THE RELATIONSHIP OF INSTRUCTIONAL APPROACH TO CREATIVITY IN HOME-SCHOOLED CHILDREN

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(ABSTRACT)

This study surveyed a nationwide sample of home-schooling parents and their children and investigated two questions: (1) What are the differences in instructional approaches used by home-schooling parents? (2) Is the creativity of home-schooled children related to differences in the instructional approach? Instructional approaches were assessed by the Home Schooling Instructional Survey (HSIS), a self-report questionnaire developed for this study and completed by the home-schooling parent. Creativity of home-schooled children was measured by the Torrance Tests of Creative Thinking - Figural Form A (TTCT). Significant differences in instructional approach were found in four primary areas: goal orientation, autonomy, motivational orientation, and instructional format. These instructional factors were significantly related ($p<.05$) to the number of children being home schooled, the prior schooling experiences of the children, the parents' motivation for home schooling, and relationship with a home study school. Creativity scores were found to be positively correlated ($p<.05$) with the number of years the child had spent in conventional schools, household income, and the home teacher's age and educational level, but negatively correlated ($p<.05$) with years of home schooling.

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By the Grace of God, the wheel turns
One cycle ends, another begins.
Ite, missa est. Deo gratias.

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Chapter 1 - Introduction

Background

Within the last twenty years, a grass-roots educational movement has been developing that has the potential to affect the lives of many children throughout the United States. This movement is composed of parents who are dissatisfied with various aspects of the conventional forms of education and have decided to teach their own children at home, an educational approach called *home schooling*.

Home schooling is not a new approach to education. For centuries, many outstanding individuals in a variety of fields have been educated primarily at home. According to Fox (1988), "Until far into the nineteenth century most elementary schools [in the United States] were private or home schools." But with the advent of public education, the number of home-schooled children declined rapidly, until by the 1950's home schooling was virtually nonexistent. However, during the social upheavals of the sixties, many parents and teachers became interested in alternative approaches to education, and during the next ten years began to experiment with a variety of new approaches. By the early seventies, some educational critics (Holt, 1972; Illich, 1970) had begun to envision a society without schools, and to propose that children learn outside of conventional school structures. Holt (1976) continued to advocate this view, and in 1977 founded a newsletter entitled *Growing Without Schooling*, which soon became the unofficial voice of home schoolers throughout the world,

helping to catalyze the disparate visions of thousands of parents into a cohesive movement.

Since its resurgence in the mid-seventies, the home schooling movement has grown considerably. Estimates of the number of children being taught at home range from 50,000 (McCurdy, 1985) to 1,000,000 (Hewitt Research Foundation, 1986). The most recent and extensive survey in this regard (Lines, 1987) set the figure at 250,000. If the exact numbers are in question, however, the *growth* of the movement certainly isn't. School officials, curriculum suppliers, and home-schooling parents all agree that the number of home schoolers is increasing dramatically every year. In Colorado, for example, the number of state-approved home schoolers increased from 54 in 1981 to 835 in 1988 - an average increase of 50% per year. According to the Hewitt Research Foundation, a major home schooling support organization, this growth rate "is not an improbable estimate of the growth of the home schooling movement in the nation" (Ray, 1988, P. 23). If the growth of home schoolers continues at this rate - and, at present, there is no indication of a decline - we could be faced with several million home schoolers by the end of this century, a situation that would have a significant impact upon the character of education in this country.

In spite of the dramatic growth of home schooling in this country, home-schooling research is in its infancy, with virtually all of the studies in the area having been completed in the past ten years, and most within the last five years. In general, the studies completed thus far have focused upon one of three primary domains: the characteristics of home-schooling

families, the academic achievements of home-schooled children, or the affective development of home-schooled children. Most of the early studies of home schooling focused upon the characteristics of home-schooling families (Greene, 1984; Gustavsen, 1981; Linden, 1983). Next, due to the concerns of many public school officials, the focus shifted to academic achievement (Alaska Department of Education, 1986; Wartes, 1988a; Washington State Superintendent of Public Instruction, 1985). In more recent years, studies exploring affective issues such as self-concept (Taylor, 1986) and peer interactions (Delahooke, 1986) have begun to appear.

One attribute that has frequently been associated with home-schooled children, but that has not been the focus of any study thus far, is *creativity*. Reports of creativity in home-schooled children can be found in the writings of both home-schooling parents and home-schooling researchers. Colfax and Colfax (1988), in describing the educational approach to home schooling that they believe enabled three of their sons to enter and succeed at Harvard University, note that "if only by virtue of the freedom it affords, home schooling promotes creativity. It is an almost inevitable consequence of a program in which self-directed boys and girls are encouraged - and even given space - to devise their own programs, to explore, and to experiment at their own pace" (p. 48). Home schooling researchers Moore and Moore (1984) contend that home schooling fosters creativity, and that "children in [conventional] schools generally have little opportunity to develop creative, independent thinking skills" (p. 89). In reports such as these, the term "creativity" is used loosely to describe an attribute that has a

variety of meanings. Thus, our first task was to clarify the use of this term and provide an operational definition that could be used in this study.

Creativity is complex and paradoxical, and can be viewed in many ways. Early discussions of creativity (e.g. Cox, 1926; Galton, 1870) frequently centered around the concept of "genius," with research focusing upon descriptions of the personality attributes of geniuses and the question of whether genius is an inherited trait. Galton (1870), in particular, amassed a large body of data that supported the basic concept that geniuses are born, rather than made. Although some researchers continue to advocate the view of creativity as genius and to assert that creativity occurs only in special individuals (the Edisons, Einsteins, Freuds, Mozarts, and Picassos of the world) at rare moments in time, in recent years many researchers have begun to move away from the concept of creative genius as a rare inherited trait, and instead to view creativity as a much more normative process, "available to every thinking instrument - adult, growing child, or programmed computer" (Sternberg, 1988, p. 432). Within this "available-to-everyone" view, however, there are differences in opinion as to whether creativity can be developed and improved through training. Some authors (Torrance, 1979) believe that it can, and suggest a variety of ways to enhance individual creativity. Others, however, (Csikszentmihalyi, 1988) propose a "systems" approach, in which creativity is not solely an individual matter, but arises when a unique combination of problems, social milieu, and individual skills is achieved.

There are a variety of definitions of creativity and none are universally

agreed upon (Taylor, 1975). In general, however, attempts to define creativity can be classified as either *process* definitions or *product* definitions (Amabile, 1983). Process definitions focus upon the nature of the creative process itself, and include a variety of conceptualizations. Watson (1928) proposed that creativity is a random process, in which words are manipulated until a new pattern occurs. Koestler (1964) argued that creativity was not a random process at all, but a "bisociative process" in which two previously unrelated "matrices of thought" are deliberately connected to produce a new insight. Jung, as cited by Lesner and Hillman (1983, p. 103) believed that creativity was "dependent upon the principle of synchronicity, the simultaneous occurence of two meaningful but not causally connected events." Ausubel, Novak and Hanesian (1978) defined creativity as the generation of new "superordinate and explanatory principles" (p. 556), while Newell, Shaw and Simon (1972) stated that "creative activity appears to be a special class of problem-solving activity characterized by novelty, unconventionality, persistence, and difficulty in problem formation" (p. 66).

Product definitions focus upon the creative product as the distinguishing sign of creativity. Since these definitions are more operational, they have guided most of the current research in creativity. Bruner (1962) defined the creative product as one that produces "effective surprise" in the observer coupled with a "shock of recognition" that the response is entirely appropriate. Mednick (1962) proposed an associative conception of creativity, in which he defined creative thinking as ". . . the

forming of associative elements into new combinations which either meet specified requirements or are in some way useful" (p.221). In this context, he introduced the concept of a response hierarchy, in which popular responses occur first in the sequence of responses, and original responses occur later. The perspective that has been most fruitful in creativity research is that of Guilford (1956). He focused upon the concept of "divergent thinking," as contrasted with more conventional (convergent) forms of intellectual activity. According to Guilford, in convergent thinking there is a single right answer or best answer, while in divergent thinking there is not. Guilford isolated four factors within the divergent thinking domain, which he labeled originality, fluency, flexibility and elaboration. Originality is defined as flexibility with verbal material; fluency is composed of three elements: ideational fluency (the rate of generation of a quantity of ideas), associational fluency (the ability to construct analogies and complete relationships), and expressional fluency (the ability to construct sentences); flexibility has two aspects: spontaneous flexibility (the ability to shift classes of responses) and adaptive flexibility (ability to create a variety of responses to the same input); elaboration is defined as the production of a variety of implications (Hudgins, 1977).

An important issue in the development of measures of creativity has concerned the methodological problems involved in distinguishing creativity as a domain separate from other domains, especially intelligence. In fact, many early measures of creativity were criticized as being simply measures of IQ (Wallach & Kogan, 1965). Basing their work on the models

of Guilford (1956), and Mednick (1962), Wallach & Kogan (1965) developed a set of tasks to measure creativity, and demonstrated that the intercorrelations among the task components of the creativity measure were high, while the intercorrelations between these components and a measure of IQ were low, thus providing strong support for the position that creativity and intelligence are distinct domains.

This conceptualization of creativity as a domain distinct from intelligence and defined as divergent thinking composed of originality, fluency, flexibility and elaboration constitutes the conceptual context for this study of creativity and home schooling.

Purpose of the Study

Although there have been many anecdotal reports and comments suggesting that home schooling and children's creativity may be related, there are no formal studies that have investigated creativity within the home-schooling context. Thus, the first purpose of this study was to measure the creativity of home-schooled children. Measuring the degree of creativity among home-schooled children, however, provided only broad descriptive data. To develop a deeper understanding of this variable within the home schooling context required an investigation of the relationship of creativity to variables in the home-schooling environment. The home-schooling context is complex, and there are a wide range of variables that could be legitimately investigated as being related to creativity. From

an educational perspective, however, one variable that is central to any investigation of an educational environment is the instructional approach used. There is no research on the relationship of creativity to instructional approaches in home-schooling environments, but research on creativity in conventional school environments has identified three factors that demonstrate a positive correlation with creativity: student autonomy (Rejskind, 1982), intrinsic motivation in students (Amabile, 1983), and "open" classroom environments (Horwitz, 1979).

An "open" classroom environment provides the broadest base for investigation among these three variables, for it includes among its attributes both autonomy and intrinsic motivation, as well as several other factors. According to Rejskind (1982), "one of the core concepts of open education is to give pupils greater control over their learning activities" (p. 61), while Hyman (1978) states that open education encourages "individuality, diversity and autonomy" (p. 8). Regarding the relationship of intrinsic motivation to open learning approaches, Amabile (1983) proposes that "clearly, one viable explanation [for the superiority of open classrooms on creativity measures] is that intrinsic task motivations are encouraged by the relative lack of extrinsic constraints in the open classrooms" (p.163) and that "children's intrinsic motivation (and hence, creativity) might be enhanced by teacher attitudes about autonomy and self-direction" (p.161). Amabile's findings of a positive correlation between intrinsic motivation and creativity conflict with the findings of Torrance (1965), which suggest that extrinsic rewards can increase creativity, but

both researchers agree upon the importance of increased autonomy and self-direction (Torrance, 1979). In a study investigating the relationship between classroom environment and intrinsic motivation, Harter (1981) found that open classroom environments were significantly related ($p<.001$) to an intrinsic motivational orientation in students. Reports such as these suggest that both autonomy and intrinsic motivation are both key components of an open educational approach, but there are other factors involved in open education as well, and these may also play a part in the relationship of open education to creativity. Silberman (1970) has characterized "openness" as "less an approach or method than a set of shared attitudes and convictions about the nature of childhood, learning and schooling" (p. 208). In a discussion of their classroom observation scale that has been used in many studies of open classrooms, Walberg & Thomas (1974) identified eight "themes" that can be used to distinguish between open and traditional classrooms: instruction (how the teacher directs and responds to students), provisioning (procedures and expectations for providing learning materials), diagnosis (the approach used to observe a child's work), humaneness (the teacher's use of students' work), evaluation (the teacher's criteria for judging student learning), seeking (the teacher's interest in self-development), self-perception (the teacher's view of self and role), and assumptions (the teacher's orientation toward children, knowledge and the process of learning). Using the Walberg-Thomas scale, Hyman (1978) found significant differences ($p<.01$) between an open and a traditional classroom on a measure of creativity.

Given the relationship between these factors and creativity, an examination of these factors within the context of the home-schooling environment becomes an important aspect of any investigation of creativity among home-schooled children. But aren't all home-schooling instructional approaches open, rather than traditional? Since home schooling, by definition, tends to take place primarily in the home and out of a structured classroom environment, one could reasonably assume that home-schooling instructional approaches are more open. However, this assumption may not be valid. Home-schooling researcher Van Galen (1987) notes that "the home schooling movement is diverse; the pedagogy created for Emile by Rousseau and that created by the writers of some home school correspondence programs that require children to do little more than fill in workbook pages for several hours each day are worlds apart, yet current research . . . has not taken such pedagogical differences into account." (p.3).

The few home-schooling studies (Reynolds, 1985; Reynolds & Williams, 1985; Schemmer, 1985) that provide information on variations in the instructional approaches used by home-schooling parents are case studies that provide rich descriptive data, but focus upon limited numbers of families. In general, the only studies that provide information about the instructional approaches used by large numbers of home-schooling families are surveys that investigated family characteristics, and included in the survey a few questions relating to the instructional approach used by the parents. Although the parental responses to these questions do not

provide specific information about the attributes mentioned previously, they do provide enough of a glimpse to suggest that some variations exist.

At first glance, it would appear that home-schooled children are given greater autonomy in the learning process than their peers in conventional school environments. John Holt was a strong advocate of giving children greater autonomy in the learning process. In *Instead of Education* (1976), he proposed that children should be allowed to "explore the world in their own way, and in as many areas as possible direct and control their own lives" (p. 7). In a review of the home-schooling movement, Divoky (1983) stated that "the goal, many veteran home schoolers suggest, is to be able to get out of the way of children's learning, to simply provide an environment that allows youngsters to be self-directed" (p. 397). Comments such as these suggest that home-schooling parents give a considerable amount of autonomy to their children. However, other reports suggest that this is not always the case. In a review of home-schooling curricula suppliers, Lines (1987) reported that curricula materials from Accelerated Christian Education, used by 3,600 home schoolers, are "politically conservative [and] authoritarian" (p.515). In a national survey of 244 home-schooling parents, Gladin (1987) found that 77% of the parents indicated that the desire "to have more control over what my children learn" was a "very important" reason for deciding to home school (p. 128). In addition, 43% listed "too little discipline" as being a "very important" or "somewhat important" concern they had with the school their children previously attended (p. 129). Reports such as these indicate a parental desire for greater control over the content

of the learning process, and suggest that there are variations in the amount of autonomy that some home-schooling parents give to their children.

Are home-schooling environments more open and flexible? There is some support for this. Gustavsen (1981) characterized the typical home school as being informal, child-centered and relatively flexible. However, a sample of 470 home schoolers from Washington state rated their home-schooling approach as slightly toward the structured side on a "very unstructured" to "very structured" continuum (Wartes, 1988b). The parents in a study by Gladin (1987) also appeared to have a more formal concept of instruction, for they indicated that they spent an average of one hour per day in "preparation" and three hours in "instruction." In a study of Utah home schoolers, Knowles (1987) found that "Christian home schools tend to display greater rigidity" in their instructional approach than other home schools (p. 9).

Do home-schooling parents encourage their children to be intrinsically motivated? Initially, this would appear to be a reasonable assumption. Intrinsic motivation is a recurrent theme in the writings of many home-schooling advocates. Holt (1976) proposes that children "will live better, learn more, and grow more able to cope with the world if they are not constantly bribed, wheedled, bullied [and] threatened, . . . [but] . . . allowed, encouraged and (if they wish) helped to . . . think, talk, write and read about the things that most excite and interest them" (p.7). This philosophy is echoed by home-schooling parents (Colfax & Colfax,1988) and home-schooled children (McAlpine 1989), suggesting that intrinsic

motivation is a strong component of home schools. Once again, however, this assumption may not be valid. In view of the previous comments about "authoritarian" curricula and greater tendency toward structure among some home-schooling parents, some parents appear to use an instructional approach that tends to discourage intrinsic motivation in their children.

