

THE RELATIONSHIPS AMONG IDEATIONAL FLUENCY,
SELF-REPORTS OF CREATIVITY, INTRINSIC VERSUS EXTRINSIC
MOTIVATION, AND PERCEIVED PARENTING STYLE IN GIFTED AND
NONGIFTED ADOLESCENTS

by

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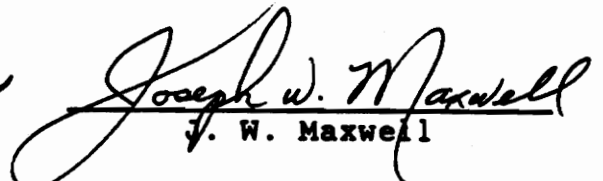
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(ABSTRACT)

The purposes of this study were to examine the relationships among creativity, motivational orientation, and perceived parenting style in gifted and nongifted adolescents; to compare gifted and nongifted adolescents in creativity, motivational orientation, and perceived parenting style; and to establish preliminary validation for the Perceptions of Parenting Scale (POPS). The Multidimensional Stimulus Fluency Measure (MSFM), the Student Self-Evaluation of Creativity (SSEC), the Scale of Intrinsic Versus Extrinsic Orientation in the Classroom (IEOS), the Cornell Socialization Inventory (CSI), and the POPS were administered to 37 gifted and 57 nongifted sixth- through twelfth-grade students. IQ scores were obtained from school records.

Results indicated a positive relationship between intrinsic motivation and self-reports of creativity. For the gifted, self-reports of creativity correlated positively with original fluency on the MSFM, and IQ was positively related to maternal negative affect and general control in the preschool and primary years. IQ was negatively related to maternal deprivation of privileges in the nongifted.

For the nongifted, IEOS scores were negatively related to maternal control through reward in the preschool and primary years. For the gifted, IEOS scores were positively related to maternal consistency, confidence in child, and past autonomy.

Self-reports of creativity correlated positively with maternal confidence in child. For the gifted, SSEC scores correlated positively with maternal consistency and with paternal and maternal allowance of autonomy. SSEC scores correlated negatively with maternal reward for the gifted.

Several POPS scales correlated highly with the CSI factors. Chi-square results indicated that gifted students were more intrinsically motivated than nongifted students. MANOVA and t-test results revealed that gifted students scored higher than nongifted

students on measures of IQ, self-reports of creativity, intrinsic motivation, paternal achievement demands, and past and present paternal and past maternal negative affect; nongifted students scored higher than gifted students on measures of perceived paternal indulgence and maternal instrumental companionship; females rated their mothers as higher than males in present negative affect, past affective companionship, and past and present control; and high school students reported greater past paternal control and punishment than did middle school students.

Dedication

to Jordan Lewis Rolan

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CHAPTER I

Introduction

Research in the area of creativity is likely to have implications for society because many of today's problems require innovative solutions. The 1970 White House Conference on Children recognized the importance of efforts to develop creative abilities in children; however, much of the research on creativity suggests that the abilities of creative children are often unrecognized and neglected. Several studies have shown that teachers are unable to identify creative children. Miller and Sawyers (1989) found that fifth graders were better at identifying creativity in themselves than were their teachers. Teachers typically identify intelligent children and children with leadership abilities as being the most creative (Getzels & Jackson, 1962; Holland, 1959; Nicholson & Moran, 1986; Piers, Daniels, & Quakenbush, 1960; Torrance, 1962). For this reason, gifted programs that use intelligence and academic achievement as their sole criteria may be overlooking the creatively gifted student.

Because a number of researchers have found no relationship between creativity (or divergent thinking)

and intelligence (or convergent thinking) (Moran, Milgram, Sawyers, & Fu, 1983a; Wallach, 1970, 1971; Ward, 1968), it cannot be assumed that gifted programs that focus only on the identification and development of intelligence are necessarily identifying and developing the abilities of the creatively gifted student. MacKinnon (1962) has suggested that we may have overestimated the role of intelligence in selecting students for specialized training and has indicated that if a person has the minimum amount of intelligence required for mastery of a field of knowledge, whether or not he or she performs creatively will be determined by nonintellective factors.

It has been suggested that the enhancement of creativity is not being encouraged in American schools because instruction is conducted in a linear, convergent manner. The enhancement of intelligence has far overshadowed enhancing creativity (Mark, 1986). Clark (1983) has noted that schools have focused on cognitive learning while devaluing and, in some cases, actually suppressing creative functioning. Amabile (1983) has noted that students who score high on creativity tests, produce unusual responses to questions, and display a keen sense of humor might be

disadvantaged in many classrooms. Because they can be considered nonconforming and unpredictable, these students may be viewed as bothersome by their teachers. In their research on highly creative and highly intelligent adolescents, Getzels and Jackson (1961, 1962) suggest that creative children, because of their playfulness, humor, and independence, may be difficult for teachers to control. As a result, they may become unpopular with their teachers. Clark (1983) has noted that by junior high, creative students who are not intellectually gifted are discounted with their ideas being considered "wild" and their behavior deviant or wrong. The more creative they are, the less they like school (Kurtzman, 1967; Liberty, Jones, & McGurie, 1963; Torrance, 1962). Placing such people in the tradition-oriented, conformist setting of school is likely to lead to growth inhibition, frustration, and often the denial and abandonment of creative potential (Clark, 1983).

An understanding of creativity from a developmental perspective may be enhanced by an understanding of various background factors relating to creativity. Some scholars believe that genetic variations among people are the most important

determinants of individual differences in cognitive abilities (Jensen, 1969; Munsinger, 1975). Others are equally convinced that environmental circumstances are the most important (Kamin, 1975; Lewontin, 1976). Most think that heredity and environment interact in complex ways to determine a person's ability levels in various areas. The research of Skodak and Skeels (1949) and Scarr and Weinberg (1976, 1977) supports this concept. Their results illustrate the genetic concept of reaction range. An individual's genetic make-up sets limits on the general range of abilities. Given the normal range of environments, abilities can vary a certain amount within those limits. Some environments support and encourage particular abilities, while others suppress them. It is also possible that the environment that would nurture the development of intelligence or creativity at one age or stage of development could be detrimental at another age or stage of development. For example, a preschool child's creativity may be nurtured by certain parental behaviors which may actually inhibit creativity in an adolescent.

The development of a child's creative potential can be maximized only when those factors which

contribute to the development of creativity are identified. Clark (1983) has identified authoritarian parenting and teaching, sex-role stereotyping, and disrespect for fantasy and daydreaming as factors that may inhibit creativity. Amabile (1983) has noted that de-emphasis of traditional sex roles, little concern for social convention, and independence from parental control may be conducive to creative development. She suggests that children should be encouraged to develop an intrinsic attitude toward work. Her research indicates that creativity is more likely to occur under a state of intrinsic motivation - a motivational state in which an activity is viewed as an end in itself rather than as a means to an end. She further suggests that parents and teachers should eliminate the dichotomy between work and play and should comment on enjoyable aspects of activities, on the inherent satisfaction of engaging in them, and on the pleasure of watching one's work unfold. She indicates that a high degree of choice will enhance intrinsic motivation, and consequently, creativity. She recommends teaching children self-observation and self-evaluation in order to avoid a concentration and dependence upon the external evaluation that can

undermine creativity. She cites evidence (Amabile, 1983) that teachers who exert a high level of control in their classrooms foster lower levels of intrinsic motivation in their students than do teachers who encourage a high level of self-determination and self-control. She indicates that teachers' acceptance of autonomy is positively related to students' curiosity, preference for change, and desire for independent mastery. It is likely that these relationships would be true for parents and children as well as for teachers and children. An understanding of factors related to creativity and giftedness may help make teachers and parents more aware of the roles they may play in enhancing children's creative and intellectual development.

Rationale

A number of researchers have demonstrated that parenting plays a significant role in the development of creativity and in the development of intellectual giftedness in children; however, various limitations exist in the previous studies. A number of researchers have assumed that creativity and intellectual giftedness are related and that the parental characteristics that are associated with creativity are

the same that are associated with giftedness. Since Moran, Milgram, Sawyers, and Fu (1983a) have demonstrated that creativity and intelligence are distinct capacities it cannot be assumed that the parental characteristics that enhance the development of creativity are necessarily the same characteristics that enhance the development of intellectual giftedness. It is also possible that certain parenting behaviors contribute to the development of giftedness, whereas another set of characteristics contributes to the development of creativity. It may be that various combinations of parental characteristics influence the development of various combinations of giftedness and creativity. For example, it is possible for a child to be gifted and high in creativity, gifted and low in creativity, nongifted and high in creativity, or nongifted and low in creativity.

Two earlier studies (Datta & Parloff, 1967; Getzels & Jackson, 1961) suggest that parents of creative children are less vigilant and more autonomy-granting than parents of highly intelligent children, although both may grant considerable amounts of autonomy when compared with parents of less intelligent, less creative children. Parents of

creative adolescents were found to be more concerned with internal, less visible characteristics in their children's friends, whereas parents of highly intelligent adolescents were more concerned with external, visible characteristics. An overview of the research suggests that the family of a creative child may be somewhat less warm, less structured, more encouraging of independence, and more flexible than the family of an intelligent child which is likely to be characterized by more warmth, nurturance, structure, and vigilance. Both are characterized by nonauthoritarian discipline and allowance of autonomy, but this pattern appears to be more pronounced for creative children than for intelligent children. The information provided by Getzels and Jackson (1961) and Datta and Parloff (1967) is somewhat limited in that all of the subjects were above average in intelligence and most were of superior intelligence. The results provide information about the parenting of high creative/high intelligent children and low creative/high intelligent children, but no information is provided about the parents of low intelligent/high creative children or low intelligent/low creative children. This study, unlike previous research, will

treat giftedness and creativity separately and examine the effects of parenting on each and on various combinations of each trait.

Amabile's (1983) research has provided support for the intrinsic-motivation hypothesis of creativity. She assessed creativity using a products definition in which creative works (such as collages, creative writing, etc.) are rated by judges. This study will define creativity differently using measures of divergent thinking and self-reports of creativity.

If creativity is enhanced by an intrinsic motivational state, then it appears likely that parenting styles that emphasize and encourage intrinsic motivation may also be conducive to fostering creativity in children. Unlike previous research, this study will approach the intrinsic-motivation hypothesis from a developmental standpoint.

The purposes of this study are: (a) to apply Amabile's intrinsic-motivation hypothesis of creativity to a developmental model and to a divergent thinking definition of creativity; (b) to examine the relationships among creativity (as measured by tests of ideational fluency and by a self-report scale), motivational orientation, and perceived parenting

style; (c) to compare gifted and nongifted adolescents in the areas of creativity, motivational orientation, and perceived parenting style; and (d) to attempt to establish preliminary validation for a new instrument being developed by the author: the Perceptions of Parenting Scale (POPS) (Lewis-Rolen, 1991).

CHAPTER II

Review of the Literature

Creativity and Giftedness

Creativity. Divergent thinking involves searching for material that is not known or that is only loosely related to that which is known, as opposed to convergent thinking which involves finding the implied answer. Convergent thinking is more closely related to conventional intelligence, whereas divergent thinking is more closely related to creativity (Guilford, 1967). In his structure of intellect model Guilford (1956, 1967) characterized divergent thinking as being composed of fluency, flexibility, and originality. Fluency refers to the number of responses given on a divergent thinking task. Flexibility refers to the number of categories of responses, and originality usually refers to responses that are given by less than five percent of a given sample. Of these components, fluency has been the most researched. In addition, fluency appears to be the route through which flexibility and originality are attained (Mednick, 1962; Moran, Milgram, Sawyers, & Fu, 1983b) because more original responses typically occur at the end of the response hierarchy.

Sawyers, Moran, and Tegano (1986) define creativity as the generation of products which are socially useful, unusual, and of high quality. Moran, Milgram, Sawyers, and Fu (1982) identified seven cognitive abilities (ideational fluency, fantasy predisposition, problem-finding, curiosity, imagery, metaphoric production, and selective attention deployment) which are thought to predict creativity. Of these, ideational fluency has generally been found to be the most valid and reliable predictor. Ideational fluency has been defined as the generation of ideas or as the number of ideas generated by a divergent thinking task (Wallach, 1970, 1971). Runco (1992) reviewed the literature on divergent thinking tests and concluded that they are useful estimates of potential for creative thinking. Ideational fluency is related to children's imaginative play (Moran, Sawyers, Fu, & Milgram, 1984).

Giftedness. Clark (1983) defines giftedness as: "a biologically rooted concept, a label for a high level of intelligence that results from the advanced and accelerated integration of functions within the brain, including the physical sensing, emotions, cognition, and intuition. Such advanced and

accelerated functioning may be expressed through abilities such as those involved in cognition, creativity, academic aptitude, leadership, or the visual and performing arts. Therefore, with this definition of intelligence, gifted individuals are those who are performing, or show promise of performing, at high levels of intelligence. Because of such advanced and accelerated development these individuals require services not ordinarily provided by the schools in order to develop their capability more fully."

Although this definition encompasses a number of cognitive abilities, students identified as gifted are generally those who obtain high scores on conventional intelligence tests or tests of convergent thinking. For the purposes of this study a gifted student is one who is participating in his or her school's gifted program. An Eligibility Form is used by the school to determine a student's eligibility for the Gifted and Talented Program. Students receive points based on their scores on standardized tests of ability and achievement and based on their grades in school. Students may also qualify for the program based on

teacher ratings of special ability in art, drama, music, writing, creativity, or leadership.

The Relationship Between Creativity and Intelligence. Research assessing the relationship between creativity and intelligence has yielded mixed results. Some investigators have found low positive correlations between intelligence and creativity suggesting that they are distinct, but not completely independent, capacities (Anastasi & Schaefer, 1971; Morena Abello & Alonso del Campo, 1983; Nijse, 1973; Runco & Albert, 1986a, 1986b). Others have found a significant relationship between intelligence and ideational fluency, flexibility, and originality (Qureshi & Qureshi, 1990). Still others have found no relationship between intelligence and creativity (Moran et al., 1983a, 1983b; Wallach, 1970, 1971; Ward, 1968; Welsh, 1966).

Runco (1986a) evaluated the predictive validity of ideational fluency before and after controlling for IQ in a sample of 150 fifth- through eighth-grade students, many of whom were gifted. Ideational fluency was found to be predictive of the quantity of creative performance in areas such as writing and crafts. IQ was significantly positively related to the quantity of

creative performance in areas such as sciences and the performing arts. Quality of creative performance was not found to be related to ideational fluency or to IQ. Runco (1986b) found that divergent thinking scores and creative performance were moderately related for gifted children but were unrelated for nongifted children. The quantity of extracurricular performance was more predictive than the quality from divergent thinking scores. Extracurricular performance in writing and art was more strongly related to divergent thinking than was performance in music and science.

