	.04	.22
R. of Compliance	.33	.70	.01
Male Soc. Scales			
R. for Helping		.15	
R. of Easy Tasks		.03	
R. of Compliance		.26	
R. of Exploration		1.26	
Female Soc. Scales			
R. for Helping		5.78*	
R. of Easy Requests		.23	
R. of Compliance		.28	
Giving of Overhelp		.12	
R. of Independence		5.12*	

Note. Reinforcement is abbreviated to R.

* $p < .05$

Appendix GG

Univariate F Values for Fathers' Socialization Scales for Groups Selected by Fathers' Compliance Ratings in Study II

	Sex(A)	Compliance(B)	A x B
General Soc. Scales			
R. for Helping	.66	.62	.66
R. of Easy Requests	1.01	.01	.93
Giving of Overhelp	2.58	.02	1.24
Male Soc. Scales			
R. for Helping		.09	
R. of Easy Requests		.39	
Giving of Overhelp		.68	
R. of Compliance		1.36	
Female Soc. Scales			
R. for Helping		2.16	
Giving of Overhelp		.09	
R. for Difficult Tasks		.91	
R. of Compliance		.01	
R. of Proximity		1.41	

Note. Reinforcement is abbreviated to R.

Appendix HH

Means and Standard Deviations of Matching Variables for Groups Selected by Parents' Composite Compliance Ratings in Study II

	Low Compliant		High Compliant	
	Boys	Girls	Boys	Girls
Characteristics n	31	39	33	37
Age (in months)	58.84 (3.98)	58.28 (3.92)	59.36 (4.14)	59.57 (3.93)
PPVT scores	106.48 (12.70)	105.05 (8.11)	103.97 (13.67)	104.54 (12.84)
SES scores	2.45 (.72)	2.33 (1.01)	2.21 (.82)	2.22 (.89)
Fathers' Ed. level	15.16 (2.77)	15.39 (3.13)	15.97 (3.46)	15.54 (4.15)
Mothers' Ed. level	14.06 (2.48)	14.46 (2.43)	13.61 (2.77)	14.08 (2.45)

Note. Standard deviations are in parentheses.

Appendix II

Summary of Analysis of Variance on Problem-Solving Scores for Groups Selected by Parents' Composite Compliance Ratings in Study II

Source of Variance	df	SS	MS	F
		Circus Think It Through		
Sex(A)	1	96.48	96.48	7.83***
Compliance(B)	1	32.68	32.68	2.65*
A x B	1	.76	.76	.06
Error	136	1,675.17	12.32	
		Owl Task		
Sex(A)	1	17.55	17.55	.52
Compliance(B)	1	189.67	189.67	5.57**
Condition(C)	2	134.27	67.14	1.97
A x B	1	20.94	20.94	.62
A x C	2	2.69	1.35	.04
B x C	2	17.69	8.98	.26
A x B x C	2	39.47	19.74	.58
Error	128	4,359.16	34.06	

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