Overall, it appears that there is some variation in home-schooling instructional approaches in several dimensions that have been shown to be correlated with creativity. This variance points to a need for more specific information about the extent of these differences in the home-schooling environment. This constituted the second purpose of this study: to gather data about variations in the instructional approaches used within the home-schooling environment.

The third purpose of this study arises out of the information gained from the first two purposes. After measuring both the creativity of home-schooled children and the orientation of home-schooling instructional approaches, the next step is to investigate the nature of the relationship, if any, that exists between them.

In summary, the present study has three primary purposes:

1. To measure the creativity of home-schooled children.

2. To assess variations in the instructional approaches used by home-schooling parents.

3. To determine if there is a relationship between the creativity of home-schooled children and the parents' instructional approach.

Chapter 2 - Literature Review

Characteristics of Home Schooling Families

Although most home schooling studies devote some attention to family characteristics, there are several studies that are exclusively concerned with exploring this aspect. Some of these studies are local in nature, and only explore the characteristics of home schooling families in specific states, for example, Texas (Linden, 1983), Alaska (Greene, 1984), Washington (Washington State Superintendent of Public Instruction, 1985), North Carolina (Van Galen, 1986), California (Northern California Homeschool Association, 1987), Kentucky (Kutter, 1987), Virginia (Jones-White, 1987), Alabama (Rakestraw, 1988) and Oregon (Mayberry, 1988). Although these studies provide valuable information on various aspects of home schools, they quite likely reflect the unique attributes of the geographical areas that they represent. Thus, to derive a synthesis of the characteristics of home schoolers, the more relevant source may be those studies that have drawn their samples from a national population.

To date there are four studies - Gustavsen (1981), Taylor (1986), Gladin (1987) and Gustafson (1987) - that have sampled a nationwide population and that serve as a reasonably broad base upon which to build an understanding of the characteristics of home schooling families.

In all of the studies, the parents appeared to be functioning in somewhat traditional roles, with the father as the primary wage earner and the mother as the housewife/homemaker. The fathers tended to be

professionals or skilled workers (Gustavsen, 1981). Although both parents were involved in the home schooling endeavor, the mother was usually the parent responsible for most of the actual teaching (Gladin, 1987). In general, parents were well educated, with the majority having attended or graduated from college. In the study by Gustafson (1987), 59% of the mothers and 72% of the fathers had received undergraduate or graduate degrees.

The average household income tended to be in the middle income bracket, with the largest number of families reporting an annual household income of $20,000 to $30,000, but Gladin (1987) reported 21% of the families having incomes below $20,000, and Gustafson (1987) reported 22% of the families having incomes above $45,000. The majority of the families lived in suburban or rural environments, with Gustavsen's (1987) study indicating 53% living in either of those areas, and Gladin(1987) reporting 51% living in suburban areas and 36% in rural areas.

In regard to the characteristics of the children involved, the studies indicated a higher than average number of children in the family, with the majority of the children in the family being home schooled. Taylor (1986) found an average of 3.7 children per home schooled family, with an average of 2.5 children involved in the home school. There was no indication of a strong gender preference in any of the studies, although boys appeared to be attending home school slightly more frequently than girls (50.4% to 49.6% in Taylor's study).

According to Divoky (1983), home schooling is primarily a movement of

religious fundamentalists. Results from most of the studies reviewed tend to support that position, although the actual percentages involved are still not clear, due to the biases inherent in various home school mailing lists, which are the primary source for selecting samples of home schoolers. For example, Gladin (1987) reported that 92% of the home schooling families considered themselves to be either evangelical, fundamental, or charismatic Christians, with 93% of the families indicating that they attended church at least once each week. However, in Gustafson's (1987) study, 34% of the families indicated they had no religious affiliation at all, and of the 66% who indicated an affiliation, only 13% considered themselves to be fundamentalist Christians. This wide variance in results was most likely due to the difference in the mailing lists of home schoolers used in the two studies. The Gustafson (1987) sample was drawn from the directory of *Growing Without Schooling*, the home-schooling newsletter started by John Holt and his associates. Although they do support a particular educational philosophy, Holt's associates do not appear to adhere to any specific religious affiliation. On the other hand, the Gladin (1987) sample was drawn from a list of home schoolers who had purchased Christian-oriented curriculum materials from Bob Jones University Press.

Although one would tend to suspect that a variation in responses relating to religious preference would arise from such differences in samples, a study by Mayberry (1988) suggests that the philosophical or religious biases inherent in different home-schooling mailing lists may relate to significant differences in other aspects of home schools as well.

Her study presents an interesting categorization of home-schooling families, and provides additional insight into their characteristics.

Briefly, Mayberry conducted a sociological study of Oregon home schoolers, in which she proposed, based upon an analysis of their stated motivations for home schooling, four distinct types of home schoolers:

Religious - those primarily motivated to home school as a result of religious beliefs (65% of the respondents)

Academic - those concerned primarily with the academic achievement of their children (22%)

Socio-relational - those parents who are primarily concerned with the socio-relational development of their children and the environment in which their education is conducted (11%)

New Age - those parents primarily motivated by a desire for a "New Age" educational orientation consisting of humanistic values, global ecological concerns, and an eclectic spiritual perspective (2%)

Mayberry (1988) compared these groups in terms of such factors as social characteristics, economic characteristics, political characteristics and educational attitudes, and found significant differences in several areas. Thus, although the population of home schoolers in general may be dominated by fundamentalist Christians, the other sub-groups involved may have quite different characteristics and values.

In general, parents have a variety of reasons, both cognitive and affective, for deciding to home school. Gustavsen (1981) identified the

following reasons why parents started teaching their children at home:

1. Concern about the moral health and character development of their children
2. Concern about the detrimental effects of rivalry and ridicule in conventional schools
3. The perception by the parents that the quality of education in public schools was poor
4. The desire to extend the parent-child contact

The respondents in Gladin's (1987) study echoed these reasons, but also listed several religious reasons, such as "To fulfill my God-given responsibility" and "To provide more religious instruction for my children," responses that were a reflection of the strong fundamentalist Christian orientation of the respondents in the Gladin study, as mentioned previously.

Gustafson's (1987) study did not identify "reasons" specifically, but instead asked parents to list "advantages" and "disadvantages" of home schooling. She then tabulated these responses according to frequency, and identified the following advantages (respondents were allowed to list more than one advantage):

1. Permits less negative influences than conventional schools (listed by 47% of respondents)
2. Permits greater flexibility than conventional schools (46%)
3. Allows the parent to pace learning according to the child's

readiness (43%)

4. Improves moral development (31%)

5. Gives more individual attention (27%)

6. Provides more opportunities to develop independence and self-esteem (27%)

7. Strengthens the family (23%)

Under disadvantages, the respondents in Gustafson's (1987) study listed the following:

1. Time commitment (36%)

2. No disadvantages (27%)

3. Social isolation (20%)

4. Other - This included such disadvantages as financial expense (11%), lack of certain features of conventional schools (8%), disapproval of others(6%) and legal problems (3%)

In summary, it appears that home schoolers are a diverse group, displaying a variety of religious and philosophical perspectives, income levels and educational backgrounds. However, there are several characteristics that seem to stand out from a review of the research in this field:

1. Both parents are well-educated, and tend to live in either suburban or rural areas (Gladin, 1987; Gustafson, 1987)

2. The household income is in the middle income range (Gladin, 1987;

Gustafson, 1987)

3. The mother is the primary teacher in the home school (Gladin, 1987).
4. The learning program is flexible and individualized (Gustavsen, 1981).
5. Parents choose home schooling for a variety of reasons, including both cognitive and affective (Gustavsen, 1981).

Cognitive Attributes of Home Schooled Children

In the early 1980's, when home schooling began to become more prevalent, the first concern of many educators was the effect that such an educational approach was having upon the cognitive development of the children involved. Specifically, many public school officials wanted to know if home-schooled children were keeping up with their peers academically. At that time, home-schooling advocates had virtually no empirical evidence to support their contention that such children were having no problem keeping up with their peers, and in many cases were even surpassing them. Raymond Moore, an early advocate of home schooling and founder of the Hewitt Research Foundation, had synthesized a sizable base of interdisciplinary research in support of home schooling (see Moore, 1982 for a summary), but very little research existed that focused specifically upon home schoolers. One of the first studies to provide quantitative data on the academic achievement of home-schooled children was conducted by Linden (1983), who surveyed 16 home schooling

families and reported test scores on the California Achievement Test (CAT). The children ranged from grade 1.9 to 11.6, and the averages of their three scores on the CAT averaged 1.04 points above their actual grade level. However, due to the small sample size, the results of this study, although promising, did not provide the kind of support that educators were seeking.

More substantial support soon came from public education itself, in the form of a series of studies conducted by the Alaska Department of Education (ADE) to assess the academic achievement of students in Alaska's Centralized Correspondence Study Program (CCS). The CCS is a home-study program operated by the ADE and financed out of public funds. A home teacher, usually a parent, teaches the student (Madden, 1986).

The results of each of the studies conducted by the ADE were consistent in indicating that home-schooled students were scoring higher on standardized tests than their conventionally-schooled peers. The ADE conducted studies in 1984, 1985 and 1986, but to summarize these studies I will examine the results of ADE (1986), in which the ADE reviewed data back to 1981 in order to (a) assess the achievement of CCS students compared to both Alaska and national norms, (b) assess the long-term effects of CCS enrollment on achievement, and (c) compare pre- and post-CCS achievement. The dependent variables in this study were the students' scores on the CAT (form C, levels 11-19) and on the Alaska Statewide Assessment Tests (ASA) in reading and math (grades 4 and 8).

The findings were as follows:

1. CAT reading scores for CCS grades 1-8 were .58 to 1.31 standard deviations (SD) higher than the norm.
2. CAT math scores for CCS grades 1-8 were .21 to 1.13 SD higher than the norm.
3. Overall, the CCS student scores were significantly ($p<.01$) higher than the CAT norms.
4. Those 4-8 grade students in CCS two years or more scored significantly higher ($p<.05$) on the CAT than those in it less than two years (.61 SD higher in math and .83 SD higher in reading).
5. The scores of 4-8 grade students after CCS involvement were significantly higher ($p<.05$) than before CCS study (.29 SD higher in math and .43 SD higher in reading).
6. On the ASA, CCS students in grade four scored higher than the Alaska averages in reading (by 14.27%) and math (by 7.7%).
7. On the ASA, CCS students in grade eight scored higher than the Alaska averages in reading (by 8%) and math (by 6%).

While these studies were in progress, the Washington State Superintendent of Public Instruction (WSSPI) (1985) was also conducting a study of home schoolers in Washington state. With home schooling growing quickly in that state, and legal concerns mounting, the WSSPI declared a moratorium on decisions about home schooling until a study could be conducted to determine the performance of home-schooled

children on standardized tests. Accordingly, the Washington State Board of Education approved two "...private experimental programs using the parent as tutor under the supervision of a certified teacher" (p. 1). Scores on the Stanford Achievement Tests (SAT) were used as the dependent variable, and the scores of the home-schooled students in the two approved "parent as tutor" programs were compared with the scores of the 275,000 pupil norm group, composed of conventionally-schooled children "...in a large number of cities and communities across the state" (p. 1). The scores of 100 randomly-selected students in grades K-8 were analyzed and presented as percentiles. The K-8 children in the "parent as tutor" program averaged 62 percentile in reading, 56.5 percentile in language and 53 percentile in math.

Although the results of these studies provided additional support for home schooling advocates, many home-schooling parents felt that the WSSPI requirement that they be supervised by a certified teacher was unnecessary. Wartes (1988a, 1988b) explored this and other questions in two studies of home schoolers in Washington state. In his first study, Wartes (1988a) sampled 873 students and tabulated their scores on the SAT. The median scores for all of the students were in the 65 to 66 percentile range. The highest percentile scores were in the area of science (70) and in the verbal areas of listening (71), vocabulary (79) and word reading (76). The lowest scores were in math computation (42), but math application scores (65) were much stronger.

In his second study, Wartes (1988b) sampled 470 home school students

and analyzed their SAT scores as a function of parent education level, number of years home schooled, and other variables. In this analysis, Wartes found a statistically significant ($p<.05$) positive relationship between parent education level and test scores. Seventeen percent of the parents in the sample were teachers and, in general, children of teachers outscored children of non-teachers. However, this relationship did not hold for children who had been home schooled two years or more. It also did not hold when compared to non-teacher parents having a roughly equivalent level of education to a teacher. Children who had no teacher contact at all scored, as a group, at the 70th percentile on national norms. This finding suggests that contact with a certified teacher is not a necessary component of academic success, and appears to cast some doubt upon the WSSPI policy of having a certified teacher supervise the home-schooling parent.

The consistency of the results of these studies lends considerable support to home-schooling advocates, and suggests that home-schooled children are progressing quite well cognitively, and are performing above their conventionally-schooled peers on recognized standardized tests. This brings us to a consideration of the second aspect of child development that was of concern for educators: the affective domain, involving such considerations as the need for socialization and the developing child's self-concept.

Affective Attributes of Home-Schooled Children

A second major area of concern among home-school critics has been the affective domain, especially the areas of socialization and the development of the child's self-concept. However, research in this area has been slow in developing, and there is still very little data on this aspect of the field. Many of the studies that surveyed the characteristics of home schooling families (discussed previously) touched on the affective component of home schooling as isolated items on a survey instrument, but the first true research study of home schooling and the affective domain was completed by Taylor (1986). In this study, Taylor focused upon socialization and the self-concept of home-schooled children in grades four through twelve, using the *Piers-Harris Children's Self-Concept Scale* (PHCSCS). Taylor drew a random sample from the combined lists of both Holt Associates and Hewitt Research Associates, and eventually analyzed data from 224 participants in every geographical area of the U.S. His analysis resulted in the following findings:

1. The self-concept of the home schooled children was significantly higher ($p<.001$) than that of the conventionally schooled population on the global scale and all six subscales of the PHCSCS.

2. The self-concept of the home schooled children decreased significantly ($p<.01$) as age and grade level rose. Taylor cautions that this is not likely due to increased number of years of home schooling, since the factor of increased years had a positive effect as part of his best predictive model for self-concept (see number 5, below). He proposes that it could be

due to a higher age and grade level when the child entered the home school from a conventional school.

3. The factors of gender, number of siblings, locale of residence, prior conventional schooling, educational level of the parents and geographical region were not significantly related to the self-concept of home-schooled children.

4. Higher socioeconomic status and an increase in the total number of home-schooling children in the family is significantly related ($p<.05$) to a more positive level of self-concept in home schoolers.

5. The best predictive model of self-concept in home-schooled children ($p<.001$) is related to lower grade-equivalence, higher years of home schooling, higher socioeconomic status, higher number of home schooling children in the family, and higher beginning school age.

This study provides support for the position that home schooling improves a child's self-concept, a contention of many home schoolers. It also seems to suggest that, insofar as self-concept is a reflector of socialization (Rosenberg, 1965), not many home schooling children are socially deprived.

Another study of the affective domain and home schooling was conducted by Delahooke (1986). Delahooke compared two groups of children: a home-school group (N = 28) and a private-school group (N = 32). The two groups were matched in terms of age (9.1 years), gender ratios, intelligence and socioeconomic status, and were evaluated using the

Roberts Apperception Test for Children (RATC), a sociometric instrument used to measure "dimensions of personality, as well as providing indications of adaptive and maladaptive functioning" (p. 52).

The statistical analyses revealed significant differences ($p<.05$) in the "Non-Family" categories of the Interpersonal Matrix. Delahooke states that "this finding suggests that children in the private school exhibited a greater focus upon peer interaction, while the home educated group children's primary focus was in the family arena" (p. 83). "...Private school subjects appeared to be more influenced by or concerned with peers than the home educated group" (p. 85).

These two studies represent the beginnings of research on home schooling and the affective domain. Although it is premature to form any conclusions based upon just these two studies, the data they provide does lend some support to those who contend that home schoolers are not being deprived socially and emotionally, and that they are less dependent upon peers than those in conventional schools.