Runco and Albert (1986a) evaluated the threshold theory regarding creativity and intelligence. This theory contends that creativity and intelligence are related only up to an IQ of 120. Five divergent thinking tests were administered to a heterogeneous sample of 228 fifth- through eighth-grade students. Correlations were found between measures of creativity and intelligence calculated within four IQ levels and within California Achievement Test quartiles. The researchers concluded that the relationship between creativity and intelligence is a function of the heterogeneity of the sample and the measures used.

Jaswal and Jerath (1991) found some support for the threshold theory. Creativity and intelligence were not related in males with IQs greater than 110. For males with IQs less than 110, IQ was related to verbal and total creativity but not to figural creativity.

Runco (1985) studied the reliability and convergent validity of ideational flexibility in 230 gifted and nongifted children ages 9 to 14. The children were divided into quartiles based on achievement test scores. Significant differences in ideational flexibility were found among the quartiles with higher achieving children scoring higher in ideational flexibility. The unique variance of ideational flexibility was reliable only for the highest quartile.

There appears to be some relationship between intellectual giftedness and certain aspects of creativity. Gifted students have scored higher in the areas of fluency (Chein, 1982), flexibility (Runco, 1985; Runco & Albert, 1986a, 1986b), and originality (Kershner & Ledger, 1985). While there appears to be a positive relationship between creativity and intellectual giftedness, the relationship does not appear to be large enough to warrant an assumption that

most gifted students are creative or that most creative students are intellectually gifted. Torrance (1962) has shown that if only an intelligence test is used and the top twenty percent are identified as gifted, seventy percent of those who would fall into the upper twenty percent on a test of creative thinking ability will be missed.

Overall, research examining the relationship between creativity and intelligence has revealed that the two concepts are distinct abilities. Many studies have indicated no relationship between the two concepts. Research suggesting a relationship between the two variables reveals a relationship only at certain levels of intelligence or for certain aspects of creativity.

Parenting

Parenting appears to play a role, along with numerous other genetic and environmental factors, in the development of creativity or intellectual giftedness in children. The relationships among creativity, giftedness, and parenting will be discussed in later sections. First, literature regarding parenting styles will be reviewed.

A number of dimensions and categories of parenting have been proposed. In an early study, Baldwin (1955) revealed a warmth/coldness dimension, a democracy/autocracy dimension, and an emotional involvement/detachment dimension. Becker (1964) proposed a warmth/hostility dimension and a restrictiveness/permisiveness dimension. In this model, praise and reason are associated with warmth variables, and physical punishment is associated with the hostility dimension. Restrictiveness/permisiveness refers to parental discipline. Becker found children of restrictive parents to be fearful, dependent, submissive, well-controlled, and socially appropriate in their behavior. Children of permissive parents were found to be less persistent and more sociable, outgoing, and assertive. Based on factor analytic studies, the restrictiveness/permisiveness dimension (or autonomy/control dimension) was later differentiated into autonomy-granting/psychological control and firm control/lax control (Burger & Armentrout, 1971; Schaefer, 1965).

Baumrind (1966, 1967, 1968, 1971, 1977, 1979) identified the authoritarian, authoritative, and permissive patterns of parenting. Authoritarian

parents are high in demandingness but low in responsiveness. They value obedience, discourage verbal give-and-take between parent and child, and tend to control and evaluate their child's behavior in accordance with an absolute set of standards. Maccoby and Martin (1983) found that these parents strictly limit their child's expression of needs; strongly value their own authority and the ideals of work, tradition, and preservation of order; attempt to control, shape, or judge their child's behaviors and attitudes according to an absolute set of standards; administer severe, often physical, punishment when their children deviate from parental standards; discourage their child's autonomy and independence; and display parent-centeredness when interacting with their child. Children with authoritarian parents were found to be unhappy and socially withdrawn, lack spontaneity and motivation, have an external moral orientation and locus of control, and exhibit low self-esteem and low social competence. Baldwin (1955) found these children to be void of affection, curiosity, and originality.

Authoritative parents are high in both demandingness and responsiveness. They expect mature behavior, enforce clear standards, encourage

independence and individuality, encourage open communication, and recognize the rights of both parents and children (Baumrind, 1966, 1967, 1968, 1971, 1977, 1979; Maccoby & Martin, 1983). Children of these parents have been found to be competent, independent, socially responsible, self-confident, and able to control aggression. This pattern is associated with high self-esteem (Coopersmith, 1967) and achievement motivation in adolescents (Hein & Lewko, 1994); high levels of family cohesion, interaction, and encouragement; and high scores on a science outcome measure.

Lewis (1981) argues that Baumrind's measure of parental control may be measuring child compliance instead of parental control and may merely reflect low parent-child conflict which may or may not relate to parental practices. Using Baumrind's data, she also noted that if firm control is subtracted from the behaviors characterizing authoritative parenting, the children do not become less competent. She identified the harmonious cluster for parents of girls and the nonconforming cluster for parents of boys. Harmonious and nonconforming parents are similar to authoritative parents, but they do not exhibit firm control.

Children from these families do not differ significantly from children of authoritative parents causing Lewis (1981) to question the need for firm parental control.

In Baumrind's classification permissive parents are accepting and tolerant of children's impulses, make few demands for mature behavior, avoid asserting authority and imposing restrictions, allow children to regulate their own behavior and make their own decisions, and have few rules governing their children's time schedules. Baumrind (1967, 1971) has found this pattern to relate to immaturity, poor impulse control, low social responsibility, low independence, and low self-reliance. Others (Apolonio, 1975; Baldwin, 1948, 1949, 1955; Clark, 1983) have found that permissive parenting has a positive effect on children. Clark (1983) has noted that permissive parents tend to have more original, spontaneous, independent, outgoing, friendly children. Qadri and Kaleem (1971) found that children of accepting parents exhibit greater self-esteem than children of rejecting parents and that children of permissive parents exhibit greater self-esteem than children of restrictive parents. Litovsky and Dusek (1985) found that high

self-esteem adolescents perceived their parents as more accepting, as using less psychological control, and as not being overly firm in making rules and enforcing and regulating behavior. In a study of earliest memories of university students, Rule (1992) found that the more self-confident the individual, the more likely the student's overall childhood rearing was judged as permissive.

Conflicting results relating to parental permissiveness may be a result of the definitions and methods used to measure parental permissiveness. A number of scales used to measure permissiveness appear instead to be measuring parental involvement, care, and concern, with parents scoring low in concern being considered the most permissive. Dornbusch, Ritter, Liederman, Roberts and Fraleigh (1987) measure permissiveness with such items as "parents are not involved in the child's education," "parents do not attend school programs," and "hard work in school is not important to the parents." Kelly and Goodwin (1983) categorize ignoring-type parents as permissive, and Baumrind (1967, 1971) classifies indulgent parents and indifferent parents as permissive. These scales and methods of measuring permissiveness do not assess

the effects of parents who are permissive in the sense of granting autonomy and minimizing restrictiveness and punishment but who are also highly involved with their children and who devote considerable amounts of time, energy, and attention to their children. Such parents may be similar to Lewis's harmonious parents.

Maccoby and Martin (1983) note that highly involved parents need not be intrusive or dominating but, on the contrary, may grant the child considerable autonomy. They identify the indifferent-uninvolved pattern of parenting which they believe to be the most detrimental to the child. These parents exhibit a minimal commitment to the child and are motivated to do whatever is necessary to minimize the costs in time and effort of interacting with the child. A number of scales purporting to measure permissiveness (Baumrind, 1967, 1971; Dornbusch et al., 1987; Kelly & Goodwin, 1983) appear instead to be measuring the characteristics associated with this pattern.

Parenting and Giftedness

There is evidence that the parents of gifted children differ in significant ways from parents of nongifted children. When compared with parents of nongifted children, parents of gifted children have

been found to spend more time with their children working on school-related activities, to be more likely to report unconditional love for their children, and to be more willing to encourage their children to be independent (Karnes, Shwendel, & Steinberg, 1984). Parents of gifted children tend to be more nurturing, less restrictive (Radin, 1972), and less authoritarian (Clark, 1983) than parents of nongifted children. Academic achievement has been positively related to perceptions of parents as benevolent, warm, and autonomy-granting and negatively related to maternal neglect and punishment of sons (Schaffer, 1977); to parental authoritarianism; and to perceptions of parents as severe, rejecting, and controlling (Cross & Allen, 1969; Dornbusch et al., 1987).

Intelligence has been shown to be associated with a loving, nonrestrictive, emotionally secure atmosphere in the home (Bradley & Caldwell, 1976). There is some evidence that intelligence is associated with high parental demands for achievement (Bloom, 1985; Schaffer, 1977; Vernon, 1979) combined with an environment that creates an atmosphere of democracy with an emphasis on control and responsibility (Vernon, 1979).

Landau and Weissler (1993) compared parental environments of gifted and nongifted fourth through sixth grade Israeli children. Families of gifted children allowed children greater participation in decision-making, exhibited more flexible division of labor, and were more likely to discuss family problems with the children and to voice criticism of the child's teacher or school. These families displayed greater openness but also exhibited more tension within the family.

There is some evidence that the social and emotional development of gifted children is facilitated by parents who are supportive yet autonomy-granting. Janos, Fung, and Robinson (1985) suggest that gifted children may need increased psychological support to optimize their self-esteem and their personal and social development. Ostrum (1973) suggests that gifted children who are given freedom of movement are more likely to develop high self-esteem than gifted children whose freedom is greatly restricted.

Parenting and Creativity

Early Childhood. Research assessing the relationship between parenting and creativity in preschool children has generally suggested a positive

relationship between creativity and parental allowance of autonomy and less restrictive parenting. Bishop and Chace (1971) found that creativity and playfulness were inversely related to restrictiveness of mother's attitude toward play. Creativity was positively related to playfulness of home environment and to abstractness of maternal conceptual system. Creativity in daughters was negatively related to protectiveness in fathers.

Dreyer and Wells (1966) found creativity to positively relate to marital-role tension and maternal allowance of freedom in early childhood exploration. Creativity was negatively related to marital value consensus and parental concern for place in the community. The parents of creative children were more likely to emphasize individual divergence and expression of feeling.

Using the Multidimensional Stimulus Fluency Measure (MSFM) Bomba, Moran, and Goble (1991) found ideational fluency to correlate negatively with family cohesion in a sample of preschool children, suggesting relatively less closeness in these families. A positive, but nonsignificant, relationship was found between ideational fluency and family adaptability.

Others have found no significant relationship between creativity and various family variables. Fu, Moran, Sawyers, and Milgram (1983) and Ryan (1984) found no relationship between preschoolers' ideational fluency and parents' childrearing attitudes, parent personality on the Myers-Briggs Type Indicator, or family income. Schwartz (1976) found no relationship between ideational fluency and parental authoritarianism as measured by a personality questionnaire.

Middle Childhood. In a sample of fourth graders, Ellinger (1965) found creativity, as measured by the Minnesota Tests of Creative Thinking (MTCT), to be inversely related to the frequency of coercive, physical discipline and positively related to involvement of the child in the family, parents' reading to the child, and supply of reading material in the home. Weisburg and Springer (1961) administered the MTCT to intellectually gifted fourth graders and completed interviews with their parents. Children whose parents were expressive and nondominating scored significantly higher than children whose parents were less expressive and more dominating on measures of ideational fluency, flexibility, and originality;

curiosity; and fantasy. Creativity was also positively related to parental acceptance of regression in the child, father's occupational autonomy, and the intensity of the father-child relationship. A negative relationship was found between creativity and compulsivity in mothers.

Orinstein (1962) found nonverbal creativity in second-grade children to be positively related to maternal hostility. Maternal restrictiveness was positively associated with total creativity in children but was negatively associated with children's vocabulary.

Silverberg (1971) found a curvilinear relationship between creativity and perception of father's acceptance in fourth graders with superior intelligence. Creative children perceived their fathers as less accepting than less creative children, but children with the highest scores on creativity perceived their fathers as highly accepting. Sheldon (1968) found no relationship between MTCT scores and parental authoritarianism-control or parental hostility-rejection.

Using a sample of third-grade children and their parents, Aldous (1975) observed parent-child

interaction during performance on tasks designed to measure children's creativity and maternal giving directions. The proportion of mother's acts directed toward the child was negatively associated with creativity; however, paternal giving directions and proportion of father's acts toward the child were positively related to originality in daughters. Harrison (1973) found creativity to be positively related to maternal encouragement of sons' creative interests and activities and to paternal acceptance of daughters' regressive behavior.

Michel and Dudek (1991) administered the Torrance Tests of Creative Thinking (TTCT) to eight-year olds and interviewed their mothers. Mothers of high creative children were more self-confident, less emotionally involved with their children, less likely to be perceived as overprotective, and less likely to deny their feelings of hostility toward their children.

Clark (1983) has noted that creativity in children is associated with a nonauthoritarian, equalitarian, warm, affectionate, and permissive family background with stimulation and encouragement to be unique and to value that uniqueness. She indicates that parents of creative children tend to allow their children more

freedom in decision-making and in exploring the environment. They tend to prefer guidance to punishment.

Adolescence. Dewing and Taft (1973) administered childrearing and personality questionnaires to mothers, and a self-descriptive checklist to fathers, of 80 12-year old Australian children with high creative potential and 80 controls matched to the creative potential children for school, grade, and intelligence. Creative potential was assessed with portions of the MTCT. Creative performance was measured by peer and teacher ratings, questionnaires, and an imaginative composition task. Creative potential in girls was positively related to mothers who were employed and to mothers who were older and better educated than fathers. Mothers' equalitarian childrearing attitude was positively related to creative potential and performance in girls, and mothers' rejection of outside influences was negatively related to girls' creative performance. Mothers' preference for inner-directed qualities in their children's friends was positively related to creative potential and performance in boys. The number and complexity of mothers' interests were positively related to creativity in girls. Creative

potential was also related to emotionality, inner-directed drive, imagination, and perseverance in fathers. Mothers' educational level and fathers' occupational status were also positively related to creativity.