Summary

The findings of the studies conducted thus far are generally supportive of the home schooling approach to education, and suggest that public school officials, in particular, do not need to be as concerned about the cognitive and affective attributes of home schooling as they originally were. In fact, the research suggests that home-schooled students have some advantages that their conventionally-schooled peers do not have. Ray

(1986) notes that some of the following advantages offer possible explanations for the superior scores of home schooled students on both cognitive and affective measures:

1. The home school environment provides an extremely low student-teacher ratio, usually in the range of 1:1 to 3:1.

2. Parents are highly involved in their children's learning, which research (e.g. U.S. Department of Education, 1986) indicates is related to learning success.

3. Parents are "significant others" to their children, and the extra attention received from them may result in improved self-concept.

4. Home schooling lends itself to a high degree of individualization and flexibility in terms of each student's curriculum.

Considering these possible advantages, it is understandable why the home schooling movement is growing as rapidly as it is, and why it is quite likely to continue to grow in the future.

As is evident from this review, research on home schooling is limited. However, it is growing rapidly, with the focus of research beginning to shift from explorations of the characteristics of home-schooling families to investigations of the many variables and relationships involved in the home-schooling domain.

Chapter 3 - Methodology

Overview

This study surveyed a nationwide sample of home-schooling families and gathered information from two sources: home-schooled children and home-schooling parents. The home-schooled children provided information on creativity, by completing the Torrance Tests of Creative Thinking- Figural Form A (TTCT). The home-schooling parents provided information on their instructional approaches, by completing a survey questionnaire on the home-schooling instructional approach that they use. Data from these two sources were correlated to investigate the relationships between creativity of home-schooled children and the instructional approaches used.

Sample

Participants for the study were self-selected from a random sample of 360 families on the mailing list of Oak Meadow Educational Services, a nationwide home study school and supplier of home-schooling materials. The Oak Meadow mailing list is composed of approximately 7,000 names of home-schooling families who have responded to advertisements placed in national home-schooling magazines representing all sectors of the home-schooling population. Using a sample of names drawn from one mailing list is a common practice among home-schooling researchers who sample a national population (Gladin, 1987; Gustafson, 1987; Gustavsen,

1981). The only nationwide study conducted thus far that has used more than one list (Taylor, 1986) found no significant differences in results obtained from each list. Therefore, it was assumed that the Oak Meadow list constituted a representative sample of the home-schooling population.

The Oak Meadow mailing list contains the names of three subsets of individuals: those who have requested information about home-schooling curricula, those who have purchased home-schooling curricula, and those who have enrolled in Oak Meadow School as home-schooling students. Parents who purchase curricula materials from Oak Meadow without enrolling in the school are free to use the materials as they choose, and presumably follow a variety of home-schooling approaches. Parents who enroll their children in Oak Meadow follow the school's curricula and are assigned to a supervising teacher who evaluates the children's work either in person or by correspondence (depending upon geographical location) and provides educational guidance and support for the parent. According to Taylor (1986), lists of home-schooling inquirers contain as many as 50% non-home schoolers, and using such lists exclusively can contaminate the sample and result in very low response rates. Therefore, for this present study, those who had only inquired about home-schooling materials were excluded from the selection process, and the sample was drawn only from the remaining two subsets of the list: those individuals who had either purchased a K-8 home-schooling curriculum from Oak Meadow within the past six months, or who were currently enrolled in Oak Meadow School in grades K-8 under the guidance of a supervising teacher. This eliminated

from the sample those who were not actively home-schooling, and enabled the researcher to more accurately determine the response rate. These two subsets of the Oak Meadow list totaled approximately 1,000 names of current home-schoolers, so that a sample of 360 names constituted a 36% sample of the Oak Meadow list.

Instruments

Home Schooling Instructional Survey

The Home Schooling Instructional Survey (HSIS) is a survey questionnaire developed specifically for this study, to provide information about demographics of the family and the instructional approach used by the home-schooling parent. The questionnaire is included in Appendix C.

In the construction of the questionnaire, surveys used in other home-schooling studies (Gladin, 1986; Taylor, 1986) were reviewed, and questions considered appropriate for this survey were included. Several questions were original to this survey, and were included to provide information about those aspects of the instructional approach that research indicates tend to be related to creativity.

The survey is divided into two sections: *Family Attributes* and *Instructional Attributes.* The first section of the questionnaire, *Family Attributes*, is designed to provide information about the demographics of the family. The information obtained in this section was used to compare the general demographics of this sample with other samples of home schoolers that have been studied, and to investigate relationships with

creativity scores. One question on religion was included due to the relationship that this factor has been shown to have with the instructional approach used (Knowles, 1987; Mayberry, 1988).

The second section of the survey, *Instructional Attributes*, contains questions that assess the orientation of the instructional approach used by the home-schooling parent. This section contains three subsections: *The Parent, The Child,* and *The Learning Process.* The subsection entitled *The Parent* is provided information about the parent who is the primary home-schooling teacher.

The next subsection, *The Child,* provided information about the child who completed the Torrance Tests of Creative Thinking (Figural Form A).

The last subsection, *The Learning Process,* provided information about the instructional approach used by the home-schooling parent. The questions in this section were adapted from several sources: the Classroom Observation Rating Scale (developed by Walberg & Thomas, 1974), research on the effects of various instructional approaches on the intrinsic motivation of children (Hennessey & Amabile, 1987), research on the effects of time-related factors on the instructional approach (Denham & Lieberman, 1980; Fisher & Berliner, 1985), and research relating to analysis of the teacher-student interaction and its effect upon the instructional process (Amidon & Hough, 1967).

The Walberg-Thomas scale has been validated in a variety of educational settings and has an internal consistency of .95. According to Walberg & Thomas (1974), the scale has demonstrated its ability to

"discriminate between open and traditional classes in American and British schools in advantaged and disadvantaged areas at high levels of statistical significance" (p. 12). In the original scale, there are eight dimensions: instruction, provisioning, diagnosis, humaneness, evaluation, seeking, self-perception, and assumptions. Since this scale was intended to be used in a classroom environment, some of the questions concerned group relationships and classroom arrangement, and thus were not relevant to a home-schooling environment. When these questions were deleted, the remaining questions were grouped into five categories: instructional format, autonomy, resources, evaluations, and teacher beliefs. In addition to these four categories, three additional categories were added to include other aspects of the instructional environment. The first of these additions, the sixth category, was composed of four items that creativity research has indicated tend to limit intrinsic motivation in children: competition, focus on rewards, focus on evaluations, and close observation. Since these items primarily focused upon an intrinsic/extrinsic motivational orientation, this category was called motivation. The seventh category arose from research in the field of interaction analysis (Amidon-Hough, 1967) and considered variations in the quality of interaction between the teacher and the student. This category was labeled teacher/student interaction. The final category involved variations in approaches in the use of instructional time (Denham & Lieberman, 1980; Fisher & Berliner, 1985) and was labeled time usage. This brought the number of categories to eight: autonomy, motivation,

home teacher beliefs, instructional format, resources, evaluations, time usage, and teacher/student interaction.

With the exception of some of the questions on time usage and resources, each attribute was assessed on a Likert-type scale of 1 to 4, representing the home-schooling parent's perception of the instructional approach used within each of the eight categories mentioned previously. An alpha coefficient (KR-20) was calculated for the HSIS, and a result of .64 was obtained, indicating a moderately reliable instrument.

Torrance Tests of Creative Thinking - Figural Form A (TTCT)

The TTCT is a pencil-and-paper measure of creativity consisting of three subtests: picture construction, picture completion, and parallel lines. In the original version of the TTCT, Torrance utilized the four factors identified by Guilford and mentioned previously (fluency, originality, flexibility and elaboration) as subscores of the TTCT. However, as a result of extensive re-analysis of previously completed TTCT's, Torrance & Ball (1984) developed a streamlined scoring system for the TTCT, using five factors: fluency, originality, abstractness of titles, elaboration, and resistance to premature closure. The streamlined scoring system, with these five subscores, was used in this study. The picture construction subtest was scored on originality, abstractness of titles, and elaboration. The picture completion subtest was scored on all five factors: fluency, originality, abstractness of titles, and resistance to premature closure. The parallel lines subtest was scored on fluency,

originality and elaboration. Scoring of the tests was completed by the researcher, following the guidelines in the administration manual, and required no special training. Classroom teachers who used the guidelines in the manual showed mean interrater reliabilities of .88 to .96 on subtest scores.

An important factor to consider in assessing the validity of any measure of creativity is its correlations with a measure of intelligence, since creativity measures have been criticized for being simply another measure of IQ. Wallach & Kogan (1965) proposed that the most effective way to insure the construct validity of a measure of creativity is to assess the intercorrelations among the task components of the creativity measure, and the intercorrelations between these components and a measure of IQ. If the creativity measure being assessed is distinct from IQ, then there should be a high intercorrelation between the components of the measure, but a low corelation between those components and IQ. Using this approach to assess the independence of the TTCT and a measure of IQ, Torrance (1974) found correlations of .74 to .86 among the component measures (fluency, flexibility, originality and elaboration) of the TTCT and correlations of -.02 to .04 between these measures and IQ. This provides stong support for the position that the TTCT measures a domain distinct from IQ.

According to Hudgins (1977), the TTCT represents "probably the best known effort to measure creativity" (p. 262). The TTCT has been subjected to a wide variety of validity and reliability studies. Studies of the test-retest

and alternate forms reliabilities of the TTCT-Figural have ranged between .50 and .85. In a review of the TTCT, Treffinger (1985) stated that "the TTCT can be recommended as a sound example of an instrument useful for research, evaluation and general instructional planning decisions. The TTCT appears to be adequate in reliability and validity for these purposes" (p. 1634). A copy of the TTCT is included in Appendix D.

Procedure

The 360 families randomly drawn from the Oak Meadow list were mailed a survey packet containing four items: (1) a cover letter containing an explanation of the purpose of the survey (2) instructions for administering the TTCT, completing the HSIS and returning the instruments, (2) the Home Schooling Instructional Survey, (3) the Torrance Test of Creative Thinking - Figural Form A, and (4) a self-addressed stamped return envelope. These items are included in Appendices A-D.

Those home-schooling parents who chose to participate in the study completed the HSIS and administered the TTCT to the home-schooled child, following the instructions provided. After completing the HSIS and administering the TTCT, the parent mailed the completed materials back to the researcher for scoring. TTCT scores and responses to the HSIS were entered into a Macintosh computer and analyzed using StatView statistical software.

Chapter 4 - Results and Discussion

Overview

The purpose of this study was to investigate the instructional approaches used by home-schooled parents and determine if variations in these approaches were related to the creativity of home-schooled children. Data were gathered from a nationwide random sample of home schooling families utilizing two primary sources: the Home Schooling Instructional Survey and the Torrance Tests of Creative Thinking (Figural Form A). Analysis included descriptive statistics and regression analysis.

Pilot Study

Three weeks prior to the actual mailout of the survey materials, a pilot study was conducted with 25 home-schooling parents. The results of this study resulted in a refinement of the instructions and the Home Schooling Instructional Survey. The format and content of the instructions were changed to eliminate areas of confusion. In the Home Schooling Instructional Survey , the wording of several questions was changed to improve their clarity, and the wording of the response choices in the four-item, Likert-type scale was changed to eliminate what several respondents in the pilot study indicated encouraged a bias toward the upper end of the scale. The data from the pilot study were not included in the final study.

Response Rate

The responses received from the mailing were divided into four categories: (1) those that were marked by the post office as "undeliverable," (2) those that were returned but declined to participate, (3) those that were returned but were rejected because the children were out of the age range or the questionnaires or creativity exercises were not completed, and (4) those that were accepted as participants in the study. Out of the original 360 packets of survey materials that were mailed, a total of 207 were returned in one of the above categories. Seven packets were returned by the post office as "undeliverable" and 10 were returned with a note from the addressee explaining why he or she could not participate in the study. Of these, 6 replied that they were not currently home schooling. Fourteen responses were received that were rejected because they consisted of incomplete materials or else the child was out of the age range (K-8) of the study. Of these 14 responses, 4 were out of the age range. The remaining 176 responses were accepted as valid participants in the study. Taking into consideration the 7 packets returned by the post office, the 6 respondents who stated they were not currently home schooling, and the 4 respondents whose children were out of the age range of the study, the number in the original sample population was recalculated, resulting in an adjusted sample population of 343 home schooling families. Using this adjusted figure, the 176 valid responses represent a response rate of 51.3%. It should be noted, however, that this figure may actually be a conservative calculation, since the adjusted sample population figure of 343 was derived

by deleting (in addition to responses returned by the post office) only those individuals out of the sample population who responded and indicated they were either not home schooling or were out of the age range. It is quite likely that there were others who belonged in these two categories but did not respond, which would have resulted in an increase of several percentage points in the response rate. Nevertheless, according to Dillman (1978), a 50% response rate "is considered quite acceptable for mail surveys" (p. 21). Thus, it is assumed that the respondents in this study constituted a representative sample of the population of home schooling families.

Characteristics of the Sample

The first three sections of the Home Schooling Instructional Survey were concerned with characteristics of the family. Data from these three sections were analyzed using descriptive statistics and are summarized in the following sections labeled "Family Attributes," "The Home Teacher," and "The Child."

Family Attributes

Geographical Location

The sample population was limited to home schooling families within the United States, and participants in the study were distributed throughout all geographical regions (see Table 1).

Table 1

Distribution of Sample by Geographical Region

Region	n	% of Sample
Northeast	42	24.0
Southeast	29	16.6
Midwest	32	18.3
Northwest	20	11.4
Southwest	52	29.7

Family Size

The families in the sample were composed of a mean of 4.64 individuals, with a standard deviation of 1.30 and a range of two to ten. Of this number, the mean number of adults was 2.01, with a standard deviation of .43. Although the number of adults in the family spanned a range of one to six, 90.3% of the respondents indicated there were two adults in the family. The mean number of children in each family was 2.63, with a standard deviation of 1.19. The number of children ranged from one to eight, with the majority of families consisting of either two (36.6%) or three (28.6%) children. Overall, 80.0% of the families consisted of three or fewer children. This is consistent with the findings of Ray (1985) that 89% of the families had three or fewer children, and Gladin (1987) who found a mean of 2.78 children per family, but conflicts with the findings of Taylor (1986), who found a larger family size, with an average of 3.69 children per family and five or fewer children found in 88.0% of the

families surveyed.

Religious Affiliation

Participants in the study reflected a diversity of religious affilations, but tended to group around two major affiliations: "Other Christian" and "New Age" (see Table 2).

Table 2

Religious Affiliation

Affiliation	n	% of Sample
Fundamental Christian	10	5.9
Other Christian	55	32.4
Non-Christian Religion	14	8.2
"New Age"	58	34.1
No Religious Affiliation	33	19.4

This distribution of religious affiliations reflects a much larger percentage of "new age" families than was found in previous studies (cf. Mayberry, 1988) and a substantially smaller percentage of fundamental Christians (cf. Gladin, 1987).

Family Income

The participants in the sample tended to have household incomes in the middle income bracket, with 60.2% reporting total family earnings of at least $30,000 (see Table 3). The most recent available statistics on

household income for the United States general population (U.S. Bureau of the Census, 1989) indicate that the 1987 median income for the general population in the 25 - 44 age range (the approximate range of the adults in this sample) varied from $26,923 to 34,929, with 54.6 - 67.4% reporting incomes of $25,000 or more. Assuming a moderate adjustment for cost-of-living increases in the three years since those figures were reported, current general population figures would reflect those reported in this sample. The relative income figures reported in this study agree with the findings of Gustavsen (1981), Linden (1983), and Taylor (1986), that the average household income of home schooling families is in the middle income bracket.

Table 3

Annual Family Income

Income	n	% of Sample
Less than $10,000	11	6.4
$10,000 - 19,999	22	12.7
$20,000 - 29,999	36	20.8
$30,000 - 39,999	34	19.7
$40,000 - 49,999	37	21.4
$50,000 or more	33	19.1

The Home Teacher

According to the instructions included with the survey, the "home teacher" is the individual who is the primary teacher of the child who

completed the Torrance Test of Creative Thinking (Figural Form A). The home teacher is the adult who is physically present in the home environment and who is involved daily, to a greater or lesser extent, in the child's learning process.

Relationship to the Child

In 95.8% of the families responding, the mother was reported as being the primary home teacher. The father was listed as the primary teacher for 3.6% of the families, and one family (.6%) indicated that the primary home teacher was someone other than the mother or father.