Halpin, Payne, and Ellett (1973) found creativity, as measured by a personality inventory, to be negatively related to perceived parental control in high school junior and senior boys participating in a program for artistically and academically gifted and talented students. In a sample of high school seniors participating in National Merit competition and their mothers, Nichols (1964) found that the major maternal attitude related to creativity as assessed by an originality scale, self- and teacher-ratings, and a student questionnaire was maternal authoritarian control with mothers scoring high in this dimension having children lower in creativity. Maternal hostility and maternal democratic attitudes were not related to creativity. Contrary to these findings, Rabinowitz and Engelberg (1984) found that adolescents with nonpermissive parents scored higher on daydreaming scales.

Wade (1971) used an ideational fluency measure and a home-environment questionnaire completed by the students and found that creativity in high-school sophomores was positively related to time spent watching television, perceived approval of fantasy behavior by parents, and fathers' professional employment. In a sample of middle-class mothers and their high-school sons with creative sons matched against noncreative controls, Domino (1969) found creativity to be positively related to maternal interpersonal competence, preference for change and unstructured demands, and insight and tolerance of others. Mothers of creative sons valued autonomy and independence. Creativity was negatively related to maternal sociability, inhibition, concern about making a favorable impression, and nurturance of others.

Getzels and Jackson (1961) found creativity in adolescents to be negatively associated with parental insecurity, maternal concern for financial status, maternal vigilance over child, maternal criticism of child's school performance, satisfaction with childrearing practices, maternal focus on immediate visible virtues, and mother being exclusively a homemaker. Datta and Parloff (1967) found creativity

in adolescent males (as rated by science projects) to be positively related to paternal lax discipline, paternal allowance of extreme autonomy, and paternal nonenforcement. Creativity was negatively related to paternal authoritarianism, paternal and maternal control and enforcement, and maternal hostile detachment. They concluded that the relevant dimension is autonomy-control.

Adulthood. Using peer professional nominations as a measure of creativity and retrospective reports about home background as a measure of parenting, MacKinnon (1962) found that creative professionals recalled that, when they were very young, their parents showed great respect for them as individuals, showed unusual confidence in their ability, and granted them responsibility for decision-making. Drevdahl's (1964) sample of creative psychologists (using nominations and retrospective interviews) remembered their parents to expect correct behavior without coercion and, at the same time, grant freedom and responsibility. Helson's (1968) creative college females described their parents as allowing individuality, but as also expecting and stressing achievement. Their parents emphasized moral

integrity and achievement and exhibited intellectual interests.

Several studies using retrospective accounts of adults have suggested, contrary to other research, a positive relationship between creativity and perceived parental rejection. Joesting (1975) found that creative female undergraduates considered family discipline to have been more strict and less fair than did less creative subjects. Siegelman (1973) found that undergraduates with higher creative potential described more rejecting parents. Paternal protectiveness was negatively related to creativity in daughters. Halpin (1973) found verbal originality and creative figural elaboration to be negatively related to perceived maternal warmth and perceived parental control in college students who planned to become teachers. Being described as a "daddy's girl" was negatively related to figural fluency and flexibility. Eisenman and Foxman (1970) found creativity in college students as measured by an Unusual Uses task to positively relate to spending most of childhood with one or both parents and negatively relate to living at home while attending college and to frequency of seeing parents. Miller and Gerard's (1979) review suggests

that these findings indicate a picture of less emotional closeness, perhaps even coolness, in the families of creative children. Siegelman (1973) suggests that these findings occurred because parents of creative children tend to be more distant rather than because they are rejecting and do not love their children.

Gardner and Moran (1990) found no relationship between family cohesion and creativity in college students but did find creativity to positively relate to family adaptability. Students exhibiting the highest scores on a questionnaire assessing creativity obtained the highest family adaptability scores, whereas those with the lowest creativity scores obtained the lowest adaptability scores, indicating rigidity within the family.

Summary of Parental Influences on Creativity.

Some studies of creativity and parenting have not found a relationship between the two variables. Of those indicating a relationship between creativity and parenting, there appear to be certain patterns of parenting associated with creativity in different age groups. Preschoolers' creativity is generally positively related to allowance of autonomy and

negatively related to parental authoritarianism. Most studies at this age level have used ideational fluency measures and scales completed by parents.

In middle childhood, creativity is positively related to child's involvement in the family, parental encouragement of child's interests, and expressive nondominating parenting. The one study revealing conflicting results, and indicating a positive relationship between creativity and maternal restrictiveness (Orinstein, 1962), used a rating scale to measure creativity, whereas most other researchers used divergent thinking measures. It is possible that the rating scale measures a different construct from the divergent thinking measures, which may explain the conflicting results.

Creativity in adolescents is generally positively related to maternal employment, equalitarian childrearing attitudes, mother's educational level, father's occupational status, lax discipline, and allowance of autonomy. Creativity in adolescents negatively relates to perceived parental control, authoritarianism, parental insecurity, parental vigilance, and criticism.

Studies of creativity using retrospective accounts of adults indicate that creativity positively relates to parental allowance of freedom and responsibility, parental confidence in the child, noncoercive discipline, and intellectual and creative interests in parents. Some studies using adults suggest a negative relationship between creativity and perceived parental warmth, understanding, and fairness of discipline.

Several researchers have formed conclusions regarding the optimal family pattern for the development of creativity. Getzels and Jackson (1961) describe the "highly creative family" as one in which individual divergence is permitted and risks are accepted. Dewing and Taft (1973) conclude that the most important factors appear to be nonauthoritarian discipline, diverse and relatively intellectual interests, and a parent-child relationship that is not overly dependent. Foster (1968) described a democratic, permissive, nonauthoritarian, affectionate home environment as optimal. Weisburg and Springer (1961) described the optimal pattern as an open, but not overly close, family with little clinging or conformity in which the father exhibits a high level of interaction with the children and the parents easily

accept regressions. Albert (1971) concluded that parents who were more likely to contribute to the development of creativity were those who interacted with their children in an open, adult-like manner, showed confidence and respect, and allowed children freedom to act independently.

Miller and Gerard (1979) reviewed the literature relating to creativity and parenting and concluded that the relationships between creative children and their parents tend to be neither overly close emotionally nor hostile and detached, but characterized by respect, independence, and freedom. Creative children tend to have parents who treat them with respect, have confidence in their abilities, give them responsibility with autonomy and freedom, and expect them to do well. The marital and parent-child relationships are not overly close. There appears to be somewhat less family unity and perhaps even greater parent-child distance or coolness than in families of less creative children. Children's creativity tends to be lower, however, where parent-child relationships are characterized by overt hostility, rejection, and detachment. The most consistent finding is that creativity in children appears to be negatively related to parental vigilance,

authoritarianism, dominance, and restrictiveness. They further concluded from their review of the literature that most studies in the area of creativity and parenting have shown that parental authoritarianism, control, restrictiveness, and domination inhibit the development of creativity in children.

A few studies have shown results which contradict the majority of findings in this area and suggest a positive relationship between creativity and more restrictive discipline. Miller and Gerard (1979) attribute much of the difficulty in reconciling conflicting findings to the incomparability of the studies. Many are based on limited samples, and there are variations and inconsistencies in the methods used to measure creativity.

Another issue, and possible reason for the disparity among findings, is that the research deals with different stages of development. Parenting may need to change with development. The parenting that is optimal for the development of creativity at one age or stage of development may not be optimal at another stage of development and may even be detrimental. This possibility is not adequately reflected in the research.

Another possible explanation for findings of a relatively few studies showing opposite results from the majority of findings in this area (suggesting a positive relationship between creativity and parental strictness or restrictive discipline) is that more creative children may be more curious and nonconforming which may lead them to explore and experiment more than other children. This may indirectly lead to increased discipline by their parents. Creative children may be perceived by parents as exhibiting difficult behaviors which may lead to more restrictive discipline. It is also possible that creative individuals would tend to feel more restricted by discipline than would less creative individuals. Consequently, they may be likely to be more sensitive to and aware of authoritarian, strict, or unfair discipline when it occurs and may be more likely to report it, whereas less creative children may experience the same discipline and be less sensitive to it and consequently less likely to report it. This may apply to research using retrospective accounts of adults.

Conclusions and Explanations for Findings Relating to Parental Influences on Creativity. There are a number of possible explanations for the findings of

creativity and parenting research. One explanation is that certain styles of parenting contribute to the development of the child's creativity. It is possible that a family environment characterized by less emotional closeness encourages greater independence. Children from less close families may have to "entertain" themselves, whereas parents in close families may constantly provide interesting activities for their children. This may result in the child's having to think creatively in order to provide himself or herself with entertaining activities. It is also possible that the relationship occurs because the parents themselves are more creative and consequently are interested in, and involved in, more activities that take time away from their families. It could be that these children develop more individual interests because their parents spend less time with them.

Another explanation is that the parents of creative children are themselves more creative and that creative people tend to use certain parenting styles. It is possible, for example, that creative people may tend to be less authoritarian than less creative people.

Siegelman (1973) has suggested that rejecting parents could inadvertently encourage a rebellious attitude in their children that facilitates independent thinking and action. Loving parents may foster acceptance of parental orientation in their children and thus foster conformity to the general customs of their society.

Another explanation is that the creativity of the child leads the parents to adopt a certain style of parenting. It may be that creative children spend more time in creative pursuits which may lead their parents to leave them alone more and consequently make the parents appear more autonomy-granting. Perhaps these children do not seek their parents' attention or assistance as much as less creative children. It is also possible that creative children appear more advanced than their less creative peers, so their parents may feel they need less supervision and consequently grant more autonomy.

It is also possible that creative children (or adults in retrospective studies) and their parents may be less likely to give conforming or socially appropriate responses to questions relating to parenting, so they may be more honest than less

creative individuals about the lack of closeness in their families. They may be likely to be more perceptive and sensitive to the negative qualities in their families and be more likely to report them.

The most likely explanation for the relationship between creativity and parenting is that the parent and child continually influence each other over time through a series of complex transactions among the child, the parent, and the environment. A child is born with a certain amount of potential. The parent develops certain ways of interacting with the child which are based on a number of factors, including the parent's own genetic make-up, the characteristics of the child, and the personality and childrearing attitudes of the parent. The parent's style of interacting with the child further influences the child, and the child, in turn, influences the parent. At the same time, the child is developing ways of interacting with the parent. In addition, the child is influenced by factors outside the family such as the educational system, the peer group, the media, and the larger community, all of which further impact on the development of the child's intelligence and creativity.

Parenting, Creativity, and Giftedness

An overview of the research suggests some similarities between parents of gifted children and parents of creative children. There is evidence that both may be more autonomy-granting than parents of nongifted and less creative children, but this appears to be more true of parents of creative children than of parents of gifted children. Some, but not all, of the research on parental warmth versus coolness has suggested a picture of less emotional closeness, and perhaps even coolness, in parents of creative children. This pattern does not emerge for parents of gifted children. There is also some research suggesting that creative children may feel less love and acceptance from their parents than do less creative children, but again this pattern does not emerge for gifted children.

Overall a review of the relevant literature suggests that the patterns of parenting associated with creativity and giftedness share some similarities, but they are not identical. While a great deal of research has been conducted to examine the relationship between parenting and giftedness and the relationship between parenting and creativity, little research exists examining the differences among parents of creative

children and parents of gifted children. Datta and Parloff (1967) compared creative young scientists with equally intelligent but less creative controls. The less creative group described their parents as moderately affectionate, nonrejecting, and high in encouraging intellectual independence. The creative subjects were more likely to perceive both parents as providing a "no rules" situation in which integrity and responsibility are assumed rather than one in which expectations are enforced by authoritarian controls and punishment.

Getzels and Jackson (1961) compared the most intelligent adolescents with the most creative in their sample. Both groups, however, had above average IQ scores and equally superior school achievement. Teachers rated the adolescents in the high IQ group as more desirable than the average student but did not rate adolescents in the high creative group as more desirable than the average student. A number of differences were noted in the families of the two groups. The parents of the high IQ group were more educated and had greater specialized training. A greater proportion of their fathers were in academic or educational occupations. Despite greater professional

training, the mothers of the high IQ group were more likely than mothers of the high creative group to be homemakers, suggesting that they had more time to devote to their children. These mothers were also more concerned with the "correct" upbringing of their children, less accepting, and more critical and vigilant of their children. They exhibited greater insecurity, yet they had fewer misgivings about their own childrearing practices. The mothers of the high IQ children desired more external qualities such as cleanliness and good manners in their children's friends, whereas the mothers of creative children desired more internal qualities such as values, interests, enthusiasm, and openness to experience.

Wade (1971) concludes that research data indicate common ground between creativity and intelligence, but there is also reason to suspect that creativity is fostered by a particular environment that has little affect on intelligence. The correlation between intelligence and creativity can be easily attributed to common factors. The remaining variance in intelligence and creativity appears to depend on the psychological safety and freedom in which the child is encouraged to present himself or herself as an independent

individual.

The Role of Intrinsic Motivation in Giftedness,
Creativity, and Parenting

Amabile (1983) has identified three components which are essential for the production of creative responses and works. These are domain-relevant skills, creativity-relevant skills, and task motivation.

Domain-relevant skills are a set of cognitive pathways for solving a given problem or performing a given task. They include factual knowledge, technical skills, and special talents in the domain in question. These skills can be considered as the basis for any performance in a given domain and are dependent on innate cognitive, perceptual, and motor abilities and on formal and informal education.

Creativity-relevant skills determine the extent to which a product or response will surpass previous products or responses in a particular domain. These skills include the application of heuristics for the exploration of new cognitive pathways and a working style and a cognitive style characterized by a facility in understanding complexities and an ability to break a set in problem-solving.

Task motivation refers to motivational variables that determine an individual's approach to a given task. These variables include the individual's baseline attitude toward the task and the individual's perceptions of reasons for undertaking the task in a given instance. Amabile (1983) distinguishes between intrinsic and extrinsic motivation. Intrinsic motivation refers to a motivational state generated by the individual's reaction to the intrinsic properties of the task and not generated by extrinsic factors. A person who is intrinsically motivated perceives an act as an end in itself, not as a means to an extrinsic goal. Amabile (1983) suggests that creativity is most likely to appear under a state of intrinsic motivation. The intrinsic motivation state is characterized by an attitude of intellectual playfulness and total absorption in the task at hand. This state would be most conducive to the set-breaking cognitive flexibility and the risk-taking that appears essential for high levels of creativity.

Amabile (1983) distinguishes between algorithmic and heuristic tasks. Algorithmic tasks have a known solution path and a clearly defined goal, whereas heuristic tasks have an unknown solution path and may

or may not have a clearly defined goal. A heuristic is defined as "any principle or device that contributes to a reduction in the average search to solution" (Amabile, 1983). Creative heuristics are ways of approaching a problem that can lead to set-breaking and novel ideas, rather than strict rules that can be applied by rote. The intrinsic motivation hypothesis states that the intrinsic motivational state will be most conducive to creativity but that the extrinsic motivational state will be detrimental. This hypothesis applies only to heuristic tasks where the problem does not have a clear or straightforward path to solution. On algorithmic tasks, extrinsic motivation may enhance performance.

Amabile (1983) notes that the conditions most conducive to creativity include conditions free from salient extrinsic constraints on performance, conditions that encourage self-direction, and conditions where intrinsic reasons for engaging in activities are stressed over extrinsic reasons. The intrinsic motivation hypothesis states that creativity may be undermined by rewards, constrained choice evaluation, conformity pressure, and surveillance. Initially interested in an activity, individuals who

are led to engage in that activity in the presence of some salient extrinsic constraint will judge themselves to be motivated by that constraint and not by their own interest.

Extrinsic motivation will decrease the probability that the creative heuristics of set-breaking, exploration, and risk-taking will be applied. There will be a heavy reliance upon response algorithms that already exist within the store of domain-relevant skills. External constraint can contribute to uncreative performance in two ways. It can divert attention away from the task and direct it toward the extrinsic goal, and it can make the individual reluctant to take risks since those risks might impede attainment of the goal (Amabile, 1983).

According to self-perception theory (Bem, 1972), people who perform a task in order to meet some extrinsic constraint will infer that their task engagement was motivated by the constraint and not by their own interest. An individual will discount one possible cause of a behavior if other, more salient causes are present. Similarly, cognitive evaluation theory (Deci, 1975) proposes that the presence of salient external constraints on performance cause a

shift in the individual's locus of causality from internal to external. The intrinsic motivation hypothesis of creativity shares with these theories an emphasis on the cognitive effects of extrinsic constraint. Amabile (1983) suggests that this phenomenon has an affective component in addition to the cognitive component. The undermining of creativity under external constraint is mediated not only by cognitive processes (task judgments, self-judgments, and attention) but also by affective processes (feelings of displeasure with a task approached as "work").

Harter (1978, 1981a) has delineated five aspects of learning that she considers indicative of intrinsic or extrinsic motivational orientation: (1) learning motivated by curiosity versus learning in order to please the teacher, (2) incentive to work for one's own satisfaction versus working to please the teacher and get good grades, (3) preference for challenging work versus preference for easy work, (4) desire to work independently versus dependence on the teacher for help, and (5) internal versus external criteria for determining success or failure. Amabile (1983) notes

that intrinsic versus extrinsic motivation can change over time and may be task specific.

The intrinsic motivation hypothesis of creativity appears to have implications for parenting. If creativity is enhanced by an intrinsically motivated state, then it appears likely that parenting styles that emphasize and encourage intrinsic motivation may also be conducive to fostering creativity in children. Amabile's (1983) hypothesis would suggest that parents who minimize extrinsic constraints may contribute to the development of creative thinking skills in their children. Likewise parents who exert a high level of control over their children may foster lower levels of intrinsic motivation and creativity. To the extent that individuals perceive their task engagement as externally controlled, they are extrinsically rather than intrinsically motivated. Amabile (1983) notes that creativity may be undermined by rewards, conformity pressure, and surveillance. It appears likely that intellectually gifted children and high achieving children may come to be extrinsically motivated because of competition for grades, academic awards, and other recognition for achievement. It also seems likely that these children would be more likely

than nongifted children to have received a great deal of positive attention from parents and teachers for their achievements. This may lead them to be motivated to achieve in order to obtain extrinsic rewards. Parents of gifted children may tend to place emphasis on grades, recognition for achievement, and awards which may contribute to extrinsic motivation and consequently inhibit creativity. Being concerned with goals extrinsic to the task itself, cognitive processes become less flexible and insights less sensitive (Amabile, 1983; Crutchfield, 1962). Effort becomes directed toward the goals of being accepted and rewarded. This suggests that high achieving children may become more extrinsically motivated, and consequently less creative, as a result of pressures to achieve in order to receive praise, recognition, or other rewards.

Intrinsic motivation appears to be an important factor in the achievement of high ability students. Nakamura (1988) compared adolescents with high mathematical ability who were achieving at a high level with those with equally high ability who were not achieving commensurate with their ability. She found

that the high achieving students were those who perceived academics to be intrinsically enjoyable.

Intrinsic motivation has been shown to enhance creative performance in various age groups. Academic intrinsic motivation in nine- and ten-year olds has been found to be positively related to maternal encouragement of task endogyny and negatively related to maternal provision of task-extrinsic consequences. Academic motivation at age nine was a significant predictor of achievement at age ten. Parental motivational practices appear to play a significant role in academic intrinsic motivation and achievement (Gottfried, Fleming, and Gottfried, 1994).

Diaz Soto (1989) found higher achieving fifth and sixth grade students to be more intrinsically motivated than lower achieving students. In a sample of six- and seven-year olds, mother's controllingness, as measured by a free-choice behavior measure, was negatively related to intrinsic motivation as measured by a children's self-report measure of interest and liking for the task (Deci, Driver, Hotchkiss, & Robbins, 1993). College students wrote more creative Haiku under intrinsic-motivation conditions than under extrinsic-motivation conditions (Greer & Levine, 1991).

Fair and Silvestri (1992) reviewed the relevant literature and concluded that rewards and punishments decrease intrinsic motivation.

Summary

In general, there appears to be some positive relationship between intellectual giftedness and certain aspects of creativity, but the relationship is not large enough to lead to an assumption that all gifted children are highly creative or that all creative children are intellectually gifted. Giftedness in children is associated with parents who encourage independence and who are less severe, rejecting, controlling, and restrictive. When compared with parents of nongifted children, parents of gifted children are more loving, nurturing, and warm, but this pattern is not necessarily associated with parents of creative children. Results are mixed as to whether warm family relationships or somewhat cool, distant relationships among family members are more likely to facilitate creativity. Most of the relevant studies have indicated that creativity, and to a lesser extent giftedness, is associated with a more permissive parenting style, but a few studies contradict these findings. The mixed results may relate to assessment

procedures used. A number of scales purporting to measure parental permissiveness appear instead to be measuring parental concern and involvement with less concerned, less involved parents being scored as more permissive. Some findings are consistent across studies. Parental allowance of autonomy is consistently and positively related to creativity, and parental authoritarianism is consistently and negatively related to creativity. Creativity appears to be enhanced by a state of intrinsic motivation; therefore, it is likely that parents who encourage intrinsic motivation may contribute to the development of creativity in their children.

It is not clear if parenting styles contribute to the development of creativity and giftedness in children or if the child's characteristics lead the parents to adopt a certain style. It is likely that the relationship is bidirectional and transactional with the parent and child continually influencing each other over time. The child's innate ability; the child's home, school, and other environments; the parents' personalities and experiences; the child's personality and experiences; and the parents' parenting styles all interact over time.

CHAPTER III

Method

Participants. Participants were 37 sixth- through twelfth-grade students participating in their school's gifted program and 57 sixth- through twelfth- grade students participating in the regular program. Special education students were excluded from the sample. The students were chosen from a predominantly rural county in Southwest Virginia. The final sample was predominantly Caucasian (90 Caucasian students, 3 black students, 1 Hispanic student). Other demographic information is presented in Tables 1 and 2. The entire population of gifted sixth- through twelfth-grade students (a total of 69 students) attending the chosen schools was invited to participate. A stratified-random selection procedure was used to select nongifted students. Initially, an equal number of nongifted students matched to the gifted students for grade, sex, and school were invited to participate. The students were randomly-selected within the categories of grade, sex, and school. In addition to the matched students, two additional male and two additional female nongifted students from each

Table 1

Demographic Information of Students Invited to Participate

Grade *	Nongifted							total
	6	7	8	9	10	11	12	
males	8	8	7	8	10	9	10	60
females	7	13	7	10	9	7	12	65
total	15	21	14	18	19	16	22	125

Grade *	Gifted							total
	6	7	8	9	10	11	12	
males	4	4	3	4	6	5	6	32
females	3	9	3	6	5	3	8	37
total	7	13	6	10	11	8	14	69

*

For statistical purposes, grade 6-8 were considered middle school, and grades 9-12 were considered high school.

Table 2

Demographic Information of Final Sample

* Grade	Nongifted							total
	6	7	8	9	10	11	12	
males	6	3	4	3	2	0	1	19
females	6	12	6	0	9	2	3	38
total	12	15	10	3	11	2	4	57

* Grade	Gifted							total
	6	7	8	9	10	11	12	
males	2	1	1	4	4	1	3	16
females	2	7	1	5	3	1	2	21
total	4	8	2	9	7	2	5	37

*

For statistical purposes, grade 6-8 were considered middle school, and grades 9-12 were considered high school.

grade at each school were invited to participate in order to increase the nongifted sample size. The gifted sample size was limited by the number of students in the program, and thus could not be increased. It was determined that the advantages of a larger sample would outweigh the disadvantages of having unequal gifted and nongifted sample sizes. A second reason for inviting extra nongifted students was that it was thought that the gifted students may be more likely than the nongifted to choose to participate and to return their permission forms. A total of 125 nongifted students were invited to participate.

Materials

The Multidimensional Stimulus Fluency Measure (MSFM). The MSFM (Moran et al., 1982, 1983a, 1983b, 1984) is an adaptation of ideational fluency tasks developed by Starkweather (1971), Wallach and Kogan (1965), and Ward (1968). Tegano, Moran, and Godwin (1986) established construct validity for the instrument by cross-validating it with the Thinking Creatively in Action and Movement (TCAM) (Torrance, 1981). Original responses on the MSFM correlated positively with the total number of responses on the TCAM ($r = .55$). Total fluency scores and total

originality scores for both measures were positively correlated ($r = .61$ and $.62$, respectively). An interrater reliability coefficient of $.98$ was established for this scoring system of the MSFM. Moore and Sawyers (1987) found that the instrument displayed reasonable test-retest reliability over a period of two to three years.

The MSFM consists of three subtests. The Uses task involves asking the child to think of as many uses as possible for common objects, such as a box or paper. The Instances task involves asking the child to name all of the things he or she can think of that belong to a particular category, such as red things or round things. On the Patterns task, the child is shown three-dimensional styrofoam shapes or two-dimensional drawings of the shapes and is asked to name all of the things the pattern could be. The instrument yields three scores: original, popular, and total fluency. An original response is defined as a response that is given by fewer than five percent of respondents in the sample. Popular responses are those that are given by five percent or greater of respondents in the sample. Total fluency is the total number of responses generated by an individual. The instrument is scored

by coding each participant's responses as popular or original relative to the sample. For each participant, the originality score is the total number of original responses generated by that individual. The popular score is the total number of popular responses, and the total fluency score is the total number of responses or the sum of the individual's original and popular responses.

In the present study, one task from each subtest was used, and a two-dimensional drawing was used for the Patterns task. Participants were asked to list uses for a box, all the things they can think of that are round, and all the things a certain pattern could be.

Student Self-Evaluation of Creativity (SSEC). The SSEC was developed by Miller and Sawyers (1989) using the social validation procedure outlined by Runco (1984) in the development of Teachers' Evaluation of Students' Creativity (TESC). Students are asked to rate themselves on 25 items using a 7-level response option: (1) rarely, (2) very little, (3) slightly, (4) moderately, (5) considerably, (6) very much, and (7) extremely. Twenty of the 25 items are the most frequently given responses of sixth- and seventh-grade

students who were asked to list synonyms of creativity, behaviors observed in peers they considered creative, and personality traits common to creative peers. One item is "creative," and the other four are antonyms of creativity used to prevent a response set.

The instrument is scored by summing the numerical values of each participant's scores on the items assessing creativity. For example, a response of "rarely" on a particular item is scored as 1, and a response of "extremely" is scored as 7. Scores can range from 21 to 147. Scores on the SSEC were found to be related to original responses on the MSFM, unrelated to intelligence, and positively correlated with TESC scores for five of six teachers who participated in the validation procedure (Miller & Sawyers, 1989).

Intelligence. Intelligence scores were obtained from students' school records. For most students, the second-grade Kuhlman-Anderson Group Intelligence Test IQ was used. If this score was not available, a third-grade SRA ability score was used. No IQ was available for eight students. More recent IQ scores were not available because standardized tests given after third grade did not include ability scores.

Scale of Intrinsic Versus Extrinsic Orientation in the Classroom (IEOS). The IEOS (Harter 1981b) was developed to measure intrinsic versus extrinsic motivational orientation in the classroom. The children read sets of statements then decide which of the two statements in a set is more true for them. Then they select whether it is "really true" or "sort of true."

Factor analysis (Harter, 1981b) revealed five subscales: preference for challenge versus preference for easy work, curiosity/interest versus pleasing teacher/getting grades, independent mastery versus dependence on teacher, independent judgment versus reliance on teacher's judgment, and internal criteria versus external criteria. Average loadings for the five subscales range from .46 for the independent mastery versus dependence on teacher scale to .54 for the internal criteria versus external criteria scale. Congruence coefficients representing the correlation between factor loadings in different samples range from .67 to .84. Kuder Richardson reliability coefficients range from .54 on the curiosity scale to .84 on the challenge scale (Harter, 1981b).

For the purposes of this study, a shortened version of the scale consisting of one item from each subscale was used. The selected items were those from each scale that display the highest validity (Harter, 1981b). Participants obtain from 1 to 4 points on each of the 5 items with higher scores indicating higher intrinsic motivation. A total score is obtained by adding the individual's scores on each item. Total scores can range from 5 to 20.

Cornell Socialization Inventory (CSI). The CSI is a shortened version of the Cornell Parent Behavior Description (CPBD) (Bronfenbrenner, 1961; Devereux et al., 1974, Siegelman, 1965) and consists of 11 statements relating to parental behaviors toward children. Children rate the frequency with which their parents exhibit certain behaviors toward them using a 5-point Likert-type scale. The instrument contains two factors: Support and Discipline and measures perceived parenting as it has been during the past year. The Support factor is comprised of the following one-item scales: Nurturance, Achievement Demands, Instrumental Companionship, Consistency, Autonomy, and Principled Discipline. The Discipline factor is made up of the Physical Punishment, Deprivation of Privileges,

Rejection, and Strictness scales. The Indulgence scale is a separate scale that does not load on either factor. Separate but identical forms are used for each parent. Table 3 lists the items comprising each scale and factor.