Age

The mean age of the home teacher was 36.99 years, with a standard deviation of 4.86 and a range of 25 to 50 years. This age is somewhat higher than that found by Gladin (1987), who reported a mean age of 32.7 for the mother and 34.7 for the father.

Formal Education

The respondents in the sample tended to be reasonably well-educated, with a mean of 15.00 years of formal education, a standard deviation of 2.34 and a range of 8 to 24 years. This supported the findings of other researchers (Greene, 1985; Gustavsen, 1981; Taylor, 1986) that home schooling parents, in general, tend to be well-educated. Comparisons with statistics from the U.S. Bureau of the Census indicate that the average

educational level of home schooling parents is higher than that of the general population. The U.S. Bureau of the Census (1989) reported that the median number of years of formal education achieved by the general population in 1987 was 12.6 years, with 19.4% of the population having completed four or more years of college. In comparison, 47.2% of the respondents in this study had completed the equivalant of a bachelor's degree (16 years) and 23.6% had completed some graduate study or advanced degrees (see Table 4).

Table 4

Formal Education of Home Teacher

Years of Formal Education	n	% of Sample
0 - 11	5	2.9
12	25	14.4
13 - 15	62	35.6
16	41	23.6
17 - 24	41	23.6

Motivation for home schooling

For the choices provided on the survey, the most common response (65.6%) was "to provide a better social-emotional environment for my child" (see Table 5). This supported the findings of Gustavsen (1981), that social-emotional motives were predominant for most families, but conflicted with Gladin's (1987) findings of predominantly religious reasons. This difference was most likely due to the sizable differences in

the number of "fundamental Christians" represented in the two samples. In the Gladin study, 92% of the respondents considered themselves to be either evangelical, fundamental or charismatic Christians, while only 38.3% of the respondents in the present study considered themselves to be either fundamental or "other" Christians.

Table 5

Motivation for Home Schooling

Primary Reason	n	% of Sample
Better Academic Environment	35	21.5
Better Social-emotional environment	107	65.6
To impart fundamental Christian values	9	5.5
To impart "New Age" values	12	7.4

The Child

The individual described in this section is the one who completed the Torrance Test of Creative Thinking (Figural Form A). He or she may have older or younger brothers and sisters (some of whom are possibly being home schooled and others who are not), but according to the instructions provided with the survey materials, this individual is the oldest child being home schooled in grades K-8.

Age

The mean age of the child was 8.93 years, with a standard deviation of

2.32 and a range of 5 to 14 years. The most frequent ages reported were 8-9 years, accounting for approximately one-third of the sample (see Table 6).

Table 6

Age of Child Being Home Schooled

Age	n	% of Sample	Age	n	% of Sample
5	7	4.0	10	21	11.9
6	24	13.6	11	15	8.5
7	21	11.9	12	11	6.3
8	30	17.0	13	14	8.0
9	29	16.5	14	4	2.3

It should be remembered that this study was limited to children in grades K-8. Therefore, since these data do not include those children beyond age 14 who are being home schooled, the mean age of all home-schooled children may be somewhat higher than the 8.93 years reported in this study.

Gender

The children in this sample were 55.1% male and 44.9% female, indicating a slight predominance of males over females for this study.

School Grade Equivalent

The mean grade equivalent for the sample was 3.51, with a standard

deviation of 2.29 (see Table 7). As stated previously, the range was limited to grades K-8, so it is probable that the mean grade-equivalence of all home-schooled children is somewhat higher than the stated mean.

Table 7

Grade Equivalent of Child Being Home Schooled

Grade	n	% of Sample	Grade	n	% of Sample
K	13	7.4	5	22	12.5
1	29	16.5	6	11	6.3
2	19	10.8	7	11	6.3
3	38	21.6	8	13	7.4
4	20	11.4			

The grade-equivalent statistic is not intended to be a comparative measure of the child's academic progress, but simply an indication of the grade level at which the home teacher considers the child to be operating. Since the sample is composed of individuals who have purchased home schooling curricula, and these curricula are sold by grade level, it is assumed that this figure represents the grade level of the curriculum which the child is currently using. No attempt was made to verify the child's grade equivalent through testing or any other means. In all cases, the researcher accepted the grade level indicated by the respondent, and with few exceptions the grade level indicated was one which would be considered appropriate for a child of that age in a conventional school.

Age at which child began home schooling

The mean age at which the child began home schooling was 6.39 years, with a standard deviation of 2.32 and a range of 0 to 13 (see Table 8). Considering the range, it is apparent that there is some variation in interpretation about what exactly constitutes "home schooling." A few parents (those coded with a zero in the data) remarked that schooling began "at birth," but most parents responded with more conventional answers, presumably based upon the child's age when the parents purchased their first home schooling curriculum or began more formal studies. The responses were distributed into three basic groupings: those that began when the child was 0 to 4 years old (8.0%), 5 to 7 years old (69.3%), and 8 to 13 years old (22.7%). Presumably, the 5 to 7 year old group was beginning formal instructional for the first time, while the 8 to 13 year old group consisted primarily of children who had left a conventional school situation to begin home schooling. This tendency to begin formal schooling when the child is approximately 5 to 7 years old is consistent with Taylor' (1986) findings, and suggests that most parents prefer to begin formal home instruction when their children are approximately the same age as their peers who are beginning conventional schooling.

Table 8

Age at Which Child Began Home Schooling

Age	n	% of Sample	Age	n	% of Sample
0	6	3.4	7	28	15.9
1	1	.6	8	10	5.7
2	1	.6	9	10	5.7
3	1	.6	10	9	5.1
4	5	2.8	11	7	4.0
5	47	26.7	12	3	1.7
6	47	26.7	13	1	.6

Years of home schooling completed

The children in the sample had completed a mean of 2.63 years of home schooling, with a standard deviation of 2.11 and a range of 0 to 13 (see Table 9). In coding this item, those who indicated increments of less than one-half year of home schooling were rounded down to the next lower integer, while those that indicated increments of more than one-half year were rounded up to the next higher integer.

Table 9

Years of Home Schooling Completed

Years	n	% of Sample	Years	n	% of Sample
0	8	4.5	7	5	2.8
1	57	32.4	8	2	1.1
2	43	24.4	9	1	.6
3	27	15.3	10	0	0.0
4	9	5.1	11	1	.6
5	14	8.0	12	0	0.0
6	8	4.5	13	1	.6

Conventional School Attendance

Responses to this item indicate that 54.0% of the children participating in the study had previously attended a conventional school. A few parents added comments explaining that the schools attended weren't really "conventional," but attendance at any school other than home schooling was coded as "Yes." For those children who attended conventional schools, the mean number of years attended was 2.66, with a standard deviation of 1.68. The range was 1 to 8 years (see Table 10).

Table 10

Number of Years of Attendance at a Conventional School

Years	n	% of Sample	Years	n	% of Sample
1	30	31.6	5	10	10.5
2	25	26.3	6	6	6.3
3	12	12.6	7	0	0.0
4	10	10.5	8	1	.6

Home study school involvement

The majority of families were independent home schoolers, operating without the teacher or organizational support of a home study school, as indicated by 67.6% of the respondents indicating that their child's work was not being evaluated by a teacher from a home study school.

The Learning Process

The section of the Home Schooling Instructional Survey entitled "The Learning Process" consisted of 33 questions about various aspects of the instructional approaches used by the parents. These questions were divided into eight categories that covered various aspects of the instructional process: autonomy, motivation, teacher beliefs, instruction, resources, evaluations, time usage, and teacher/student interaction.

Student Autonomy

This category contained four questions that investigated the amount of autonomy that the home teacher provided the child. The results of the responses to the questions in this category are summarized in Table 11.

Table 11

Autonomy Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#20 Do you trust in your child's ability to make significant decisions about his/her education?				
n	7	39	78	49
%	4.0	22.5	45.1	28.3
#22 To what extent is your child free to use resource materials?				
n	0	4	93	78
%	0.0	2.3	53.1	44.6
#26 Do you let your child make decisions about what subjects he/she should study?				
n	5	49	68	53
%	2.9	28.0	38.9	30.3
#34 Do you let your child determine his/her daily schedule for doing schoolwork?				
n	16	54	61	44
%	9.1	30.9	34.9	25.1

The responses to the items in this category indicate that home-schooling parents provide their children with a considerable amount of autonomy in the learning process. A sizable majority of the parents (73.4%) indicated that they "frequently" or "almost always" trusted in their

child's ability "to make significant decisions about his/her education." In addition, 69.2% of the parents reported that they "frequently" or "almost always" let the child determine what subjects he/she should study, and 60.0% "frequently" or "almost always" let the child decide his/her daily schedule for studying. In another domain, the use of resource materials, home-schooled children also appear to be given considerable autonomy, with 97.7% of the parents indicating that "most" or "all" of the resource materials in the home were readily available and may be used freely by the child. Although no other studies have specifically investigated the degree of autonomy in the home-schooling environment, the significant amount of autonomy given to the children in this sample does agree with the findings of other studies (Gustavsen, 1981) that the home-schooling environment tends to be "flexible and individualized."

Student Motivational Orientation

This category contained four questions that investigated the extent to which children were motivated intrinsically (within themselves) or extrinsically (by the home teacher). Results of the response to the questions in this category are summarized in Table 12.

Table 12

Student Motivational Orientation Category
Response to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#21 To what extent do you monitor your child's progress while he/she is engaged in a creative activity?				
n	54	87	30	2
%	31.2	50.3	17.3	1.2
#33 Do you use external rewards to help motivate your child to learn?				
n	101	64	8	2
%	57.7	36.6	4.6	1.1
#36 Do you focus your child's attention upon upcoming tests to motivate him/her to learn?				
n	149	17	5	3
%	85.6	9.8	2.9	1.7
#37 Do you encourage cooperation rather than competition in the learning process?				
n	0	0	25	150
%	0.0	0.0	14.3	85.7

Responses to the items in this category suggest that the home-schooling parents in this sample tend to encourage intrinsic, rather than extrinsic, motivation in their children. Home teachers monitored their children's creative activities "almost never" or only "occasionally" in

81.5% of the responses. External rewards to motivate children to learn were "almost never" or only "occasionally" used by 94.3% of the parents, and 85.6% of the parents said they "almost never" used upcoming tests to motivate their children to learn. Overall, all of the parents (100.0%) indicated that they "frequently" or "almost always" encouraged cooperation rather than competition in the learning process. This evidence of a strong tendency toward intrinsic motivation is suggestive of Harter's (1981) finding that open classroom environments were significantly related ($p<.001$) to an intrinsic motivational orientation in children, and lends support to the position that home-schooling environments are similar in some respects to open classroom environments.

Home Teacher Beliefs

Four questions were included in this category, which investigated the nature of the beliefs about learning held by home teachers. The results of the responses to the questions in this category are included in Table 13.

Table 13

Home Teacher Beliefs Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#29 Do you actively seek advice or ideas on how you can improve yourself as a teacher?				
n	8	39	79	49
%	4.6	22.3	45.1	28.0
#30 To what extent do you consider your child's academic achievement to be your top priority for the learning process?				
n	43	88	33	11
%	24.6	50.3	18.9	6.3
#38 To what extent do you feel that you are responsible for the overall success of the learning process?				
n	5	76	76	17
%	2.9	43.7	43.7	9.7
#50 To what extent do you believe that early formal learning is necessary for your child to reach his/her full potential?				
n	108	52	13	3
%	61.4	29.5	7.4	1.7

The responses to the questions in this category indicate that the home teachers in this sample tended to be united in holding strong beliefs in some areas but divided in others. In general, the respondents tended to be interested in becoming better teachers, with 73.1% reporting that they

"frequently" or "almost always" seek advice or ideas on how they can improve" themselves as teachers. However, though this large majority indicated they were interested in improving themselves as teachers, they were evenly divided in their beliefs about their responsibility for their children's learning, with 53.4% indicating they believed they were "largely" or "completely" responsible, and 46.6% reporting they were "somewhat" or "not at all" responsible. This latter response probably suggests a belief in the child as an active, independent learner with very little need of assistance.

If their responsibility as teachers was in question, they were quite unified on two other points: academic achievement and early learning. Regarding academic achievement, the home-schooling parents in this survey appeared to see it as only one aspect of the learning process, for 74.9% indicated that academic achievement was "almost never" or only "occasionally" their top priority for the learning process. They were even more unified in their beliefs about the lack of importance of early learning, with 90.9% indicating that they "disagree" or "strongly disagree" with the view that early formal learning is necessary for a child to reach his/her full potential.

Instructional Format

This category consisted of four questions that explored broad parameters of the instructional approach being used. A summary of the responses to the items in this category is included in Table 14.

Table 14

Instructional Format Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#19 To what extent do you integrate subjects, rather than teaching them separately?				
n	2	36	121	16
%	1.1	20.6	69.1	9.1
#23 To what extent do you follow the guidelines of a professionally-developed curriculum?				
n	7	68	99	0
%	4.0	39.1	56.9	0.0
#31 Do you use play and physical activities in the learning process?				
n	4	37	98	37
%	2.3	21.0	55.7	21.0
#39 To what extent do you use an unstructured, rather than structured, approach to learning?				
n	5	56	91	22
%	2.9	32.2	52.3	12.6

Generally, the home teachers in this sample tended to favor an unstructured, rather than structured, approach to learning, with 64.9% rating their instructional approach as either "unstructured" or "tends to be unstructured." This agrees with the findings of Gustavsen (1981), who characterized the typical home school as being informal, child-centered,

and flexible, but disagrees with Wartes (1988b), who found that parents rated their approach as slightly toward the "structured" side on a structured-unstructured continuum.

In developing a curriculum for their studies, parents indicated a willingness to use materials from a variety of sources, since none of the parents surveyed indicated that they exclusively followed the guidelines of a professionally-prepared curriculum. However, 56.9% of the parents indicated they "usually follow a professionally-developed curriculum, but adjust it occasionally " to meet their children's needs. Parents also preferred to integrate, rather than separate, subjects in their teaching, with 78.2% indicating that they "frequently" or "almost always" integrated subjects when teaching.

Play and physical activities were considered to be an important part of the learning process by 76.7% of the respondents, who indicated that they "frequently" or "almost always" used play and physical activities in their teaching.

Use of Resources

This category consisted of four questions that investigated the type of resources used by home-schooling parents and the frequency of use. The results of the responses to the questions in this category are summarized in Tables 15, 16 and 17.

Table 15
Resources Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#27 To what extent do you use home-made learning materials in the learning process?				
n	5	49	68	53
%	2.9	28.0	38.9	30.3
#35 Do you include activities in your local community as part of the learning process?				
n	10	45	94	27
%	5.7	25.6	53.4	15.3

Responses to these two questions in the resources section indicate that the home-schooling parents in the sample tend to utilize home-made materials (books, tapes, charts, or diagrams), with 69.2% of the respondents reporting they "frequently" or "almost always" use learning materials that either they or their children have made. They also tend to include resources outside the home environment, with 68.7% indicating they "frequently" or "almost always" use resources in their local community.

Question 41 investigated the types of resources used by the home teacher and the child in the learning process. Table 16 summarizes the results of responses to this question.

Table 16

Resources Category
Question #41: Resources used in the Learning Process

Resource	n	%
Printed Materials	166	94.9
Games	163	93.1
Science equipment	131	74.9
Audio Tape Recorder	132	75.4
Art and Crafts Supplies	172	98.3
Musical instruments	154	88.0
Computer	75	42.9
Video cassette recorder	80	45.7
Tools	144	82.3
Animals	135	77.1

Printed materials (used by 94.9% of the respondents), games (93.1%) and art and craft supplies (98.3%) were the resources used by the largest numbers of respondents. Overall, the resources used showed a preference for a wide variety of resources that included both academic and artistic resources. Less than half of the parents (42.9%) indicated that they used computers or video cassette recorders (45.7%).

The mean number of resources used by all parents was 7.71, with a standard deviation of 2.03 and a range of 1 to 10. For all parents in the sample, 3.4% indicated they used less than three of the resources listed, 13.1% reported using 3 to 5 of the resources, 42.3% reported using 6 to 8, and 42.9% indicated they used more than eight of the resources listed.