Scores on each item can range from 1 to 5, with higher scores indicating that the parent is being rated higher on the measured item. Total Discipline scores for each parent can range from 4 to 20. Total Support scores for each parent can range from 6 to 30. Support and Discipline scores are obtained by summing the participant's scores on the items comprising the particular scale.

Perceptions of Parenting Scale (POPS). The POPS (Lewis-Rolen, 1991) assesses adolescents' perceptions of certain parenting behaviors. Participants answer the items both for the way their parents are now and for the way they were when the participants were younger. Participants respond to four sets of 16 items each, resulting in a total of 64 items, using a 4-point Likert-type scale. The four sets of items measure perceived present parenting by mothers, perceived present parenting by fathers, perceived past

Table 3

The Cornell Socialization Inventory

Description of Scales

I can count on (him/her) to help me out if I have some kind of problem. (Nurturance)

S/he says s/he will hit me or smack if I do something s/he doesn't like. (Physical Punishment)

S/he keeps pushing me to do my best in whatever I do. (Achievement Demands)

S/he lets me off easy when I do something s/he doesn't like. (Indulgence)

S/he helps me with my schoolwork if there is something I don't understand. (Instrumental Companionship)

S/he won't let me do something with my friends when I have done something s/he doesn't like. (Deprivation of Privileges)

I know what s/he expects of me and how s/he wants me to act. (Consistency)

S/he lets me make my own plans for things I want to do. (Autonomy)

When s/he wants me to do something s/he explains why. (Principled Discipline)

Table 3 (continued)

S/he acts cold and unfriendly if I do something s/he doesn't like. (Rejection)

S/he is very strict toward me if I don't do what is expected of me. (Strictness)

The Support factor is comprised of the following scales: Nurturance, Achievement Demands, Instrumental Companionship, Consistency, Autonomy, and Principled Discipline.

The Discipline factor is comprised of the following scales: Physical Punishment, Deprivation of Privileges, Strictness, and Rejection.

The Indulgence scale does not load on either factor.

parenting (during the preschool and primary years) by mothers, and perceived past parenting by fathers. Separate but identical forms are used for each parent. Reliability and validity have not been established but will be evaluated as part of the current research by correlating scores with the CSI factor scores. Each of the four sets consists of eight 2-item scales which are Expressive/Affective Companionship, Control through Punishment, Autonomy, Negative Affect, Control through Reward, Instrumental Companionship, Confidence in Child, and General Control.

The POPS is scored by adding the participant's scores for each of the two items comprising a particular scale. The individual obtains scores for each scale for each parent, past and present. This instrument was used to supplement the CSI because it measures aspects of parenting not addressed by the CSI and because it measures both current and past parenting. Table 4 describes the items comprising each scale.

Hypotheses

Hypotheses were tested in null form. The null hypotheses were:

Table 4

The Perceptions of Parenting Scale (POPS)

Description of Scales

Affective Companionship

S/he (spends/spent) time with me doing fun things.

S/he (jokes/joked) and (laughs/laughed) with me.

Autonomy

S/he (gives/gave) me freedom.

S/he let/s me make my own decisions.

Punishment

S/he (grounds/grounded) me or (won't/wouldn't) let me do things with me friends when I misbehave/d.

S/he (spanks/spanked) me.

Negative Affect

S/he (yells/yelled) at me.

S/he (criticizes/criticized) me.

Confidence in Child

S/he (trusts/trusted) that I (can/could) take care of myself.

S/he (gives/gave) me responsibility.

Control through Reward

S/he (gives/gave) me money or other rewards when I (make/made) good grades.

S/he (rewards/rewarded) me when I (do/did) good things.

Table 4 (continued)

Instrumental Companionship

S/he (helps/helped) me with homework.

S/he (teaches/taught) me things.

General Control

S/he (controls/controlled) what I (do/did).

S/he (has/had) rules she (expects/expected) me to follow.

1. No relationships will be found among IQ and scores on the MSFM, IEOS, and SSEC.
2. Giftedness and SSEC scores will be unrelated.
3. Giftedness and MSFM scores will be unrelated.
4. Giftedness and IEOS scores will be unrelated.
5. POPS scores will be unrelated to CSI factor scores.
6. IQ will be unrelated to Parenting as measured by the CSI and the POPS.
7. IEOS scores will be unrelated to CSI and POPS scores.
8. SSEC scores will be unrelated to CSI and POPS scores.
9. MSFM scores will be unrelated to CSI and POPS scores.
10. Gifted and nongifted adolescents will not differ on IEOS, SSEC, and MSFM scores.
11. Gifted and nongifted adolescents will not differ in perceived parenting as measured by the CSI and the POPS.
12. High and low scorers on the IEOS, SSEC, and MSFM will not differ in perceived parenting as measured by the POPS.

Procedure

Prior to data collection, a letter was written to the superintendent of the school system requesting permission to initiate the project. After he granted permission, the principals of the involved schools were contacted by telephone to arrange a meeting to discuss the project with them. The project was explained to them, and they granted permission for their schools to be involved in the research.

After permission was obtained from school officials, all the gifted students ($N = 69$) in the chosen grades and the sample of nongifted students ($N = 125$) were given letters and permission forms to take home for their parents to sign. They were instructed to return the permission forms to a box in the office or guidance office at their school if they and their parents chose to participate. Approximately 54% of the gifted and 46% of the nongifted students returned their forms, resulting in a final sample size of 37 gifted and 57 nongifted students. Informed consent was obtained from the students immediately prior to data collection. Students and parents were informed that participation was voluntary and that the

results would in no way become part of their school records. Each student was assigned a number. No student's name was associated with his or her responses.

Data were collected in groups at each school during school hours at times convenient for school personnel. At the elementary school, one middle school, and one high school, data were collected in the school cafeteria. At the other middle school, data were collected in the library. At the other high school, data were collected in an empty classroom. One session was conducted at each school lasting approximately one hour. The IEOS, the SSEC, the CSI for each parent, the POPS for each parent, and the MSFM were group-administered in the stated order by a trained examiner. The CSI and the POPS were administered so that half of the students completed the mother form first and half completed the father form first. All instruments were scored according to standard procedures.

CHAPTER IV

Results

Descriptive Statistics

Means, standard deviations, and ranges were calculated for IQ and for scores on the IEOS, SSEC, MSFM, CSI factors, and POPS for the gifted and nongifted samples. (See Tables 5 through 10.) For the MSFM, the originality score was used because it is generally the score most associated with creativity. The number of participants varies because of missing data for some participants on father variables, IQ, and MSFM scores. Data were analyzed in such a manner that all available data for a particular variable were utilized.

T-tests

Prior to hypothesis testing, t-tests were conducted to compare the means for gifted and nongifted participants on IQ; IEOS, SSEC, and MSFM originality scores; and scores on each POPS scale and each CSI factor. T-tests revealed that the gifted group scored significantly higher than the nongifted group on the following variables: IQ (t = -7.34, p = .00), IEOS (t = -5.09, p = .00), SSEC (t = -2.59, p = .01), CSI Paternal Achievement Demands (t = -2.05, p = .04), and

Table 5

Descriptive Statistics for IQ, IEOS, SSEC, and MSFM by
Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
IQ					
	Gifted	35	116.23	12.70	93-140
	Nongifted	51	99.25	8.76	78-118
IEOS					
	Gifted	37	15.11	2.69	9-20
	Nongifted	57	12.44	2.35	8-17
SSEC					
	Gifted	37	93.84	12.43	79-122
	Nongifted	57	85.72	16.21	50-117
MSFM original					
	Gifted	37	21.81	19.29	1-67
	Nongifted	55	20.05	31.90	0-197

Table 6

Descriptive Statistics for CSI Variables for Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
CSI Fathers					
Support					
	Gifted	34	23.85	2.91	19-29
	Nongifted	52	22.90	5.25	9-30
Discipline					
	Gifted	34	10.15	2.39	7-17
	Nongifted	52	9.63	2.90	4-17
CSI Mothers					
Support					
	Gifted	37	24.92	2.41	20-29
	Nongifted	57	25.02	3.22	18-30
Discipline					
	Gifted	37	9.57	3.00	4-20
	Nongifted	57	9.70	3.05	5-20

Table 7
Descriptive Statistics for POPS Present Father
Variables for Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Affective Companionship					
	Gifted	35	6.60	1.24	3-8
	Nongifted	53	6.49	1.62	2-8
Autonomy					
	Gifted	35	6.83	1.10	4-8
	Nongifted	53	6.74	1.50	2-8
Punishment					
	Gifted	35	1.35	1.35	2-7
	Nongifted	53	3.79	1.50	2-7
Negative Affect					
	Gifted	35	4.46	1.84	1-8
	Nongifted	53	3.74	1.76	2-8
Confidence in Child					
	Gifted	35	7.17	1.01	4-8
	Nongifted	53	6.81	1.41	3-8
Reward					
	Gifted	35	5.57	1.77	2-8
	Nongifted	53	5.83	2.04	2-8

Table 7 (continued)

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Instrumental Companionship					
	Gifted	35	6.11	1.21	3-8
	Nongifted	53	5.85	1.73	2-8
General Control					
	Gifted	35	5.89	1.47	3-8
	Nongifted	53	5.83	1.35	2-8

Table 8

Descriptive Statistics for POPS Father Past Variables
for Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Affective Companionship					
	Gifted	35	7.14	.94	5-8
	Nongifted	52	7.00	1.39	2-8
Autonomy					
	Gifted	35	4.80	1.26	2-7
	Nongifted	52	5.04	1.61	1-8
Punishment					
	Gifted	35	4.77	1.70	2-8
	Nongifted	52	4.15	1.64	2-8
Negative Affect					
	Gifted	35	4.37	1.70	2-8
	Nongifted	52	3.06	1.39	2-8
Confidence in Child					
	Gifted	35	4.80	1.39	2-8
	Nongifted	52	4.56	1.66	2-8
Reward					
	Gifted	35	5.69	1.78	2-8
	Nongifted	52	6.25	1.70	2-8

Table 8 (continued)

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Instrumental Companionship					
	Gifted	35	6.51	1.15	3-8
	Nongifted	52	6.25	1.57	2-8
General Control					
	Gifted	35	6.86	1.31	3-8
	Nongifted	52	6.37	1.52	2-8

Table 9

Descriptive Statistics for POPS Mother Present
Variables for Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Affective Companionship					
	Gifted	37	6.59	1.17	3-8
	Nongifted	57	6.95	1.12	3-8
Autonomy					
	Gifted	37	7.27	.87	6-8
	Nongifted	57	7.12	1.12	3-8
Punishment					
	Gifted	37	3.68	1.42	2-8
	Nongifted	57	4.09	1.65	2-8
Negative Affect					
	Gifted	37	4.41	1.74	2-8
	Nongifted	57	3.61	1.50	2-8
Confidence in Child					
	Gifted	37	7.30	.94	5-8
	Nongifted	57	7.16	1.22	2-8
Reward					
	Gifted	37	5.68	1.92	2-8
	Nongifted	57	6.33	1.75	2-8

Table 9 (continued)

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Instrumental Companionship					
	Gifted	37	6.24	1.01	4-8
	Nongifted	57	6.49	1.24	3-8
General Control					
	Gifted	37	6.05	1.58	2-8
	Nongifted	57	5.89	1.62	1-8

Table 10

Descriptive Statistics for POPS Mothers Past Variables
for Sample by Group

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Affective Companionship					
	Gifted	37	7.30	.91	5-8
	Nongifted	57	7.40	1.05	2-8
Autonomy					
	Gifted	37	4.92	1.34	2-8
	Nongifted	57	5.30	1.82	2-8
Punishment					
	Gifted	37	4.81	1.78	2-8
	Nongifted	57	4.56	1.69	2-8
Negative Affect					
	Gifted	37	4.14	1.72	2-8
	Nongifted	57	3.46	1.42	2-8
Confidence in Child					
	Gifted	37	4.95	1.63	2-8
	Nongifted	57	5.23	1.82	2-8
Reward					
	Gifted	37	5.92	1.55	2-8
	Nongifted	57	6.53	1.54	3-8

Table 10 (continued)

Variable	Group	<u>N</u>	<u>M</u>	<u>SD</u>	range
Instrumental Companionship					
	Gifted	37	6.51	1.04	4-8
	Nongifted	57	6.63	1.45	1-8
General Control					
	Gifted	37	6.78	1.49	2-8
	Nongifted	57	6.46	1.35	4-8

POPS past Paternal ($t = -3.95, p = .00$) and past ($t = -2.09, p = .04$) and present ($t = -2.35, p = .02$) Maternal Negative Affect. The nongifted group scored higher than the gifted group on CSI Paternal Indulgence ($t = 2.37, p = .02$) and Maternal Instrumental Companionship ($t = 2.63, p = .01$). The gifted and nongifted groups did not differ significantly on any other variables.

Where no significant differences were found between the gifted and nongifted groups, scores were collapsed for further analyses. Where the groups differed on one or more variables involved in a particular analysis, separate analyses were conducted for the gifted and nongifted groups.

Hypothesis 1: Relationships Among Intelligence, Motivational Orientation, Self-Reports of Creativity, and Ideational Fluency

Correlations Among MSFM Scores. Because p -test results indicated that gifted and nongifted participants did not differ significantly on MSFM original fluency, Pearson Product-Moment Correlation Coefficients for the total sample were used to assess the relationships among the various MSFM scores. Correlations for total original responses with total

popular and total responses were $r = .72$ ($p = .00$) and $r = .95$ ($p = .00$), respectively. Because of the high correlations among MSFM scores and because original fluency is generally the score most related to creativity, further analyses used only total original scores.

Relationships Among IEOS Scores, SSEC Scores, MSFM Originality Scores, and IQ. Because the gifted group scored significantly higher than the nongifted group on IQ, the IEOS, and the SSEC, separate Pearson Product-Moment Correlation coefficient matrices were conducted to assess the relationships among IQ and scores on the IEOS, SSEC, and MSFM for the gifted and nongifted samples. Intrinsic motivation and self-reports of creativity were positively related for both the gifted ($r = .39$, $p = .02$) and nongifted ($r = .35$, $p = .01$) samples.

For the gifted sample, self-reports of creativity were positively correlated with MSFM original responses ($r = .40$, $p = .02$). No other correlations were significant. Table 11 summarizes results.