Question #40 investigated the amount of time that the child spent

watching television (either network or VCR). The results of the responses to this question are included in Table 17.

Table 17

Resources Category
Question #40: Hours per week child watches television (net work or VCR)

Number of Hours	n	%
Less than 5	80	46.5
5 - 10	63	36.2
10 - 20	23	13.2
More than 20	8	4.6

The responses to this question suggest that home-schooled children do not spend a significant amount of time watching television, with 82.7% of the respondents reporting that their children spend 10 hours or less of television watching per week. When considered jointly with the results reported in Table 16 of the large percentage of parents who reported using musical instruments, games, and arts/craft supplies, this suggests that the home-schooling parents in this sample are providing other alternatives to television for their children's learning and entertainment.

Evaluations

There were three questions in the evaluations category, which considered the home-teacher's attitudes about evaluations and his/her

approach to evaluating the child's work. The results of the responses to these questions are summarized in Table 18.

Table 18

Responses to Items in the Evaluations Category

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#24 To what extent do you base your evaluation of your child's academic progress upon written test results rather than your own observations of his/her abilities?				
n	143	28	4	1
%	81.3	15.9	2.3	.6
#28 How often do you correct your child's work?				
n	28	75	44	28
%	16.0	42.9	25.1	16.0
#32 Do you keep your child's written and artistic work to review later and evaluate his/her progress?				
n	4	24	52	94
%	2.3	14.0	29.9	54.0

Overall, the home-schooling parents in the sample tended to favor more informal approaches to evaluation of their children's work, with 97.2% of the parents reporting that they "almost never" or only "occasionally" use written test results to evaluate their children's academic progress. In regards to the frequency of evaluation, the parents

in the sample were somewhat evenly divided, with 58.9% of the parents indicating that they "almost never" or only "occasionally" corrected their children's work, and 41.1% reporting that they correct work "frequently" or "almost always." However, a much larger percentage (83.9%) reported that they kept the child's written or artistic work to review and evaluate later, suggesting that they do consider longer-term periodic review helpful in evaluating a child's progress, even if they don't correct the child's work frequently.

Use of Time

This category consisted of six questions relating to the use of time in instructional environments (Denham & Lieberman, 1980; Fisher & Berliner, 1985), and investigated the amount of time that the children in the sample spent on various subjects, as well as the scheduling priorities of the home-schooling parents. Results of the responses to the questions in this category are summarized in Tables 19, 20, 21, 22, 23 and 24.

Table 19

Time Usage Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#25 Do you encourage your child to use time productively?				
n	25	49	68	53
%	14.5	26.6	28.8	30.1
#42 How often does your child become deeply engaged in a learning activity by him/herself?				
n	3	35	108	29
%	1.7	20.0	61.7	16.6

The home-schooling parents in this sample were somewhat divided in their concern over their children's use of time in the learning process, with slightly more (58.9%) reporting that they "frequently" or "almost always" encourage their children to use time productively, while 41.1% indicated that they did so only "occasionally" or "almost never." However, when considering the extent to which their children sustained focused attention (the concept of "engaged time") 78.3% of the parents reported that their children "frequently" or "almost always" became "deeply engaged in a learning activity" by themselves, suggesting that the amount of "engaged time" for some home-schooled children may be relatively high.

The next aspect of time usage to be explored was the number of hours per week that the home teacher scheduled for various subjects, and the number of hours per week that students actually spent on those subjects. Results of these questions are summarized in Tables 20 and 21.

Table 20

Time Usage Category
Question# 43: How many hours per week do you schedule for the following subjects?

	Number of Hours Scheduled Per Week and Percentage of Respondents Reporting			
Subject	0	1 - 2	3 - 4	More than 4
Math	37.1	22.3	28.0	12.6
English	36.0	19.4	22.3	22.3
Science	47.4	29.7	16.0	6.9
Social Studies	48.0	26.9	16.6	8.6
Arts & Crafts	49.7	25.7	14.9	9.7
Music	47.7	32.2	13.2	6.9
Physical Ed.	48.3	17.2	14.9	19.5
Other	77.1	10.9	1.7	10.3

Table 21

Time Usage Category
Question #44: How many hours per week does your child actually spend on the following subjects?

	Number of Hours Child Actually Spent Per Week and Percentage of Respondents Reporting			
Subject	Less than 1	1 - 2	3 - 4	More than 4
Math	1.2	48.5	31.7	18.6
English	3.0	27.0	25.1	44.9
Science	3.6	53.3	26.9	16.2
Social Studies	6.0	49.4	25.9	18.7
Arts & Crafts	3.0	30.9	26.1	40.0
Music	10.3	46.1	25.5	18.1
Physical Ed.	7.9	25.0	21.3	45.8
Other	63.3	14.5	5.4	16.8

The majority of parents indicated that they scheduled subjects, but the percentage of those parents who scheduled varied by subject, with the greatest percentage of parents scheduling math (62.9%) and English (64.0%). The least amount of scheduling occurred in "other" subjects (23.1%). Parents' tendency to emphasize math and English in their scheduling also was apparent in the amount of time that was scheduled, with results indicating that parents tend to schedule these subjects for larger blocks of time than for other subjects, with 40.6% of the parents scheduling math at least three hours per week, and 44.6% scheduling English at least three hours per week.

The majority of the children in the sample spent between one and four hours per week in each subject, with math and English occupying the largest amounts of time of any of the academic subjects (50.3% and 70.0% of the children spending at least three hours per week on math and English, respectively). In non-academic subjects, 46.1% of the students spent 1 - 2 hours per week in music, suggesting perhaps a weekly music lesson by an outside tutor, while 40.0% spent more than four hours per week in arts and crafts and 45.8% more than four hours per week in physical, suggesting more informal activities that occur throughout the week.

Table 22

Time Usage Category
Question #45: What time of day do you feel is the best time for learning?

Time of Day	n	%
Morning	80	46.2
Afternoon	2	1.2
Evening	2	1.2
There is no best time	89	51.4

Parents were approximately evenly divided on this question, with slightly more (51.4%) indicating that they felt "there is no best time" for learning, as opposed to 46.2% who felt that morning is the best time. The other times of the day were preferred by only a few respondents.

Table 23

Time Usage Category
Question #46: Percentage of Respondents Who Schedule Subjects at Various Times of the Day

	Time of Day and Percentage of Respondents Reporting			
Subject	Not Scheduled	Morning	Afternoon	Evening
Math	33.0	58.0	8.5	.6
English	31.8	58.0	8.0	2.3
Science	44.9	36.9	17.6	.6
Social Studies	44.3	34.1	17.0	4.5
Arts & Crafts	43.8	20.5	32.4	3.4
Music	46.6	22.7	22.7	8.0
Physical Ed.	42.6	15.3	34.7	7.4
Other	78.4	4.5	13.1	4.0

Responses to this question indicated a tendency among many parents to schedule academic subjects (math, English, science and social studies) in the morning and more artistic and physical activities in the afternoon. The largest percentage of parents who scheduled (58.0%), scheduled math and English in the morning, followed by a smaller percentage scheduling science and social studies at that time (36.9% and 34.1% respectively). The results also indicated a tendency for more parents to schedule math and English than other subjects, confirming the results obtained in question 43.

Table 24

Time Usage Category
Preference for Subjects Scheduled at Various Times of the Day
For Those Who Indicated That Morning Was the Best Time to Learn

	Time of Day and Percentage of Respondents Reporting			
Subject	Not Scheduled	Morning	Afternoon	Evening
Math	7.5	85.0	7.5	0.0
English	10.0	82.5	7.5	0.0
Science	21.3	60.0	18.8	0.0
Social Studies	20.0	53.8	21.3	5.0
Arts & Crafts	26.3	26.3	45.0	2.5
Music	26.3	27.5	33.8	12.5
Physical Ed.	27.5	17.5	46.3	8.8
Other	73.8	7.5	15.0	3.8

This analysis was conducted on the premise that parents who schedule subjects tend to schedule those subjects that they feel are most important at those times of the day when they feel learning occurs most easily. The results of this analysis indicate that those parents who reported that they felt morning was the best time to learn tended to schedule math (85.0%) and English (82.5%) during that time of day. Next in frequency were science (60.0%) and social studies (53.8%). These results suggest that parents feel math and English skills are more important (or perhaps more difficult), since they schedule them at those times of the day when they feel learning is most likely to occur. This focus upon math and

English is consistent with results obtained in other questions in this category. Another pattern, mentioned previously, is the tendency of those parents to reserve afternoons for activities of a more artistic and physical nature, such as arts and crafts (45.0%), music (33.8%) and physical education (46.3%). This may indicate that parents feel the afternoons are better suited for these activities, or simply that the afternoon is the time of day when most parents schedule music or art lessons with local teachers in the community, or when group classes in the local community of a more physical nature (martial arts, gymnastics, dance) are scheduled.

Teacher/Student Interaction

This category is broadly derived from research in the field known as "interaction analysis," which investigates the quality of the interaction between the teacher and the student (Amidon & Hough, 1967). There are several approaches to the study of the teacher/student interactions, and the items in this survey relating to this aspect of the instructional approach were not drawn from any particular perspective, but rather represent a variety of perspectives. This category consists of four questions, and the results of the responses to these questions are included in Table 25.

Table 25

Teacher/Student Interaction Category
Responses to Likert Scale Items

Question Number and Content	Response Category			
	Almost Never	Occasionally	Frequently	Almost Always
#18 Extent to which parent works with the child, rather than separately				
n	6	72	70	28
%	3.4	40.9	39.8	15.9
#47 Do you require your child to study a particular subject even if he/she doesn't want to?				
n	68	77	24	6
%	38.9	44.0	13.7	3.4
#48 Do you blame your child when he/she doesn't study a particular subject as much as you want?				
n	112	55	6	1
%	64.4	31.6	3.4	.6
#49 Do you find it necessary to delay or tell your child to "wait a minute" when he/she asks for help on a learning activity?				
n	37	94	44	0
%	21.1	53.7	25.1	0.0

The results of the responses to the questions in the interaction category suggest a learning environment which is emotionally supportive, in which children are either allowed to work independently or together with the parent, but are given help when needed. On the question of the

degree of interaction between the parents and the child, the respondents were rather evenly divided, with slightly more parents indicating that they tend to work with their children (55.7%) than those that tend to allow their children to work independently (44.3%). However, 74.8% of the respondents indicated that they "almost never" or only "occasionally" find it necessary to delay or tell the child to "wait a minute" when he/she asks for help on a learning activity, suggesting that the home teacher is responsive to the student's needs, even if the student is working independently.

A large majority of the parents (82.9%) reported that they "almost never" or only "occasionally" require the child to study a particular subject when he/she doesn't want to, indicating a strong tendency for the teacher/student interaction to be predominantly non-coercive in nature. This type of interaction is given additional support by the response to question 48, in which 96.0% of the respondents indicated that they "almost never" or only "occasionally" blame the child when he/she doesn't study a particular subject as much as the parent wants.

Identification of Instructional Factors

To identify common factors in the instructional environment, a factor analysis was performed on the questions in the "learning processes" section of the Home Schooling Instructional Survey. Questions 18 through 50 were included in the analysis, with the exception of four: questions 41, 43, 44 and 46. These questions were eliminated from the factor analysis because they consisted of multiple responses that tended to be highly correlated, (e.g. the number of hours the parent scheduled each week for each subject), rather than single, uncorrelated responses, and it was felt that the inclusion of the data from these questions would distort the results of the analysis. Although the multiple responses for question 41 (the number and type of resources used in the learning process) were not included, it was decided to include in the factor analysis the total of the resources reported by each respondent, as a summary of the information requested in that question. With the inclusion of this item, the total number of variables included in the analysis was 30.

Correlation coefficients were factored using the principal components method and the results were rotated orthogonally to minimize the correlations between factors (Kerlinger, 1973), using the varimax criterion (Kaiser, 1958) to maximize the variances on each of the factors and create a simpler structure. Overall, 11 factors with eigenvalues greater than 1.00 were identified. However, only five of those factors had loadings equal to or greater than .30 on more than three items. In the original analysis, (see Appendix E), these were identified as factors 1, 3, 4, 5, and 11. One of these

factors (factor 4 in Appendix E) loaded on three items that were included on another factor, so it was decided to eliminate that factor from consideration. This left four factors to be included for further analysis: those designated in the first analysis as factors 1, 3, 5 and 11. These four factors were renamed Goal Orientation, Autonomy, Intrinsic Motivation and Unstructured Format, and are interpreted in the following paragraphs. Positive loadings suggest that high scores for that item correlate with high scores for the factor, while negative correlations indicate that high scores on that item correlate with low scores for that factor. The size of the loading indicates the extent to which responses on that item explain variance in the factor, with high loadings explaining more of the variance and low loadings explaining less of the variance. The overall distribution of the responses will be summarized at the end of this section. In addition, an alpha coefficient (KR-20) was calculated for each factor to assess the extent to which the items that comprise each factor are, as a group, a reliable measure of that factor. This coefficient is included with each table.

Table 26

Factor 1: Goal Orientation (Alpha = .74)

Loading		Question Number and Content
.67	#25	Do you encourage your child to use time productively?
.65	#30	To what extent do you consider your child's academic achievement to be your top priority for the learning process?
.64	#28	How often do you correct your child's work?
.53	#38	To what extent do you feel that you are responsible for the overall success of the learning process?
.44	#33	Do you use external rewards to help motivate your child to learn?
.41	#47	Do you require your child to study a specific subject even if he/she doesn't want to?

The items in this factor all relate to an achievement-oriented attitude, and the parent who responds to these items consistently with "frequently" or "almost always" would be expected to exert a certain amount of pressure upon the child to learn and to progress at a pre-determined pace. This suggests a certain tension in the learning process, rather than an easy-going, relaxed attitude. The alpha coefficient of .74 for this factor indicates that the group of items that constitute this factor provide a moderately high degree of reliability as a measure of this factor.

Table 27

Factor 2: Autonomy (Alpha = .77)

Loading		Question Number and Content
.80	#42	How often does your child become deeply engaged in a learning process by him/herself?
.60	#18	To what extent does your child work with you in the learning process, rather than independently?
.56	#20	Do you trust in your child's ability to make significant decisions about his/her education?
.50	#34	Do you let your child determine his/her daily schedule for doing schoolwork?
.41	#26	Do you let your child make decisions about what subjects he/she should study?
.34	#31	Do you use play and physical activities in the learning process?
-.32	#28	How often do you correct your child's work?

The items in this factor are all concerned with attributes of freedom and autonomy in the learning process, suggesting that parents who tend to respond to these items with "frequently" or "almost always" responses would give their children a high level of autonomy in the learning process. The negative loading (-.32) on question #28 indicates that parents' attitudes about correcting their children's work is also an attribute of this factor, but in the opposite direction. That is, parents who provide greater autonomy tend not to correct their children's work as frequently as those that provide less autonomy. The alpha coefficient of .77 for this factor indicates that the group of items that are included in this factor provide a moderately high degree of reliability as a measure of this factor.

Table 28

Factor 3: Intrinsic Motivation (Alpha = .76)

Loading		Question Number and Content
- .78	#36	Do you focus your child's attention on upcoming tests to motivate him/her to learn?
.67	#24	Do you base your evaluation of your child's academic progress upon your own observations of his/her abilities, rather than written test results?
.60	#50	Do you disagree with the view that early formal learning is necessary for your child to reach his/her potential?
- .50	#33	Do you use external rewards to help motivate your child to learn?
- .37	#30	Do you consider your child's academic achievement to be your top priority for the learning process?
.33	#20	Do you trust in your child's ability to make significant decisions about his/her education?
.31	#39	Do you use play and physical activities in the learning process?

This factor is somewhat complex, but the primary emphasis seems to be upon an approach to learning that emphasizes intrinsic, rather than extrinsic, motivation. This attribute is suggested by the presence of strong negative loadings on two of the motivation questions, indicating that parents who share this factor would tend to disagree (by responding "occasionally" or "almost never") to the use of rewards or the focus upon tests to motivate children to learn. In addition, items that received positive loadings indicated general disagreement with the necessity for early formal learning, agreement with the use of play and physical activities in

the learning process, and a willingness to trust their children to make "significant decisions" in the educational process. When these items with positive and negative loadings are summarized, we have a picture of parents who are willing to cooperate with their children's development, integrate play into the learning process, and avoid external measures or rewards to motivate children to learn - attitudes that foster an intrinsic motivational orientation in the child. The alpha coefficient of .76 for this factor indicates that the group of items that are included in this factor provide a moderately high degree of reliability as a measure of this factor.

Table 29

Factor 4: Unstructured Format (Alpha = .71)

Loading		Question Number and Content
.79	#45	There is no "best" time for learning
.58	#39	An "unstructured" rather than "structured" instructional approach
.40	#23	Primarily develop their own curriculum, rather than using a professionally-developed curriculum
- .40	#25	High levels of television viewing
.37	#34	Do you let your child determine his/her daily schedule for doing schoolwork?
.37	#50	Do you disagree with the view that early formal learning is necessary for your child to reach his/her potential?

The items in this factor tend to relate to the instructional format, with those who respond positively to the items indicating a preference for an

instructional approach that is primarily unstructured, in which the parents develop their own curricula, children are free to determine their own daily schedule, early formal learning is not considered necessary, and there is no "best" time for learning. Item #25 (television viewing) showed a negative loading on this factor, indicating that parents who follow a more unstructured approach, as represented by this factor, tend to restrict the amount of television their children watch. The alpha coefficient of .71 for this factor indicates that the group of items that are included in this factor provide a moderately high degree of reliability as a measure of this factor.

Distribution of the Respondents by Factor

To determine the distribution of the respondents in these four factors, four new columns in the data were created, with each column consisting of the total of the numeric responses of the individual respondents on each of the items in that factor. For example, for factor 1, "goal orientation," parents' responses to items 25, 28, 30, 33, 38 and 47 were totaled and entered into a column called "goal orientation." For those factors in which some of the items were negatively loaded, those items were recoded in reverse before totaling, so that a "1" response was recoded as a "4," a "2" response as a "3," a "3" as a "2," and a "4" as a "1." Thus, the final scores obtained for each factor represented the degree of expression of that factor, with low scores representing a low degree of expression and high scores representing a high degree of expression. The possible ranges of scores for each factor were then divided into thirds, representing low, moderate and

high degrees of expression of that factor, and percentages in each third were calculated. The results of are summarized in Table 30.

Table 30

Distribution of Respondents by Factors

Factor # and Name	Low Expression		Moderate Expression		High Expression	
	n	%	n	%	n	%
#1 Goal Orientation	58	33.0	103	58.5	15	8.5
#2 Autonomy	10	5.7	95	54.0	70	39.8
#3 Intrinsic Motivation	3	1.7	24	13.6	145	82.4
#4 Unstructured Format	16	9.1	95	54.0	65	36.9

The results of this distribution indicate a consistent pattern in the instructional approach used by many of the home schooling parents in this sample. A large majority of the parents fell within the "moderate" to "high" range of expression for autonomy (93.8%), intrinsic motivation (96.0%) and unstructured format (90.9%), indicating an approach that is flexible, provides considerable amount of autonomy, and encourages intrinsic motivation in children. For factor 1, goal orientation, the pattern was reversed, with 91.5% of the parents reporting a "moderate" to "low" expression of this factor, indicating an instructional environment focused

more upon learning as a process, rather than a goal.

Creativity Scores

Scores on the Torrance Tests of Creative Thinking (Figural Form A) were calculated for the children in the sample. If more than one child was being home schooled, parents were instructed to administer the creativity test to the oldest child being home schooled. The tests were hand-scored, using the instructions in the Streamlined Manual (Torrance & Ball, 1984) and the Streamlined Scoring Workbook (Ball & Torrance, 1984). The scoring procedure yielded raw scores for five categories: fluency, originality, abstractness of titles, elaboration, and resistance to premature closure. Since TTCT subscale scores generally tend to increase with age, it was decided to convert these raw scores to normed scores by grade level to faciliate analysis across grade levels. This was accomplished by using the conversion tables in the TTCT Streamlined Manual, which converts raw scores to normed scores based upon a standard scale of a mean of 100 and a standard deviation of 20. These normed scores were used in all analyses to make relative comparisons among students within this study, but no attempt was made to determine if the scores achieved by the children in this study were significantly higher or lower than the national norms, since the testing environment and format were considerably different from those employed with children in the conventional school classrooms from which the norms were derived. The means, standard deviations and ranges for both raw and normed scores are summarized in Table 31.

Table 31

Means and Standard Deviations of Scores on the TTCT

	Raw Scores		Normed Scores	
Category	Mean	SD	Mean	SD
Fluency	21.81	8.04	97.08	20.60
Originality	15.11	6.93	106.80	23.35
Abstractness of Titles	8.06	3.98	124.50	28.70
Elaboration	8.27	2.64	101.76	18.47
Resistance to Premature Closure	13.09	3.85	110.89	18.37

Correlations

Descriptive statistics have been provided for three components of the study: demographics, instructional factors, and creativity scores. These statistics provided information to be used in answering the first research question: are there differences in the instructional approaches used by home-schooling parents? The second research question was concerned with investigating possible relationships between instructional approach and creativity scores. To answer this question, it was necessary to calculate Pearson product-moment correlations (r) between each of these categories.

Instructional Factors and Creativity Scores

The first set of correlations calculated were those between the instructional factors and the subscores on the TTCT. A summary of these correlations is included in Table 32.

Table 32

Correlations Between Instructional Factors and TTCT Scores

Variable	A	B	C	D	E	F	G	H	I
A. Goal Orientation	1.00	-.56**	-.63**	-.64**	.06	.12	-.16*	.00	.03
B. Autonomy		1.00	.59**	.64**	-.06	-.10	.12	.12	.03
C. Intrinsic Motivation			1.00	.67**	-.12	-.17*	.15*	.11	-.04
D. Unstructured Format				1.00	-.05	-.11	.12	.09	-.00
E. Fluency					1.00	.79**	.18*	.27**	.41**
F. Originality						1.00	.23**	.36**	.44**
G. Abstractness of titles							1.00	.27**	.19**
H. Elaboration								1.00	.30**
I. Resistance to Premature Closure									1.00

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

There are numerous statistically significant intercorrelations among the instructional factors, and also among the subscores of the TTCT. In this partcular analysis, however, the primary interest was in the correlations between instructional factors and the TTCT scores. In this regard, there were three correlations that were significant. The first two involve relationships with the TTCT abstractness of titles subscale. Goal orientation demonstrated a negative correlation ($p<.05$) with abstractness of titles, and intrinsic motivation exhibited a positive correlation with the

same subscale. This suggests that higher abstractness scores tend to be related to parents who encourage intrinsic motivation in their children and utilize non-goal oriented approaches.

Another relationship with intrinsic motivation involved the TTCT originality subscale score. Intrinsic motivation was found to be negatively correlated ($p<.05$) with originality, suggesting that parents who indicated they encouraged intrinsic motivation tended to have children who scored lower on the TTCT originality subscales. This result conflicts with the findings of Amabile (1983) that intrinsic motivation is positively related to creativity, but is supported by Torrance's (1965) findings that extrinsic motivational techniques can be conducive to scores on originality. This discrepancy in findings suggest that the relationship between creativity and motivational orientation is complex, and requires further research.

Demographics and Creativity Scores

The next set of correlations to be examined involved the demographic variables and the subscores on the TTCT, to assess the relationship between such factors as age, income and religious affiliation upon creativity scores. Data for these variables were divided into two categories: continuous data (e.g. household income, child's age) and discrete data (e.g. religious affiliation, gender). The continuous data were analyzed using Pearson product-moment correlations; the discrete data were analyzed using contingency tables and chi-square tests. The results of the correlation analysis of the continuous data are summarized in Table 33;

the chi-square analyses are summarized in Table 34.

Table 33

Correlations Between Demographics and TTCT Scores

Variable	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A. Family Size	1.00	.63**	.21**	-.17*	-.09	.26**	.12	.12	.05	.06	.06	-.14	-.04	.04
B. # Children Home Schooled		1.00	.11	-.06	.09	.37**	.07	.37**	.01	.04	.08	-.11	.00	.09
C. Household Income			1.00	.12	.20**	.04	.02	.01	.04	.19*	.20**	.12	.20**	.07
D. Home Teacher's Age				1.00	.35**	.27**	.17*	.13	.18*	.17*	.17*	.01	.16*	.13
E. Home Teacher's Education					1.00	-.10	-.08	-.02	-.10	.04	.06	.15*	.15*	.17*
F. Child's Grade Equivalent						1.00	.51**	.45**	.49**	.05	.02	-.42**	.14	-.02
G. Age Home Schooling Began							1.00	-.41**	.80**	.21**	.21**	-.09	.12	.05
H. # Years Home Schooling								1.00	-.29**	-.16*	-.17*	-.25**	.06	-.06
I. # Years of Conventional School									1.00	.28**	.29**	-.03	.18*	.07
J. TTCT Fluency										1.00	.81**	.19**	.27**	.42**
K. TTCT Originality											1.00	.23**	.36**	.44**
L. TTCT Abstractness of Titles												1.00	.27**	.22**
M. TTCT Elaboration													1.00	.32**
N. TTCT Resistance to Premature Closure														1.00

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

Although there were many expected significant correlations within the demographic variables themselves (such as between family size and the number of children being home schooled), and also between the various subscores of the TTCT, these were not of primary interest in this study. Rather, the correlations that were of the greatest interest were between the demographic variables and the TTCT subscores. Of these correlations, there were several that were significant. The strongest consistent relationship, and also the most intriguing, involved the number of years that the child had spent in conventional schools and the number of years spent in home schooling. The number of years the child spent in a conventional school showed a positive relationship ($p<.01$) to TTCT fluency, originality, and elaboration ($p<.05$), indicating that children who had spent more years in conventional schools tended to have higher scores on these subscales. Conversely, the number of years that children were home schooled demonstrated a negative correlation ($p<.05$) with fluency, originality and abstractness of titles ($p<.01$), suggesting that children who had been home schooled longer tended to have lower scores on these subscales. This pattern was further supported by the positive relationship ($p<.01$) between the age at which home schooling began and the fluency and originality scores, indicating that children who started home schooling at a later date tended to have higher scores on these two subscales of the TTCT.

Three additional correlations were noted in the areas of household income, home teacher's age and educational level, and the child's grade

level. Household income exhibited a consistent positive correlation with three subscales of the TTCT: fluency, originality and elaboration, indicating that children who scored higher on these subscales tended to come from families that reported higher household incomes.

The home-teacher's age demonstrated statistically significant, positive correlations ($p<.05$) with the child's scores on fluency, originality, and elaboration, suggesting that children whose scores were higher on these subscales tended to have older parents. The home teacher's educational level was positively related to scores on the abstractness of titles, elaboration, and resistence to premature closure subscales. This suggests that parents with higher educational levels tend to have children who score higher on these three subscales of the TTCT.

Finally, the child's grade level was found to relate negatively ($p<.01$) to the abstractness of titles subscale, with children in higher grade levels tending to score lower on the abstractness of titles subscale. Rather than being a substantive finding, this result may have arisen from the nature of the TTCT administration procedure itself, which permitted parents to help their children write titles if requested. Although this procedure was designed to eliminate a potential bias from younger children who do not write fluently, in an individual testing situation such as that used in this study, it is possible that younger children were facilitated by this procedure more than older children, resulting in inflated abstractness of titles scores for younger children and creating the negative correlation mentioned.

A contingency table was constructed to analyze the discrete data, and

a chi-square test was performed on the distribution of each of the variables in relationship to the scores on each of the subscales of the TTCT. To perform the analyses, scores on each of the subscales of the TTCT were divided into halves and recoded into two categories: low and high. The demographic variables remained in their original categories, which ranged from two to six. The results of this analysis are summarized in Table 34.

Table 34

Chi-Square Values For Discrete Demographic Categories and Subscales of the TTCT

Variable	Fluency	Originality	Abstractness	Elaboration	Resistance
Geographical Location	4.06	4.55	2.99	2.37	8.20
Religious Affiliation	1.76	3.18	4.53	2.19	2.74
Parents' Motivation	3.36	3.69	7.06	2.72	2.28
Child's Gender	.03	.00	.50	2.66	.38
Prior School Attendance	4.97*	4.89*	.03	.36	.07
Correspond. Study	.59	.17	.80	.61	.01

*$p < .05$

One demographic variable was found to have a significant interaction with the child's scores on subscales of the TTCT: prior school attendance. Those home-schooled children that had attended a conventional school prior to beginning home schooling were found to score significantly higher ($p<.05$) on both the fluency (45 in the "high" range vs. 38 expected) and the

originality (33 in the "high" range vs. 26 expected) subscales of the TTCT.

Instructional Factors and Demographics

The same procedure was followed in this analysis as in the previous analysis, in which the data were separated into two separate categories (continuous and discrete) and analyzed by two separate statistical methods. The correlations between the instructional factors and the continuous demographic variables are summarized in Table 35. Since the variables within the demographic category were the same in both analyses, the correlations among the variables within that category were identical to those presented in Table 33, and therefore were not included in Table 35.

Table 35

Correlations Between Continuous Demographic Variables and Instructional Factors

Variables	Goal Orientation	Autonomy	Intrinsic Motivation	Unstructured Format
Family Size	-.04	.12	.03	-.00
# Children Home Schooled	-.20**	.37**	.20**	.19**
Household Income	-.07	.09	.08	.12
Home Teacher's Age	.02	.07	-.01	.04
Home Teacher's Education	-.06	.14	.14	.18*
Child's Grade Equivalent	.18*	.18*	-.07	-.09
Age Home Schooling Began	.17*	-.02	-.16*	-.20**
# Years Home Schooling	-.07	.31**	.16*	.21**
# Years Conventional School	.18*	-.04	-.20**	-.19**

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

The most consistent significant correlation between demographic variables and instructional factors was the number of children being home schooled, which correlated significantly ($p<.01$) with every instructional factor. However, the direction of the correlation changed according to the nature of the factor, with a positive correlation indicated with autonomy, intrinsic motivation and unstructured format, and a negative correlation with goal orientation. These correlations suggest that as the number of children being home schooled increases, parents tend to provide more autonomy, encourage intrinsic motivation more often, and utilize instructional approaches that follow a more unstructured and non-goal oriented format. The home teacher's educational level also demonstrated a positive correlation ($p<.05$) with unstructured format, indicating a tendency for higher-educated parents to use more unstructured approaches. The child's grade level was positively correlated ($p<.05$) with goal orientation and and autonomy, suggesting that with increasing age, children are given more autonomy, but also are given tangible goals in the learning process. The age at which home schooling began was also significantly related to instructional factors, but in varying directions depending upon the factor. The age at which the child began home schooling was positively correlated ($p<.05$) with the factor of goal orientation, but was negatively correlated ($p<.05$ and $p<.01$ respectively) with the intrinsic motivation and unstructured format, indicating that the older a child began home schooling, the more likely the parent was to use

extrinsic motivational strategies and a structured instructional format. This tendency was reversed, however, in children who had been home schooled for a number of years, for there was a positive correlation between the number of years the child had been home schooled and the amount of autonomy provided ($p<.01$), the tendency of the parents to encourage intrinsic motivation ($p<.05$), and the tendency to use an unstructured approach ($p<.01$). Finally, the number of years in a conventional school was negatively correlated ($p<.01$) with intrinsic motivation and unstructured format, and positively correlated with goal orientation, suggesting a greater tendency of parents to use extrinsic motivation, structured learning approaches, and goal-oriented strategies with children who had been in conventional schools for a greater number of years.

Relationships between the discrete categories of demographic variables and Instructional factors were examined using a contingency table and a chi-square test. Results of these analyses are summarized in Table 36.