Table 11

Intercorrelations Among IQ, IEOS, SSEC, and MSFMOriginalityNongifted Sample

	<u>IQ</u>	<u>IEOS</u>	<u>SSEC</u>	<u>MSFM</u>
<u>IQ</u>	---	-.06	.08 **	-.01
<u>IEOS</u>		---	.35	.12
<u>SSEC</u>			---	.25
<u>MSFM</u>				---

Gifted Sample

	<u>IQ</u>	<u>IEOS</u>	<u>SSEC</u>	<u>MSFM</u>
<u>IQ</u>	---	.26	-.03 *	-.01
<u>IEOS</u>		---	.36	.12 *
<u>SSEC</u>			---	.40
<u>MSFM</u>				---

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

Hypotheses 2-4: Comparison of Gifted and Nongifted Participants on Measures of Creativity and Intrinsic Motivation

Hypothesis 2: Giftedness and SSEC Scores. A Chi-square Test of Independence was used to test the relative frequencies of high and low scores on the SSEC in gifted and nongifted participants. A median-split procedure was used to classify participants as high or low scorers on the SSEC. Results approached significance for a tendency for higher self-reports of creativity in the gifted and lower self-reports of creativity in the nongifted ($\chi^2(1, N = 94) = 3.61, p = .06$), suggesting that gifted adolescents may perceive themselves as more creative than do nongifted adolescents.

Hypothesis 3: Giftedness and MSFM Scores. A second Chi-square Test of Independence was used to test the relative frequencies of high and low scores on the MSFM originality scale in gifted and nongifted participants. A median split procedure was used to classify participants as high or low scorers on MSFM originality. Results were not significant ($\chi^2(1, N = 92) = 2.34, p = .13$), suggesting that

gifted and nongifted adolescents do not differ significantly in terms of originality.

Hypothesis 4: Giftedness and IEOS Scores. A third Chi-square Test of Independence was used to test the relative frequencies of high and low scores on the IEOS in gifted and nongifted participants. A median split procedure was used to classify participants as high or low scorers on the IEOS. The gifted group was found to be significantly higher than the nongifted group in intrinsic motivation ($\chi^2(1, N = 94) = 12.88, p = .00$).

Hypothesis 5: Correlations Between CSI and POPS

Pearson Product-Moment Correlation coefficient matrices were used to compare scores on the CSI and the POPS and to assist in providing preliminary validation for the POPS. The CSI Discipline and Support factors for each parent were correlated with the eight scales on the POPS for each parent for the present and the past. Correlations for fathers with fathers and mothers with mothers were examined. No attempt was made to examine the relationship between father scores and mother scores. Because of the large number of significant correlations obtained, only correlations

with a significance level of .01 or higher are being reported.

Separate matrices were conducted for gifted and nongifted for the analyses involving POPS past paternal and past and present maternal Negative Affect because t-test results revealed significant differences between the gifted and nongifted groups for these variables. For all other variables no significant differences were found, so scores were collapsed and the gifted and nongifted samples were combined.

POPS Maternal Negative Affect correlated positively with Maternal Discipline. For the gifted sample, present Negative Affect was related to Discipline ($r = .50$, $p = .00$). For the nongifted sample, positive correlations were obtained for Discipline with past and present Negative Affect ($r = .38$, $p = .00$, past; $r = .58$, $p = .00$, present). For the nongifted sample, the CSI Paternal Discipline factor correlated positively with past Father Negative Affect ($r = .37$, $p = .01$).

For the total sample CSI Paternal Discipline correlated positively with POPS present Paternal Punishment ($r = .62$, $p = .00$), Negative Affect ($r = .62$, $p = .00$), and General Control ($r = .32$,

$p = .00$). CSI Paternal Discipline correlated negatively with POPS past ($r = -.26, p = .01$) and present Affective Companionship ($r = -.29, p = .01$), present Paternal Autonomy ($r = -.30, p = .01$), and past Paternal Control through Reward ($r = -.32, p = .00$).

For the total sample, CSI Paternal Support correlated positively with past ($r = .54, p = .00$) and present ($r = .77, p = .00$) Affective Companionship, present Confidence in Child ($r = .49, p = .00$), past ($r = .26, p = .01$) and present ($r = .33, p = .00$) Control through Reward, past ($r = .59, p = .00$) and present ($r = .67, p = .00$) Instrumental Companionship, and past General Control ($r = .28, p = .01$).

For mothers, using the total sample, CSI Discipline correlated positively with POPS past ($r = .41, p = .00$) and present $r = .58, p = .00$) Punishment, as well as past ($r = .32, p = .00$) and present ($r = .39, p = .00$) General Control. Discipline correlated negatively with present Affective Companionship ($r = -.30, p = .00$) and Autonomy ($r = -.39, p = .00$).

For the total sample, CSI Maternal Support correlated positively with POPS present ($r = .41, p = .00$) and past ($r = .30, p = .00$) Affective

Companionship, present Autonomy ($r = .27, p = .01$), present Confidence in Child ($r = .30, p = .00$), and present Instrumental Companionship ($r = .37, p = .00$).

Hypothesis 6: Relationships Among IQ and Parent Variables

Because the gifted and nongifted groups differed significantly on IQ, two Pearson Product-Moment Correlation matrices (gifted and nongifted) were used to assess the relationships among IQ and scores on the CSI and POPS. For nongifted participants IQ was negatively related to Maternal Deprivation of Privileges on the CSI ($r = -.30, p = .03$). For gifted participants IQ was positively related to Maternal Negative Affect ($r = .33, p = .05$) and General Control ($r = .35, p = .04$) in the preschool and primary ages on the POPS. No other correlation coefficients were significant. (See Tables 12 through 16).

Hypotheses 7: Relationships Among Motivational Orientation and Parent Variables

Pearson Product-Moment Correlation coefficients were used to assess the relationships among motivational orientation and parenting. Because the gifted and nongifted samples differed significantly on

intrinsic motivation, separate matrices were conducted for the gifted and nongifted samples.

Intrinsic Motivation was negatively related to Maternal Control through Reward in the preschool and primary years on the POPS for the nongifted ($r = -.27$, $p = .04$) sample. For the gifted sample intrinsic motivation was positively related to CSI Maternal Consistency ($r = .40$, $p = .01$), POPS Maternal Confidence in Child for both the past ($r = .39$, $p = .02$) and the present ($r = .37$, $p = .02$), and POPS past Maternal Autonomy ($r = .41$, $p = .01$). (See Tables 12 through 16).

Hypothesis 8: Relationships among Self-Reports of Creativity and Parent Variables

Because a t -test revealed that gifted participants scored significantly higher than nongifted participants on the SSEC, Pearson Product-Moment Correlation Coefficients were used to assess the relationships among self-reports of creativity and parenting with separate matrices for gifted and nongifted. SSEC scores were positively related to past POPS Maternal Confidence in Child for the gifted ($r = .33$, $p = .04$) and present Maternal Confidence in Child for the nongifted ($r = .28$, $p = .05$).

Table 12

Correlations of CSI Variables with IQ, IEOS, and SSEC

	IQ	IEOS	SSEC
CSI Discipline			
Mothers			
Gifted	.16	.11	-.21
Nongifted	-.09	-.21	.03
Fathers			
Gifted	.01	-.20	-.08
Nongifted	.02	.24	.14
CSI Support			
Mothers			
Gifted	.17	.19	.24
Nongifted	.06	.05	.01
Fathers			
Gifted	.03	-.02	.16
Nongifted	.03	-.09	-.00

Table 13

Correlations of POPS Past Mother Variables with IQ,
IEOS, and SSEC

	IQ	IEOS	SSEC
Affective Companionship			
Gifted	.14	.12	-.24
Nongifted	.12	-.15	.02
Autonomy			
Gifted	.20	.41**	.44**
Nongifted	-.04	-.11	.09
Punishment			
Gifted	.29	-.01	.07
Nongifted	-.05	-.06	-.13
Negative Affect			
Gifted	.33*	.18	.09
Nongifted	.03	-.10	-.01
Confidence in Child			
Gifted	.17	.39**	.33*
Nongifted	.00	-.13	.03
* p < .05.	** p < .01.		

Table 13 (continued)

	IQ	IEOS	SSEC
Reward			
Gifted	-.07	.04	-.36 [*]
Nongifted	.08	-.27 [*]	-.07
Instrumental Companionship			
Gifted	.09	-.09	-.03
Nongifted	-.10	-.05	.06
Control			
Gifted	.35 [*]	-.05	.04
Nongifted	-.04	-.07	-.01
[*] p < .05.	^{**} p < .01.		

Table 14

Correlations of POPS Present Mother Variables with IQ,
IEOS, and SSEC

	IQ	IEOS	SSEC
Affective Companionship			
Gifted	.28	-.07	.04
Nongifted	.08	-.14	-.06
Autonomy			
Gifted	.22	.03	.21
Nongifted	.00	.24	.05
Punishment			
Gifted	.11	-.14	-.13
Nongifted	-.05	-.19	-.07
Negative Affect			
Gifted	.12	.13	.06
Nongifted	.02	.00	.09
Confidence in Child			
Gifted	.04	.37*	.22*
Nongifted	.19	.05	.29

*

p < .05.

Table 14 (continued)

	IQ	IEOS	SSEC
Reward			
Gifted	-.24	-.17	-.38*
Nongifted	-.15	-.17	-.13
Instrumental Companionship			
Gifted	.12	-.26	-.06
Nongifted	-.19	.13	.17
Control			
Gifted	.10	.01	.01
Nongifted	-.04	-.13	.02

*

 $p < .05.$

Table 15

Correlations of POPS Past Father Variables with IQ,
IEOS, and SSEC

	IQ	IEOS	SSEC
Affective Companionship			
Gifted	.12	.01	-.17
Nongifted	.03	.04	-.02
Autonomy			
Gifted	.02	.08	.20
Nongifted	-.16	-.12	.22
Punishment			
Gifted	.02	-.05	.09
Nongifted	.18	-.01	-.01
Negative Affect			
Gifted	.16	.11	.22
Nongifted	.21	-.01	.12
Confidence in Child			
Gifted	.03	.13	.23
Nongifted	-.06	.07	.14
Reward			
Gifted	.03	-.06	-.32
Nongifted	.05	-.19	-.16

Table 15 (continued)

	IQ	IEOS	SSEC
Instrumental Companionship			
Gifted	.27	.25	.02
Nongifted	-.00	-.20	-.08
Control			
Gifted	.11	.02	.09
Nongifted	.16	.09	.18

Table 16

Correlations of POPS Present Fathers with IQ, IEOS, and SSEC

	IQ	IEOS	SSEC
Affective Companionship			
Gifted	.04	-.01	-.23
Nongifted	.05	.04	.12
Autonomy			
Gifted	.01	-.04	.25
Nongifted	.10	-.21	.24
Punishment			
Gifted	.13	-.08	.07
Nongifted	-.04	-.11	-.07
Negative Affect			
Gifted	.07	-.10	.04
Nongifted	-.06	.12	-.04
Confidence in Child			
Gifted	.04	-.06	.13
Nongifted	.02	.09	.18
Reward			
Gifted	-.14	-.05	-.11
Nongifted	-.10	-.11	.11

Table 16 (continued)

	IQ	IEOS	SSEC
Instrumental Companionship			
Gifted	.19	.10	.10
Nongifted	-.02	-.03	.15
Control			
Gifted	.16	-.16	.04
Nongifted	.11	.14	.25

Autonomy was related to SSEC scores for the gifted sample. CSI Maternal and Paternal Autonomy scores and POPS past Maternal Autonomy scores correlated positively with SSEC scores ($r = .34$, $p = .04$; $r = .33$, $p = .05$; $r = .44$, $p = .01$, respectively).

SSEC scores were negatively related to POPS Control through Reward for mothers, present ($r = -.38$, $p = .02$) and past ($r = -.36$, $p = .03$) in the gifted sample. CSI Maternal Consistency was positively related to SSEC scores in the gifted ($r = .36$, $p = .03$) sample. (See Tables 12 through 16).

Hypothesis 9: Relationships Among Ideational Fluency and Parent Variables

Pearson Product Moment Correlation Coefficients were used to test Hypothesis 9. Because t -tests revealed that gifted and nongifted students differed on CSI Paternal Achievement Demands and Indulgence, CSI Maternal Instrumental Companionship, POPS past Paternal Negative Affect, and past and present Maternal Negative Affect, separate analyses were conducted for the gifted and nongifted samples for these variables. Because gifted and nongifted participants did not differ significantly on original fluency on the MSFM, scores were collapsed for all other parent variables, and

correlation coefficients were performed for the total sample. No father or mother variables on the POPS or the CSI were related to original fluency.

Hypothesis 10-12: MANOVA Results

Five MANOVAs were conducted. The first 3 MANOVAs used grade as an independent variable. Originally it had been planned to use each grade level (6 through 12) as a separate variable; however, this procedure resulted in a small number of participants for several cells. For this reason, sixth through eighth grade students were grouped together as "middle school students" and ninth through twelfth grade students were grouped together as "high school students."

Hypothesis 10: A Comparison of Gifted and Nongifted Adolescents on IEOS, SSEC, and MSFM Scores. MANOVA 1 used gifted/nongifted, sex, and grade (middle school/high school) as independent variables and IEOS, SSEC, and original MSFM scores as dependent variables. The MANOVA was significant for gifted/nongifted (Wilks' Lambda, $F(1, 84) = 8.61, p = .00$). All other possible main effects and interactions were nonsignificant.

To further evaluate the significant finding for gifted/nongifted, follow-up ANOVAs were conducted on the individual variables. Fs were significant for IEOS

($F(1, 84) = 24.61, p = .00$) and SSEC ($F(1, 84) = 8.28, p = .01$) scores. Because there were only two levels of the independent variable, t -tests were conducted to determine the direction of significant findings. T -tests revealed that gifted students scored higher than nongifted students on the SSEC ($t(92) = -5.09, p = .00$) and the IEOS ($t(92) = -2.59, p = .01$). Gifted and nongifted students did not differ significantly on original MSFM scores. (See Table 5 for M s and SD s).

Hypothesis 11: A Comparison of Gifted and Nongifted Adolescents on the CSI and the POPS. MANOVA 2 used gifted/nongifted, sex, and grade (middle school/high school) as independent variables and the two CSI mother factors and the 16 POPS mother scales as dependent variables. The MANOVA was significant for sex differences (Wilks' Lambda, $F(1, 86) = 2.43, p = .00$). No other main effects or interactions were significant.

Follow-up ANOVAs were significant for the following POPS mother variables: present negative affect ($F(1, 86) = 9.90, p = .00$), present control ($F(1, 86) = 11.94, p = .00$), past affective companionship ($F(1, 86) = 7.54, p = .01$), and past control ($F(1, 86) = 8.64, p = .00$). Follow-up t -tests

indicated that females rated their mothers higher than males on each of these variables (See Table 17 for descriptive statistics for males and females and Table 18 for t -test results).