Table 36

Chi-Square Values For Discrete Demographic Categories and Instructional Factors

Variables	Goal Orientation	Autonomy	Intrinsic Motivation	Unstructured Format
Geographical Location	4.02	5.71	9.22	3.77
Religious Affiliation	3.81	4.18	8.97	1.28
Parents' Motivation	11.93**	7.10	22.54***	13.11**
Child's Gender	.01	.92	.00	.10
Prior School Attendance	.37	.12	5.19*	.33
Correspond. Study	1.50	2.08	1.12	6.30*

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

The parents' motivations for home schooling emerged as the most consistently significant demographic variable. Parents who reported their primary motivation as "to provide a better social/emotional environment" scored significantly lower ($p<.01$) on the goal orientation factor (80 in the "low" range vs. 72 expected), but higher ($p<.001$) on intrinsic motivation (97 in the "high" range vs. 90 expected) and higher ($p<.01$) on unstructured format (67 in the "high" range vs. 58 expected) than those who were motivated by academic or other concerns. This suggests that parents who are motivated to home school by social/emotional concerns for their children tend to encourage intrinsic motivation in their children and

provide an instructional approach that is more unstructured and non-goal oriented. Another significant relationship was found with children who had previously attended a conventional school. Parents of these children tended to have significantly lower ($p<.05$) scores on the motivational orientation factor (20 scoring in the "low" range vs. 15 expected), suggesting that these parents tend to use extrinsic approaches to motivate these children to learn. Finally, a significant relationship was found between those parents who reported that their child's work was "being evaluated by a teacher from a home study school," an indication of a correspondence study relationship with a teacher from a home study school. These parents displayed significantly lower ($p<.01$) scores on the unstructured format factor (34 in the "low" range vs. 25 expected), indicating a more structured approach to learning than those parents who were working independently, and not associated with a home study school.

Predictive Models for Creativity Among Home Schoolers

A stepwise regression procedure was used to determine those variables, both demographic and instructional, that best predict creativity among home-schooled children. The stepwise method employed a forward approach, and used an F to enter of 2.0, based upon 176 subjects and 9 variables. A separate model was calculated for each of the subscales of the TTCT, and the results are summarized in Tables 37-41. The first TTCT subscale to be analyzed was fluency. Results of this analysis are included in Table 37.

Table 37

Contributions to R^2 for the Prediction of TTCT Fluency by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
# Years in a Conventional School	3.666	.076	13.64	.076
Household Income	2.020	.107	9.91	.031
Motivational Orientation	- .969	.120	7.45	.013
Child's Grade Level	-2.043	.131	6.13	.011
Home Teacher's Age	.660	.146	5.56	.015
# Children Being Home Schooled	3.053	.161	5.163	.015

The best predictive model for TTCT fluency accounted for 16.1% of the variance. In the model, high fluency scores were related to larger number of years spent in a conventional school, higher household income, an extrinsic motivational orientation, a lower grade level for the child, increased age of the home teacher, and greater number of children being home schooled.

The next TTCT subscale to be analyzed was originality. Results of this analysis are included in Table 38.

Table 38

Contributions to R^2 for the Prediction of TTCT Originality by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
# Years in a Conventional School	4.749	.083	14.99	.083
Household Income	2.554	.117	10.91	.034
Child's Grade Level	- 3.268	.137	8.70	.020
Motivational Orientation	- 1.480	.157	7.57	.020
# Children Being Home Schooled	5.571	.184	7.28	.027
Home Teacher's Age	.892	.213	7.26	.029

The best predictive model for TTCT originality accounted for 21.3% of the variance in that subscale score. In the model, high originality scores were related to increased years in a conventional school, lower children's grade levels, higher household income, an extrinsic motivational orientation, increased number of children being home schooled, and increased age of the home teacher.

The next TTCT subscale to be analyzed was abstractness of titles. The results of this analysis are summarized in Table 39.

Table 39

Contributions to R^2 for the Prediction of TTCT Abstractness of Titles by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
Child's Grade Level	- 8.031	.179	36.19	.179
# Years in a Conventional School	4.208	.221	23.43	.042
Autonomy	1.669	.269	20.16	.048
Home Teacher's Age	.616	.282	15.97	.013
Household Income	1.917	.291	13.32	.009

The best predictive model for the TTCT subscale of abstractness of titles consisted of three variables, and accounted for 29.1 % of the variance in the scores on that subscale. In the model, high scores on abstractness of titles were related to lower children's grade levels, increased number of years in a conventional school, increased autonomy, increased age of the home teacher, and higher household income.

The fourth TTCT subscale to be analyzed was elaboration. Results of this analysis are included in Table 40.

Table 40

Contributions to R^2 for the Prediction of TTCT Elaboration by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
Household Income	1.967	.038	6.63	.038
# Years in a Conventional School	2.364	.069	6.07	.031
Home Teacher's Education	1.117	.085	5.09	.016
# Years of Home Schooling	1.143	.100	4.55	.015

The best predictive model for TTCT elaboration scores was composed of three variables that accounted for 10.0% of the variance in scores on that subscale. In this model, higher elaboration scores were related to higher household income, increased number of years in a conventional school, higher home teacher educational level, and increased years of home schooling.

The last TTCT subscale to be analyzed was resistance to premature closure. Results of this analysis are included in Table 41.

Table 41

Contributions to R^2
for the Prediction of TTCT Resistance to Premature Closure
by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
Home Teacher's Education	1.296	.028	4.72	.028

The best predictive model for scores on the TTCT subscale, resistance to premature closure, consisted of only one variable, and accounted for 2.8% of the variance in the scores on that subscale. In this model, higher scores on that subscale were related to higher levels of education for the home teacher.

The last score to be analyzed was the global mean score for all five subscales of the TTCT. Results of this analysis are included in Table 42.

Table 42

Contributions to R^2 for the Prediction of TTCT Global Mean Score
by Demographic and Instructional Variables

Variables	b	R^2	F	R^2 Increase
Household Income	1.838	.050	8.78	.050
# Years in a Conventional School	3.070	.089	8.04	.039
Child's Grade Level	-2.824	.151	9.72	.062
Home Teacher's Age	.665	.182	9.05	.031
# Children Being Home Schooled	2.625	.203	8.24	.021

The best predictive model for the global mean score on the TTCT consisted of five variables and accounted for 20.3% of the variance in the global mean score. In this model, higher scores on the global mean score were related to higher household income, increased number of years in a conventional school, lower children's grade level, increased home teacher's age, and greater number of children being home schooled.

Chapter 5 - Summary and Conclusions

Summary

Demographics

The sample of parents in this study were distributed throughout the United States, with the largest percentages being located in the southwest (29.7%) and the northeast (24.0%). The parents responding reported a average family size of 4.64 persons, with 60.2% of the parents reporting an annual household income of at least $30,000. The statistics on family size are consistent with the findings of Ray (1986) and Gladin (1987), but conflict with the findings of Taylor (1986), who found a slightly larger family size. The income figures, when adjusted for time variations, agree with the findings of Gustavsen (1981), Linden (1983), and Taylor (1986), that home schooling families earn an average, or slightly above average, household income for United States families.

A wide range of religious affiliations were represented, but the largest percentages of families indicated that they were "new age" (34.1%) or Christian of a "non-fundamental" nature (32.4%). Only 5.9% of the respondents considered themselves to be fundamental Christians. This distribution of religious affiliations reflects a much larger percentage of "new age" families than was found in previous studies (Mayberry, 1988) and a substantially smaller percentage of fundamental Christians (Gladin, 1987), indicating that this sample consisted of a different segment of the

home schooling populations than has been previously investigated.

The parent who was the primary home teacher for the child was usually the mother (95.8% of respondents) , with an average age of 36.99 years, and an average of 15.00 years of formal education. This agreed with the findings of other researchers (Greene, 1984; Gustavsen, 1981; Schemmer, 1985; Taylor, 1986), suggesting that home schooling parents tend to be well-educated.

The motivations for home schooling were varied, but the majority of parents (65.6%) indicated that their primary motivation for home schooling was to provide a "better social/emotional environment" for their children. This supported the findings of Gustavsen (1981), that social-emotional motives were predominant for most families, but conflicted with Gladin's (1987) findings of predominantly religious reasons.

The children participating in the study had an average age of 8.93 years and a mean grade-equivalent of 3.51. They began home schooling at an average age of 6.39 years, suggesting that most home-schooling parents tend to begin home schooling when their children are approximately the same age as their peers who are beginning first grade in conventional schools.

The children in the sample had completed an average of 2.63 years of home schooling at the time of this study, and 54.0% had previously attended a conventional school. Those who had done so had attended for an average of 2.66 years before beginning home schooling.

The majority of families (67.6%) were independent home schoolers,

operating without the assistance of a teacher from any correspondence school or tutorial support organization.

Instructional Approach

A factor analysis was perormed on the Likert-scale questions in the Home Schooling Instructional Survey, and four factors emerged as being significant: goal orientation, autonomy, intrinsic motivation, and unstructured format.

Goal orientation reflects an achievement-oriented attitude by the parent, related to higher expectations for the child's academic achievement, pressure to progress at a pre-determined pace, and consistent evaluations by the parent. A large majority of the parents (91.5%) reported a "moderate" to "low" expression of this factor, indicating an instructional approach that is predominantly process oriented, rather than goal oriented, in which academic achievement is not the primary objective, children progress at their own pace, and parents do not frequently evaluate and correct their children's work.

Autonomy involves the extent to which the child is given freedom of choice and activity in the learning process. In addition to questions relating to choice and freedom, this factor also includes items that suggest a more extensive use of play and physical activity in learning, and a decreased tendency for parents to evaluate the child's work. For this factor, 93.8% of the parents were in the "moderate" to "high" range, suggesting a tendency for parents in this sample to give their children a significant

amount of autonomy in the learning process and to utilize play and physical activities more frequently.

The intrinsic motivation factor consisted of items that indicated the unwillingness of the parents to use strategies such as tests or external rewards to motivate learning. It also consisted of items that indicated a disagreement with both early formal learning and academic achievement as a priority in the learning process, but a tendency to use play and physical activities in the learning process and a willingness to trust their children to make "significant decisions" about their education. A sizable majority (96.0%) of the parents were within the "moderate" to "high" range on this factor, suggesting a tendency for parents in this sample to encourage intrinsic motivation and more experiential approaches to learning, and to permit children to learn at their own pace, rather than encouraging early formal education.

The final factor, unstructured format, was composed of questionnaire items that, as a group, favored an "unstructured" rather than "structured" format for the learning process. These items included a parental belief that there is no "best" time for learning, a tendency for parents to develop their own curricula from a variety of sources, rather than following exclusively the guidelines of professionally-prepared curricula, and a willingness to let children determine their own schedule for doing schoolwork. Of those parents responding, 90.9% fell within the "moderate" to "high" expression of this factor, indicating a tendency for parents in this sample to use predominantly unstructured approaches to learning.

Relationships Between Demographic Variables and TTCT Scores

Correlation and chi-square analyses were conducted among the three domains previously mentioned (demographics, instructional factors, and TTCT subscale scores) to determine if any significant relationships sould be found. Between the demographic variables and the TTCT scores, there were three variables or clusters of variables that proved to be consistently significant: prior schooling experience, household income, and the age and educational level of the home teacher.

The cluster of variables relating to the nature of the previous schooling experience tended to move in unison with each other, but in opposite directions. This cluster included the number of years spent in a conventional school, the number of years spent in home schooling, and the age at which home schooling began. The number of years spent in a conventional school was found to be significantly correlated in a positive direction with three subscale scores on the TTCT: fluency, originality, and elaboration. Conversely, the number of years spent in home schooling was negatively related to fluency and originality, and also to abstractness of titles. The third variable in this cluster, the age at which the child began home schooling, exhibited postive correlations with both fluency and originality. Together, these variables suggested that higher scores on TTCT are related to greater number of years in conventional schools, a later home schooling starting age, and less years in home schooling.

The second variable that was consistently found to be significantly

correlated was household income. This was related in a positive direction to three of the TTCT subscales: fluency, originality and elaboration, indicating that children who have higher scores on these subscales tend to come from families that have higher household incomes.

The third variable that demonstrated a consistent significant correlation was also a cluster, composed of two variables involving the home teacher: age and educational level. The home teacher's age was significantly correlated in a positive direction with the children's scores on the fluency, originality, and elaboration subscales. The home teacher's educational level was also significantly correlated positively with three subscales: abstractnesss of titles, elaboration, and resistance to premature closure. As a group, the correlations found in these two variables suggest that children who score more highly on the TTCT subscales tend to have parents who are older and who have higher educational levels.

Relationships Between Instructional Factors and TTCT Scores

There were very few relationships between instructional factors and children's TTCT scores, suggesting that instructional approach is not as significant as family demographics in determining the creativity of home-schooled children. Overall, there were only two instructional factors that were found to have significant correlations with children's TTCT scores: intrinsic motivation and goal orientation.

Intrinsic motivation demonstrated a significant negative correlation with children's scores on the originality subscale of the TTCT, indicating

that children with higher originality scores tended to have parents who encouraged an extrinsic, rather than intrinsic, motivational orientation in their instructional approach. This result conflicts with the findings of Amabile (1983) that intrinsic motivation is positively related to creativity, but is supported by Torrance's (1965) findings that extrinsic motivational techniques can increase scores on originality. This discrepancy in findings suggests that the relationship between creativity and motivational orientation may not be strictly linear. Rejskind (1982), in his review of the literature concerning autonomy and creativity, suggests that the relationship between creativity and autonomy may be an inverted U-shaped curve, in which low creativity relates to both low and high levels of autonomy, while high creativity relates only to environments that provide moderate degrees of autonomy along with moderate degrees of control. Since autonomy and intrinsic motivation may be related to some extent, as Amabile (1983) has suggested, this "inverted U" relationship may also apply to the relationship between intrinsic motivation and creativity. To briefly test this hypothesis, the intrinsic motivation scores for the present study were recoded into three ranges (low, medium and high), and TTCT originality scores were recoded into two ranges (low and high), and a contingency table and chi-square calculated. Although the chi-square was not significant (p =.12), there was a tendency for those in the "medium" intrinsic motivation range to score in the "high" range of originality more frequently than would be expected (53 observed, 49 expected). However, since this present study was not specifically designed to investigate this

hypothesis, further research is needed to explore this possibility more extensively.

Intrinsic motivation was, however, positively correlated with children's scores on the abstractness of titles subscale, indicating that those parents who encouraged intrinsic motivation in their instructional approach tended to have children who scored higher on the abstractness of titles subscale.

The abstractness of titles subscale was also involved in the second significant correlation of instructional factors and TTCT scores, a negative correlation between goal orientation and abstractness of titles, indicating that children who obtained higher scores on this subscale tended to have parents who encouraged less goal orientation in their instruction.

Relationship of Demographics to Instructional Approach

The demographics of the family were found to have a significant relationship with the type of instructional approach used by the home schooling parents. There were four variables or clusters of variables that demonstrated significant relationships with instructional approaches: the number of children being home schooled, the prior schooling experiences of the children, the parents' motivations for home schooling, and enrollment in a home study school.

The number of children being home schooled correlated significantly with all four factors of instructional approach, but in varying directions. Autonomy, intrinsic motivation and unstructured format were positively

correlated, while goal orientation was negatively correlated, indicating a tendency for parents with more children being home schooled to provide more autonomy, encourage more intrinsic motivation, utilize a less structured format, and incorporate more of a non-goal orientation in the learning process.

The cluster of variables relating to the child's prior school experience also affected all factors of the instructional approach. The number of years of home schooling showed a significant positive correlation with autonomy, intrinsic motivation and unstructured format, suggesting that parents who have home schooled longer tend to provide greater autonomy, encourage intrinsic motivation, and use an unstructured format. However, for children who had spent a greater number of years in conventional schools, this trend was reversed, with number of years of conventional schooling significantly related in a negative direction to both intrinsic motivation and an unstructured approach, but positively related to goal orientation, indicating that parents tended to rely more on goals, extrinsic motivation, and structured approaches for children who had spent more time in conventional schools. The final variable in the prior schooling cluster, the age at which a child began home schooling, demonstrated significant correlations, with different beginning ages relating to different approaches. The younger a child began home schooling, the more parents tended to use non-goal oriented approaches and to encourage intrinsic motivation and greater autonomy. As the number of years of home schooling increased, parents tended to use more goal-oriented approaches, but also increased the

amount of autonomy provided the child.

The third variable that showed a strong correlation with instructional approach was the parents' motivation for home schooling. Parents who reported that their primary motivation was "to provide a better social/emotional environment" scored significantly lower on goal orientation, but higher on intrinsic motivation and unstructured format than those parents who were motivated by religious, academic or other concerns, indicating that parents who were motivated by social/emotional concerns had a greater tendency to view learning as a process, rather than a product.