MANOVA 3 used gifted/nongifted, sex, and grade (middle school/high school) as independent variables and the two CSI father factors and 16 POPS father variables as dependent variables. The MANOVA for grade was significant (Wilks' Lambda, $F(1, 78) = 2.99$, $p = .00$). All other possible main effects and interactions were nonsignificant.

Follow-up ANOVAs revealed significant F s for present POPS father Instrumental Companionship ($F(1, 78) = 4.07$, $p = .05$), past POPS father Punishment ($F(1, 78) = 6.35$, $p = .01$), and past POPS father General Control ($F(1, 78) = 4.27$, $p = .04$). The follow-up t -test for Instrumental Companionship failed to confirm a significant relationship. T -tests for past Punishment and Control indicated that high school students reported greater past paternal punishment ($t(85) = -2.63$, $p = .01$) and control ($t(85) = -2.68$, $p = .01$) than did middle school students. (See Table 19 for descriptive statistics for middle school/high school).

Table 17

Descriptive Statistics for Sex Differences in Mother Variables

	<u>Present Negative Affect</u>			
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>Standard Error</u>
Males	35	3.46	1.52	.26
Females	59	4.20	1.65	.21
	<u>Present Control</u>			
Males	35	5.26	1.84	.31
Females	59	6.37	1.29	.17
	<u>Past Affective Companionship</u>			
Males	35	7.03	1.25	.21
Females	59	7.56	.75	.10
	<u>Past Control</u>			
Males	35	6.11	1.59	.27
Females	59	6.86	1.22	.16

Table 18

T-Test Results for Sex Differences in Mother Variables

	<u>t</u>	<u>df</u>	<u>p</u>
Present Negative Affect	-2.18	92	.03
Present Control	-3.46	92	.00
Past Affective Companionship	-2.58	92	.01
Past Control	-2.57	92	.01

Table 19

Descriptive Statistics for Grade Differences in Father Variables

	<u>Past Punishment</u>			Standard Error
	N	<u>M</u>	<u>SD</u>	
Middle School	47	3.98	1.52	.22
High School	40	4.90	1.74	.27
	<u>Past Control</u>			
Middle School	47	6.19	1.61	.23
High School	40	7.00	1.11	.17

Hypothesis 12: A Comparison of POPS and CSI Scores of High and Low Scorers on the IEOS, SSEC, and MSFM. MANOVA 4 used scores on the SSEC, IEOS, and MSFM as independent variables. A median split procedure was used to classify students as high or low scorers on each measure. The mother variables were used as dependent variables. MANOVA 5 was identical to MANOVA 4 but used father variables as dependent variables. Neither MANOVA was significant for main effects or interactions.

CHAPTER V

Discussion

The present research examined the relationships among IQ, intrinsic motivation, self-reports of creativity, ideational fluency, and parenting style and compared gifted and nongifted adolescents on these variables. Correlational analysis, Chi-square, MANOVAs, ANOVAs, and t-tests were used to analyze the data.

T-tests

T-tests were conducted for the purpose of determining whether or not to collapse scores of gifted and nongifted participants. Results indicated that gifted adolescents scored higher than nongifted adolescents on measures of intrinsic motivation, self-reports of creativity, and IQ.

When compared with nongifted adolescents, gifted adolescents reported greater parental negative affect and paternal achievement demands. These findings are consistent with previous research indicating a relationship between intelligence and parental demands for achievement (Bloom, 1985; Schaffer, 1977; Vernon, 1979) but are inconsistent with research indicating that parents of gifted children are more likely to be

warm and nurturing and to report unconditional love for their children (Karnes et al., 1984; Radin, 1972; Schaffer, 1977). The present findings suggest a tendency for parents to be critical of gifted children and to expect high levels of achievement from them. It may be that gifted adolescents perceive more parental pressure to achieve than do nongifted adolescents. Another possibility is that these parents themselves are high achieving and value education and achievement. Consequently, they may expect the same from their children.

Nongifted adolescents perceived their fathers as more indulgent and their mothers as higher in instrumental companionship than did gifted adolescents. Perhaps mothers of nongifted adolescents spend more time with their children in instrumental pursuits such as homework because gifted adolescents may not need as much assistance. This finding contradicts previous research which indicated that parents of gifted children spend more time than parents of nongifted children working with their children on school-related activities (Karnes et al., 1984).

Correlational Analyses

IQ, Creativity, and Motivation. Both ideational fluency and an intrinsic motivational orientation were positively related to self-reports of creativity, but intrinsic motivation and ideational fluency were not significantly related. IQ was not significantly related to intrinsic motivation or to self-reports of creativity. Consistent with some previous research (Moran et al., 1983a, 1983b; Wallach, 1970, 1971; Ward, 1968; Welsh, 1966), IQ and originality were also unrelated.

These results support the theory that intelligence and creativity are separate constructs (Moran et al., 1983a, 1983b; Wallach, 1970, 1971; Ward, 1968; Welsh, 1966). Self-reports of creativity and intrinsic motivation were related but intrinsic motivation was not related to ideational fluency, suggesting that the relationship between intrinsic motivation and creativity may depend on the measures used. The fact that they were related for self-reports of creativity but not for ideational fluency is somewhat puzzling. A possible explanation may be that the IEOS and the SSEC are similar in that they are questionnaires. The MSFM is different from the other measures in that it

requires divergent thinking on the part of the participant.

Another possible explanation relates to Mednick's (1962) finding that more original responses occur later in the response hierarchy. The number of MSFM responses in the present research was relatively low when compared with previous similar research (J. K. Sawyers, personal communication, November 18, 1994), possibly resulting in a restricted range. For this reason, in the present research the originality score may not adequately differentiate between high- and low-creative participants.

The CSI and the POPS. POPS Negative Affect by mothers was related to the CSI Discipline Factor for the gifted (present) and for the nongifted (past and present). For fathers of the nongifted, past Negative Affect correlated positively with CSI Discipline. Because the gifted and nongifted did not differ significantly on any other parent variables, scores were collapsed for further analyses.

For the total sample, CSI Father Discipline was positively related to POPS present Paternal Punishment, Control, and Negative Affect. CSI Father Discipline correlated negatively with POPS past and present

Affective Companionship, present Autonomy, and past Control through Reward. CSI Father Support correlated positively with present Confidence in Child; past General Control; and past and present Affective Companionship, Instrumental Companionship, and Control through Reward.

For the total sample, CSI Mother Discipline correlated positively with POPS past and present General Control and Punishment. Discipline was negatively related to present Affective Companionship and Autonomy. For mothers, the CSI Support factor was positively related to present Autonomy, Confidence in Child, and Instrumental Companionship and to past and present Affective Companionship.

The results of the present research suggest preliminary evidence for the validity of the POPS; however, further research is needed to assess validity and reliability of the instrument. Future research, including inter-item correlations and factor analysis of individual items, is needed to further validate the POPS.

IQ and Parenting. Maternal negative affect and control in the preschool and primary years were positively related to IQ in the gifted. These findings

are consistent with the research of Getzels and Jackson (1961) which indicated that mothers of the high IQ group were less accepting and more critical and vigilant of their children. These findings, however, are inconsistent with most previous research (Clark, 1983; Cross & Allen, 1969; Dornbusch et al., 1987; Radin, 1972), suggesting they may be specific to the present sample. It is also possible that high IQ children may challenge their mothers more than lower IQ children in the early years, resulting in more control and negative affect. Another possibility is that high IQ adolescents may exhibit greater sensitivity to, or be more resentful of, control and negative affect. Consequently, they may perceive and report their mothers as more controlling and negative. A third explanation is that mothers have high expectations for their high IQ children and consequently become more critical of them and exhibit more negative affect. It is also possible that the retrospective reports in the present research may be less accurate. Maternal deprivation of privileges was negatively related to IQ in nongifted adolescents, suggesting that lower IQ adolescents are more likely to have parents who place more restrictions on them.

Motivation and Parenting. Amabile's (1983)

intrinsic motivation hypothesis of creativity suggests that creativity is more likely to occur under a state of intrinsic motivation - a motivational state where an activity is viewed as an end in itself rather than as a means to an end. She suggests that intrinsic motivation and, consequently, creativity are more likely to occur under conditions free from extrinsic constraints such as rewards or high levels of parental or teacher control. Her hypothesis also suggests that intrinsic motivation and creativity are more likely to occur under conditions that allow autonomy.

Consistent with the intrinsic motivation hypothesis of creativity and with other research (Fair & Silvestri, 1992), the present research suggests that intrinsic motivation appears to be positively associated with a maternal parenting style that minimizes rewards, encourages autonomy, and exhibits confidence in the child. These findings suggest that intrinsic motivation is facilitated by a lack of extrinsic constraint and provide support for Amabile's (1983) model. Results relating to intrinsic motivation and parenting were significant for mothers but not for

fathers. Intrinsic motivation in the gifted was also positively related to maternal consistency.

Creativity and Parenting. Original fluency was not related to parenting, but self-reports of creativity were related to certain parenting variables. The present findings suggest that self-reports of creativity are positively related to parental confidence in the child and allowance of autonomy. Self-reports of creativity correlated negatively with maternal control through reward for the gifted sample but were unrelated for the nongifted sample, suggesting that gifted adolescents may be more sensitive than nongifted adolescents to the effects of rewards. Creativity was also found to positively relate to maternal consistency in the gifted. These findings also support Amabile's (1983) model and are consistent with most of the research suggesting a positive relationship between creativity and a parenting style that encourages autonomy, displays confidence in the child, and minimizes extrinsic constraints such as rewards (Albert, 1971; Bishop & Chace, 1971; Clark, 1983; Datta & Parloff, 1967; MacKinnon, 1962; Wade, 1971).

Chi-Square Results

Chi-square analyses revealed a significant positive association between giftedness and intrinsic motivation. Results approach significance for a positive relationship between giftedness and self-reports of creativity. Chi-square results for giftedness and ideational fluency were not significant. These findings suggest that gifted students are more likely than nongifted students to be intrinsically motivated and, to some extent, creative. These findings fail to support the idea that gifted students may become extrinsically motivated as a result of competition for grades and awards. These findings do support research suggesting an association between high achievement and intrinsic motivation (Gottfried et al., 1994; Nakamura, 1988).

MANOVA Results

MANOVA results revealed that gifted adolescents scored higher than nongifted adolescents on measures of intrinsic motivation and self-reports of creativity, further suggesting a relationship between giftedness and creativity and a relationship between giftedness and intrinsic motivation. These results support the

Chi-square results and suggest that gifted students are more intrinsically motivated than nongifted students.

Female adolescents rated their mothers higher than did male adolescents on present negative affect, present and past control, and past affective companionship. These findings suggest that mothers may spend more positive time with daughters than with sons but that they may also exhibit more criticism and negative interactions with daughters than with sons. It may be that mothers and daughters develop closer relationships than mothers and sons, resulting in more opportunity for both affective companionship and negative affect. Mothers may also exhibit more control over daughters than over sons, possibly due to stereotypes in our culture. It is also possible that males rebel more against their mothers and resist their control more than do females, resulting in less companionship and control.

High school students reported greater past paternal punishment and control than did middle school students. It is possible that high school students have established more independence and are more aware of and sensitive to past punishment and control. Middle school students may not perceive their parents

as having been punishing and controlling in the earlier years because they are still more likely to be influenced by their parents than are high school students.

CHAPTER VI

Summary and Conclusions

The present research examined the relationships among ideational fluency, self-reports of creativity, motivational orientation, and IQ in gifted and nongifted adolescents. Thirty-seven gifted and 57 nongifted sixth through twelfth graders participated in the study.

Gifted adolescents scored higher than nongifted adolescents on measures of intrinsic motivation, self-reports of creativity, and IQ. Results suggest that gifted adolescents, when compared with nongifted adolescents, perceive their parents as exhibiting more negative affect toward them and their fathers as displaying more achievement demands. Nongifted adolescents perceived their fathers as more indulgent and their mothers as higher in instrumental companionship than did gifted adolescents.

Intrinsic motivation and creativity were generally related. IQ was positively associated with past maternal control and negative affect in the gifted. In the nongifted, IQ was negatively related to deprivation of privileges.

For gifted adolescents, intrinsic motivation was positively associated with maternal consistency, confidence in child, and allowance of autonomy. Intrinsic motivation was negatively associated with past maternal rewards in the nongifted sample.

Self-reports of creativity were positively associated with maternal consistency and with maternal and paternal allowance of autonomy in the gifted. For the gifted, maternal rewards were negatively related to self-reports of creativity. Maternal confidence in child was related to self-reports of creativity for both the gifted (in the past) and nongifted (in the present).

Results further suggest that mothers spend more positive time with daughters than with sons but also exhibit more control, criticism, and negative interactions with daughters than with sons. When compared with middle school students, high school students perceive greater levels of paternal punishment and control during the preschool and primary years.

Overall the present results suggest that, in general, creativity and intrinsic motivation may be enhanced by a parenting style characterized by consistency, allowance of autonomy, and confidence in

the child. Rewards may decrease creativity and intrinsic motivation.

The present results suggest that parenting influences intrinsic motivation and that intrinsic motivation is related to creativity. Future researchers may want to consider a regression or path model to examine the indirect effects of creativity on parenting and to examine the idea that parenting influences creativity through intrinsic motivation.

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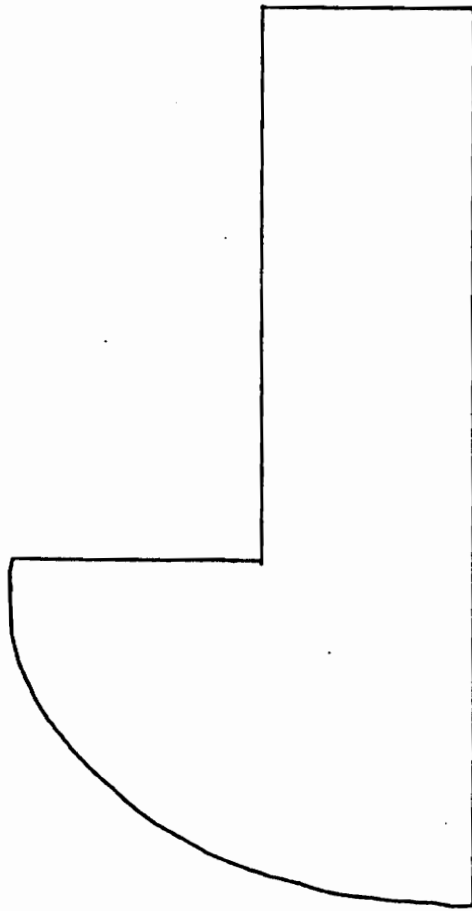
Appendix A

The Multidimensional Stimulus Fluency Measure (MSFM)

List all the things you can think of that are round.

List all the things you can think of that you can use a box for or do with a box.

List all the things you can think of that this could be.



Appendix B

The Students Self-Evaluation of Creativity (SSEC)

Here are some questions about you. Circle the number from one to seven that best describes you. Please be as honest about yourself as you can.

1. To what extent, or how often do you work on your own?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

2. To what extent, or how often are you interested in many things?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

3. To what extent, or how often are you conforming?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

4. To what extent, or how often are you questioning?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

5. To what extent, or how often are you artistic?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

6. To what extent, or how often are you willing to change plans?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

7. To what extent, or how often are you intelligent?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

8. To what extent, or how often are you willing to try the difficult?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

9. To what extent, or how often do you see things different from others?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

10. To what extent, or how often are you quiet?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

11. To what extent, or how often are you unique?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

12. To what extent, or how often do you have new ideas?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

13. To what extent, or how often are you funny?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

14. To what extent, or how often do you disagree with the teacher?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

15. To what extent, or how often are you different?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

16. To what extent, or how often are you imaginative?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

17. To what extent, or how often are you outgoing?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

18. To what extent, or how often do you invent new things?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

19. To what extent, or how often do you insist your way is right?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

20. To what extent, or how often do you need help?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

21. To what extent, or how often are you sensitive?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

22. To what extent, or how often are you expressive?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

23. To what extent, or how often are you inventive?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

24. To what extent, or how often are you good at designing things?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

25. To what extent, or how often are you creative?

- 1 rarely
- 2 very little
- 3 slightly
- 4 moderately
- 5 considerably
- 6 very much
- 7 extremely

Appendix C

Scale of Intrinsic Versus Extrinsic Orientation in the
Classroom (IEOS)

Harter's Intrinsic Motivation Measure
Pupil's Form

Name _____ Age _____ Birthday (Month) _____ (Day) _____

Grade _____ Teacher _____ Boy or Girl (circle which)

Sample Questions

	Really True for Me	Sort of True for Me		BUT		Sort of True for Me	Really True for Me
(a)	<input type="checkbox"/>	<input type="checkbox"/>	Some kids would rather play outdoors in their spare time		Other kids would rather watch T.V.	<input type="checkbox"/>	<input type="checkbox"/>
(b)	<input type="checkbox"/>	<input type="checkbox"/>	Some kids like hamburgers better than hot dogs		Other kids like hot dogs better than hamburgers	<input type="checkbox"/>	<input type="checkbox"/>

	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think they should have a say in what work they do in school		Other kids think that the teacher should decide what work they should do	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	If some kids get stuck on a problem they ask the teacher for help		Other kids keep trying to figure out the problem on their own	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	Some kids like to go on to new work that's at a more difficult level		Other kids would rather stick to the assignments which are pretty easy to do	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	Some kids do extra projects so they can get better grades		Other kids do extra projects because they learn about things that interest them	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	Some kids know whether or not they're doing well in school without grades		Other kids need to have grades to know how well they are doing in school	<input type="checkbox"/>	<input type="checkbox"/>

Appendix D

The Cornell Socialization Inventory (CSI)

Father

Here are some descriptions of the kinds of things fathers do. Read each statement below and make a check mark above the answer which best describes your father. Be sure to answer each statement. Please do not leave out any.

If a man who is not your real father has taken your real father's place during most of the last year, put check marks for the answers which best describe that person. If you have not lived with either your own father or someone taking his place for most of the last year, leave these questions blank.

If you have any questions, please raise your hand.

1. I can count on him to help me out if I have some kind of problem.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

2. He says he will hit me or smack me if I do something he doesn't like.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

3. He keeps pushing me to do my best in whatever I do.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

4. He lets me off easy when I do something he doesn't like.

() () () () ()
VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

5. He helps me with my school work if there is something I don't understand.

() () () () ()
VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

6. He won't let me do things with my friends when I have done something he doesn't like.

() () () () ()
NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

7. I know what he expects of me and how he wants me to act.

() () () () ()
VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

8. He lets me make my own plans for things I want to do.

() () () () ()
NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

9. When he wants me to do something he explains why.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

10. He acts cold and unfriendly if I do something he doesn't like.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

11. He is very strict toward me if I don't do what is expected of me.

() () () () ()

NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

Whom were you thinking of when you answered these questions?

(Check one.)

____My own father

____My stepfather

____Another man who takes care of me

Mother

Here are some descriptions of the kinds of things mothers do. Read each statement below and make a check mark above the answer which best describes your mother. Be sure to answer each statement. Please do not leave out any.

If a woman who is not your real mother has taken your real mother's place during most of the last year, put check marks for the answers which best describe that person. If you have not lived with either your own mother or someone taking her place for most of the last year, leave these questions blank.

If you have any questions, please raise your hand.

1. I can count on her to help me out if I have some kind of problem.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

2. She says she will hit me or smack me if I do something she doesn't like.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

3. She keeps pushing me to do my best in whatever I do.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

4. She lets me off easy when I do something she doesn't like.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

5. She helps me with my school work if there is something I don't understand.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

6. She won't let me do things with my friends when I have done something she doesn't like.

() () () () ()

NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

7. I know what she expects of me and how she wants me to act.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

8. She lets me make my own plans for things I want to do.

() () () () ()

NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

9. When she wants me to do something she explains why.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

10. She acts cold and unfriendly if I do something she doesn't like.

() () () () ()

VERY OFTEN FAIRLY OFTEN SOMETIMES HARDLY EVER NEVER

11. She is very strict toward me if I don't do what is expected of me.

() () () () ()

NEVER HARDLY EVER SOMETIMES FAIRLY OFTEN VERY OFTEN

Whom were you thinking of when you answered these questions?

(Check one.)

___ My own mother

___ My stepmother

___ Another woman who takes care
of me

Appendix E

Perceptions of Parenting Scale (POPS)

Read each of the following statements and think about how much each one describes your father (or his substitute) as he is now.

Then circle the number for each statement to indicate how often the statement is true of him.

Circle 1 if the statement is never true.

Circle 2 if the statement is rarely true.

Circle 3 if the statement is sometimes true.

Circle 4 if the statement is frequently true.

He spends time with me doing fun things.	1	2	3	4
He gives me freedom.	1	2	3	4
He grounds me or won't let me do things when I misbehave.	1	2	3	4
He lets me make my own decisions.	1	2	3	4
He yells at me.	1	2	3	4
He trusts that I can take care of myself.	1	2	3	4
He gives me money or other rewards when I make good grades.	1	2	3	4
He jokes and laughs with me.	1	2	3	4
He gives me responsibility.	1	2	3	4
He spanks me.	1	2	3	4
He helps me with homework.	1	2	3	4
He rewards me when I do good things.	1	2	3	4
He criticizes me.	1	2	3	4
He teaches me things.	1	2	3	4
He controls what I do.	1	2	3	4
He has rules he expects me to follow.	1	2	3	4

Now think about your father as he was when you were younger - before you started to school and in your early years of elementary school. Read each of the following statements and think about how much each one describes your father (or his substitute) as he was then. Then circle the number for each statement to indicate how often the statement was true of him.

Circle 1 if the statement is never true.

Circle 2 if the statement is rarely true.

Circle 3 if the statement is sometimes true.

Circle 4 if the statement is frequently true.

He spent time with me doing fun things.	1	2	3	4
He gave me freedom.	1	2	3	4
He grounded me or wouldn't let me do things when I misbehaved.	1	2	3	4
He let me make my own decisions.	1	2	3	4
He yelled at me.	1	2	3	4
He trusted that I could take care of myself.	1	2	3	4
He gave me money or other rewards when I made good grades.	1	2	3	4
He joked and laughed with me.	1	2	3	4
He gave me responsibility.	1	2	3	4
He spanked me.	1	2	3	4
He helped me with homework.	1	2	3	4
He rewarded me when I did good things.	1	2	3	4
He criticized me.	1	2	3	4
He taught me things.	1	2	3	4
He controlled what I did.	1	2	3	4
He had rules he expected me to follow.	1	2	3	4

Is the person you were thinking of when you answered these questions the same person you were thinking of when you answered the questions about the way your father is now?

_____yes

_____no

Read each of the following statements and think about how much each one describes your mother (or her substitute) as she is now.

Then circle the number for each statement to indicate how often the statement is true of her.

Circle 1 if the statement is never true.

Circle 2 if the statement is rarely true.

Circle 3 if the statement is sometimes true.

Circle 4 if the statement is frequently true.

She spends time with me doing fun things.	1	2	3	4
She gives me freedom.	1	2	3	4
She grounds me or won't let me do things when I misbehave.	1	2	3	4
She lets me make my own decisions.	1	2	3	4
She yells at me.	1	2	3	4
She trusts that I can take care of myself.	1	2	3	4
She gives me money or other rewards when I make good grades.	1	2	3	4
She jokes and laughs with me.	1	2	3	4
She gives me responsibility.	1	2	3	4
She spansks me.	1	2	3	4
She helps me with homework.	1	2	3	4
She rewards me when I do good things.	1	2	3	4
She criticizes me.	1	2	3	4
She teaches me things.	1	2	3	4
She controls what I do.	1	2	3	4
She has rules she expects me to follow.	1	2	3	4

Now think about your mother as she was when you were younger - before you started to school and in your early years of elementary school. Read each of the following statements and think about how much each one describes your mother (or her substitute) as she was then. Then circle the number for each statement to indicate how often the statement was true of her.

Circle 1 if the statement is never true.

Circle 2 if the statement is rarely true.

Circle 3 if the statement is sometimes true.

Circle 4 if the statement is frequently true.

She spent time with me doing fun things.	1	2	3	4
She gave me freedom.	1	2	3	4
She grounded me or wouldn't let me do things when I misbehaved.	1	2	3	4
She let me make my own decisions.	1	2	3	4
She yelled at me.	1	2	3	4
She trusted that I could take care of myself.	1	2	3	4
She gave me money or other rewards when I made good grades.	1	2	3	4
She joked and laughed with me.	1	2	3	4
She gave me responsibility.	1	2	3	4
She spanked me.	1	2	3	4
She helped me with homework.	1	2	3	4
She rewarded me when I did good things.	1	2	3	4
She criticized me.	1	2	3	4
She taught me things.	1	2	3	4
She controlled what I did.	1	2	3	4
She had rules she expected me to follow.	1	2	3	4

Is the person you were thinking of when you answered these questions the same person you were thinking of when you answered the questions about the way your mother is now?

_____yes

_____no

Appendix F

Letter to Parents and Consent Forms

Dear Parents:

I am a doctoral student in the Department of Family and Child Development at Virginia Tech. For my dissertation research, I am conducting a study of the development of creativity in adolescents.

Your child is one of approximately 150 sixth through twelfth grade students attending school in Saltville or Chilhowie who has been selected to participate in this project. Your child will be asked to complete an anonymous, confidential questionnaire which has no right or wrong answers. Most students in previous similar research have enjoyed participating in this type of project.

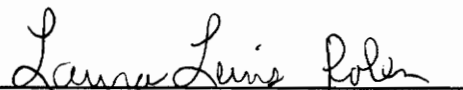
The questionnaires will be completed in groups at school and will take approximately 30 minutes to one hour. All information will be kept strictly confidential and will in no way become part of your child's school records. With your permission, I will also obtain an ability score or IQ from your child's school records. Your child's name or other identifying information will in no way be associated with his or her responses, and no one will have access to your child's responses except those individuals directly involved with the project.

This project has been approved by Mr. Winters and by your child's principal and guidance counselor. Much of the research on creativity has been conducted in urban areas or in university communities. This study will provide an opportunity for Smyth County students to participate in this research and to add to the knowledge of how creativity develops.

We hope you will consent for your child to participate in this project. We need your help and cooperation to make this study successful. The results will be more valid if all selected students participate. If you are willing for your child to participate, please complete the attached consent form. Then have him or her return it to school tomorrow and place it in the box in the office labeled "Creativity Project."

We will be happy to share the results of this study with you when the research is completed. Thank you for your cooperation. If you have questions about this project, please contact me at 496-3244.

Sincerely,



Laura Lewis Rolen
Graduate Student

Dr. Janet K. Sawyers
Professor of Child
Development

I give permission for my child _____
(child's full name)
to participate in the Creativity Project. I also give
permission for the researchers to obtain an ability
score from my child's school records.

I understand the researchers will not share information
about my child with anyone and that my child's name or
other identifying information will not be used.

Parent's or Guardian's Signature

Date

If you would like to receive a summary of the results
of this research, please write your address in the
space below.

I agree to participate in the creativity project. I understand that no one will know the answers I give and that I do not have to put my name on the questionnaire I complete. I understand that my parents have given permission for me to participate and for the researchers to see my standardized test scores at school. I understand that I may withdraw from participation at any time.

(Please sign your name above this line.)

(Date)

VITA


Laura Lewis Rolen was born in Abingdon, Virginia on September 14, 1963. She graduated from R. B. Worthy High School in Saltville, Virginia in 1981. She obtained a Bachelor of Arts degree from the University of Tennessee in 1983 with a double major in Psychology and Human Services. She received a Master of Science degree in Psychology from Radford University with a minor in Special Education in 1984.

From 1984 until 1985 Laura was employed as a therapist and psychological examiner with Holston Mental Health Center in Norton, Virginia. In the Fall of 1985 she returned to Radford University to pursue an Educational Specialist degree in School Psychology. In 1986 she entered the Child Development program in the Department of Family and Child Development at Virginia Tech. In 1985 and 1986 she was also employed part-time at the Southwest Virginia Child Development Clinic in Bristol, Virginia.

From the Fall of 1987 to the Spring of 1988 Laura completed a school psychology internship half-time with Smyth County Schools and half-time with the Southwest Virginia Child Development Clinic. She continued the two half-time positions until August of 1990 when she

accepted a full time position as school psychologist with Smyth County Schools. In June of 1991 she returned to the Southwest Virginia Child Development Clinic where she continues to be employed full-time. She plans to complete a Ph.D. in Family and Child Development from Virginia Tech. in the Spring of 1995.

Laura Lewis Rolen married Ray Rolen in 1990. They have a two-year-old son, Jordan Lewis Rolen.


Laura Lewis Rolen
Laura Lewis Rolen