The final variable that exhibited a relationship with instructional approach was whether the child was learning solely under the guidance of the home teacher, or formally enrolled in a correspondence school or tutorial support organization and working under the supervision of teacher from that organization. Parents of children who were formally enrolled in any kind of tutorial support organization tended to have a more structured format than those parents who were working independently.

Predictors of Creativity in Home-Schooled Children

Multiple regression techniques were used to determine the best predictive model for higher scores in each of the subscales of the TTCT and also the global mean score, using all of the instructional and demographic variables as potential predictors. The components of the best predictive model varied for each subscale of the TTCT, but several variables emerged

as consistent predictors across the subscales.

Higher household income and increased number of years that the child had spent in a conventional school were the strongest overall predictors of higher TTCT scores, emerging as significant predictors in four out of five of the subscales and also on the global mean score. Increased age of the home teacher and lower children's grade levels were also strong predictors, occurring in three out of five subscales and on the global mean score. Increased number of children being home schooled was a significant predictor in two out of five subscales and also on the global mean score. Higher home teacher educational levels and extrinsic motivational orientations were significant predictors of higher scores in two out of the five subscales. Other variables that entered into at least one of the five subscales were autonomy and the number of years of home schooling.

Conclusions

This study investigated two primary research questions: (1) What differences exist in the instructional approaches used by home-schooling parents? (2) Are these differences in instructional approach related to variations in the creativity of home-schooled children?

The results of this study indicate that there are significant differences in the instructional approaches used by home schooling parents. These differences tend to revolve around four primary areas: goal orientation, autonomy, motivational orientation and instructional format. These

instructional factors were primarily related to four variables: the number of children being home schooled, the prior schooling experiences of the children, the parents' motivations for home schooling, and enrollment or non-enrollent in a home study school.

The second question addressed in this study concerned the relationship of instructional approach to the creativity of home-schooled children, as measured by the Torrance Tests of Creative Thinking (Figural Form A). The results of this study indicate that creativity is not related to variations in the home schooling instructional approaches themselves, but to a combination of factors, both demographic and instructional, that lie outside the home schooling instructional domain. These factors include such variables as household income, the age of the home teacher, and the extent to which home-schooled children have attended conventional schools in the past.

These findings tend to call into question the claims of many home-schooling parents that home schooling leads to creativity, at least insofar as it is measured by the TTCT, but the results of this study do not necessarily refute the claims of home-schooling advocates that home-schooled children are more creative than their conventionally-schooled peers. It is possible that children who are more creative tend to gravitate into home schooling, but since this study was not designed to address this question, assumptions or speculations about this are unwarranted at this time.

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Appendix A

Cover Letter Sent With Survey Materials

Oak Meadow School
Post Office Box 712
Blacksburg, VA 24063
(703) 552-3263

December 29, 1989

Dear Home Schooling Parent,

As the problems we face as human beings become broader and more complex, the need for individuals who can think creatively becomes increasingly important. In recent years, many educators have recognized this need, and have begun to explore educational approaches that have the potential to foster creativity in children. Home schooling is an educational approach that offers promise in this regard, but so far no one has studied the relationship between home schooling and creativity.

In addition to my responsibilities with Oak Meadow School, during the past three years I have also been a graduate student at Virginia Polytechnic Institute and State University, working on my doctorate in education. To finish the requirements for this degree, I am conducting a study of the relationship between home-schooling instructional approaches and children's creativity. The results of this study will provide important information about the creativity of home-schooled children, and will also add to our understanding of the relationship between creativity and instructional approaches.

Your name was selected at random from the list of parents who have purchased K-8 home schooling materials from Oak Meadow within the past six months. For the results of this study to be truly representative, we need to have as many people as possible participate. To do so, you only need to do two things: complete the enclosed *Home Schooling Instructional Survey,* and give your child the creativity exercise, *Thinking Creatively With Pictures*. Both of these activities take only a few minutes, and can be easily included as part of your regular learning process. Complete instructions for both are enclosed.

All information you give will be kept strictly confidential. The survey and creativity exercise have identification numbers on them for mailing purposes only, so that I can check your name off of the mailing when your materials are returned. Results of this research study will be available through Oak Meadow in June, but if you would like a summary of the

results, just print "Copy of Results Requested" on the back of the return envelope and print your name and address below it. Please do not put this information on the survey or creativity exercise itself. The deadline for mailing your completed materials is January 26, 1990. I appreciate your cooperation, and look forward to receiving your responses.

Sincerely,

Lawrence T. Williams
Director

Appendix B

Instructions to Participants

Instructions

1. Complete the *Home Schooling Instructional Survey*, following the instructions included in the questionnaire. As mentioned in the enclosed letter, your responses will be kept strictly confidential, so please be as honest as possible.

2. Give your child the creativity exercise, *Thinking Creatively With Pictures*. If you are home schooling more than one child, give the exercise to the oldest child being home schooled. Don't present it as a "test," but as a game in which you are supposed to see how many things you can think of in a set amount of time. Your child may use a pen, pencil (regular or colored) or crayon. Introduce the exercise with a comment similar to the following:

   "In this booklet are three things for you to do. All of them will give you a chance to use your imagination to think of ideas and to put them together in various ways. For each activity, think of the most interesting and unusual ideas you can. After you think of an idea, keep adding to it and building it up so that your picture tells an interesting story. I 'm not going to help you think of ideas, because I want to see what you think of all by yourself. For each part, you have ten minutes, so make good use of your time. Work fast, but don't rush. Try to keep thinking of ideas, but if you run out of ideas before I say 'Stop,' wait until the time is up."

   Then, turn to page 2 (*Activity 1 - Picture Construction*) and ask your child to read (or read to him/her) the instructions on that page. Explain that the time limit is TEN MINUTES, and ask if he/she has any questions. If your child can't write, he/she can tell you what title to give to each drawing and you can write it in the appropriate blank. If there are no questions, begin the exercise, and stop when ten minutes is completed.

   Next, turn to page 4 (*Activity 2 - Picture Completion*) and follow the same procedure. The time limit for this section is also TEN MINUTES.

   Finally, turn to page 6 (*Activity 3 - Lines*) and follow the same procedure. The time limit for this section is also TEN MINUTES. When this last section is completed, the creativity exercise is finished. Look over and discuss the three sections with your child and compliment him/her on the work completed.

3. Mail the *Home Schooling Instructional Survey* and *Thinking Creatively With Pictures* in the self-addressed stamped return envelope no later than January 26, 1990. If you would like a summary of the results of this study, write "Copy of Results Requested" on the back of the return envelope and print your name and address under it. Results will be available in June, 1990.

Appendix C

Home Schooling Instructional Survey

HOME SCHOOLING INSTRUCTIONAL SURVEY

Instructions: This survey should be completed by the individual who is the primary home teacher of the child who completes the creativity exercise. Please place a check beside the appropriate response or write the information requested in the blanks provided.

Family Attributes

1. Which of the following geographical regions of the United States best describes your location?

___ Northeast
___ Southeast
___ Midwest
___ Northwest
___ Southwest

2. Total number of immediate family members living in your household:

___ Adults ___ Children

3. Number of children currently being home schooled: ___ Children

4. Which of the following categories best describes the religious affiliation of your family?

___ Fundamental Christian
___ Other Christian
___ Non-Christian religion
___ "New Age"
___ No religious affiliation

5. Approximate total family earnings for the past fiscal year:

___ Less than $10,000
___ $10,000 - 19,999
___ $20,000 - 29,999
___ $30,000 - 39,999
___ $40,000 - 49,999
___ $50,000 or more

Instructional Attributes

Instructions: This section requests information about the instructional approach that you use with your child. If you have more than one child being home schooled, provide information regarding the child who will complete the creativity exercise.

The Parent

6. What is your age? ___ Years

7. What is your relationship to the child?

   ___ Mother ___ Father ___ Other

8. How many years of formal education have you completed? ___ Years

9. Which of the following best describes your motivation for home schooling? (Choose only one)

___	To provide a better academic environment environment for my child	___	To provide a better social-emotional environment for my child
___	To impart fundamental Christian values to my child	___	To impart "New Age" values to my child

The Child

10. Child's age: ___ Years

11. Child's gender: ___ M ___ F

12. Child's school grade equivalent: Grade ____

13. Age at which this child began home schooling: ___ Years

14. Number of years of home schooling this child has completed:___ Years

15. Has this child ever attended a conventional school? ____ Y ____ N

16. If "Yes", how many years did he/she attend? ____ Years

17. Is this child's work currently being evaluated by a teacher from a home study school? ___ Y ___ N

The Learning Process

Instructions: This section requests information about your approach to home schooling. For each statement, place a check beside the choice that most closely represents your response to the statement given. If you are home schooling more than one child, choose the response that relates most closely to the child who will be completing the creativity exercise.

18. Do you work with your child in the learning process, or does he/she work independently?

    ___ I almost always work with my child
    ___ I frequently work with my child, but occasionally he/she works independently
    ___ I occasionally work with my child, but frequently he/she works independently
    ___ My child almost always works independently

19. Do you integrate subject areas in your teaching, rather than teaching them separately?

    ___ I always integrate subjects
    ___ I frequently integrate subjects, but occasionally I teach subjects separately
    ___ I occasionally integrate subjects, but frequently I teach subjects separately
    ___ I always teach subjects separately

20. Do you trust in your child's ability to make significant decisions about his/her education?

    ___ Almost never
    ___ Occasionally
    ___ Frequently
    ___ Almost always

21. To what extent do you monitor your child's progress while he/she is engaged in a creative activity?

    ___ I almost always leave my child alone in creative activities
    ___ I frequently leave my child alone, but occasionally watch him/her closely
    ___ I occasionally leave my child alone, but frequently watch him/her closely
    ___ I almost always watch him/her closely

22. To what extent is your child free to use resource materials (books, tapes, paper, crayons, paints, tools, etc.) in the learning process?

___ He/she must ask for all resource materials
___ He/she must ask for most materials, but some materials are readily available and may be used freely
___ Most materials are readily available and may be used freely, but he/she must ask to use some materials
___ All resource materials are available and may be used freely

23. Do you develop your own curriculum, or follow the guidelines of a professionally-developed curriculum?

___ I always follow a professionally-developed curriculum
___ I usually follow a professionally-developed curriculum, but adjust it occasionally to meet my child's needs and interests
___ I usually develop my own curriculum, but occasionally refer to a professionally-developed curriculum
___ I always develop my own curriculum to meet my child's needs and interests

24. Do you base your evaluation of your child's academic progress upon written test results, or your own observations of his/her abilities?

___ I almost always use test results to evaluate
___ I frequently use test results to evaluate
___ I occasionally use test results to evaluate
___ I almost never use test results to evaluate

25. Do you encourage your child to use learning time productively?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

26. Do you let your child make decisions about what subjects he/she should study?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

27. Do you use learning materials (books, tapes, charts, diagrams, etc.) that either you or your child have made?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

28. How often do you correct your child's work?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

29. Do you actively seek advice or ideas on how you can improve yourself as a teacher?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

30. To what extent do you consider your child's academic achievement to be your top priority for the learning process?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

31. Do you use play and physical activities in the learning process?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

32. Do you keep your child's written and artistic work to review later and evaluate his/her progress?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

33. Do you use external rewards to help motivate your child to learn?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

34. Do you let your child determine his/her daily schedule for doing schoolwork?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

35. Do you include activities in your local community as part of the learning process?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

36. Do you focus your child's attention on upcoming tests to motivate him/her to learn?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

37. Do you encourage cooperation rather than competition in the learning process?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

38. To what extent do you feel that you are responsible for the overall success of the learning process?

___ Not at all responsible
___ Somewhat responsible
___ Largely responsible
___ Completely responsible

39. Which category most closely describes your instructional approach?

___ Structured
___ Tends to be structured
___ Tends to be unstructured
___ Unstructured

40. How many hours per week do you estimate that your child watches television (either network or VCR)?

___ Less than 5
___ 5-10
___ 10-20
___ More than 20

41. Which of the following resources do you use at least occasionally in the learning process? (Check as many as you use)

___ Printed materials
___ Games
___ Science equipment
___ Audio tape recorder
___ Art and craft supplies
___ Musical instruments
___ Computer
___ Video cassette recorder
___ Tools
___ Animals

42. How often does your child become deeply engaged in a learning activity by him/herself?

___ Almost never
___ Occasionally
___ Frequently
___ Almost always

43. How many hours per week, on the average, do you schedule for the following subjects? (If you don't schedule time for a subject, mark "0")

___ Math ___ Science ___ Arts/Crafts ___ Physical Ed
___ English ___ Social Studies ___ Music ___ Other

44. How many hours per week, on the average, does your child actually spend on the following subjects?

___ Math ___ Science ___ Arts/Crafts ___ Physical Ed
___ English ___ Social Studies ___ Music ___ Other

45. What time of the day do you feel is the best time for learning?

___ Morning ___ Evening
___ Afternoon ___ I don't feel there is a "best" time

46. For each subject below, indicate whether you schedule it during the morning (1), the afternoon (2), the evening (3), or not at all (0).

___ Math ___ Science ___ Arts/Crafts ___ Physical Ed
___ English ___ Social Studies ___ Music ___ Other

47. Do you require your to child to study a specific subject even if he/she doesn't want to?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

48. To what extent do you blame your child when he/she doesn't study a particular subject as much as you want?

___ Almost never ___ Frequently
___ Occasionally ___ Almost always

49. How often do you find it necessary to delay or tell your child to "wait a minute" when he/she asks for help on a learning activity?

___ Almost Never ___ Frequently
___ Occasionally ___ Almost always

50. Do you agree or disagree with the view that early formal learning is necessary for your child to reach his/her full potential?

___ Strongly agree ___ Disagree
___ Agree ___ Strongly disagree

Appendix D

Torrance Tests of Creative Thinking (Figural Form A)

The Torrance Tests of Creative Thinking (Figural Form A) is not included due to copyright restrictions. Information about the TTCT is available from:

Scholastic Testing Service, Inc.

480 Meyer Road

Bensenville, IL 60106-8056

Appendix E

Factor Loadings From Orthogonal-Varimax Rotation

Factors

Questions	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
18	-.188	.433	.604	-.088	-.18	-.148	-.005	-.041
19	.183	.093	-.087	.043	.033	-.783	-.139	-.093
20	-.059	.018	.563	.261	.326	.298	-.193	.011
21	.147	.05	-.296	.038	-.12	-.032	.046	-.097
22	-.028	-.163	.054	.031	.01	-.054	-.007	.098
23	-.188	.11	-.138	.283	.026	.187	-.193	-.124
24	-.257	-.078	.046	.125	.667	-.048	-.014	-.043
25	.668	-.032	.067	-.144	-.012	.13	.086	.162
26	.028	.19	.409	.524	.056	.231	-.216	.028
27	-.046	-.115	-.052	-.081	.091	.176	.056	.152
28	.639	.075	-.315	-.142	.014	-.273	.253	.041
29	.116	-.015	-.078	-.058	.18	.69	-.085	-.058
30	.65	-.123	-.086	-.069	-.365	.03	.114	-.146
31	-.168	-.223	.343	-.244	.06	.258	.116	-.355
32	.194	-.061	-.026	-.827	-.035	.128	-.068	-.023
33	.435	-.112	-.038	.037	-.496	-.058	-.105	-.262
34	-.169	.169	.502	.349	.166	.011	.13	.145
35	-.014	-.216	.227	.059	.134	.045	.126	.026
36	-.024	-.192	.044	-.015	-.777	-.198	.072	.009
37	-.006	-.06	.061	.019	.012	.043	-.084	.869
38	.526	-.106	-.074	-.108	-.055	-.074	-.176	.013
39	-.252	-.154	.169	.219	.309	.021	-.136	.009
40	.034	-.084	-.073	-.033	.002	-.104	-.036	-.015
41	-.13	.163	.086	-.167	.073	.134	-.045	.158
42	-.053	-.023	.8	.005	.027	-.042	.018	.037
45	-.069	.107	.112	-.083	.116	.076	.006	.086
47	.406	-.088	-.216	-.011	-.123	-.076	.455	.123
48	.094	.036	.008	.023	-.069	.053	.894	-.11
49	-.084	.852	.081	.13	.075	-.072	.026	-.035
50	-.085	-.257	.251	-.053	.598	-.06	-.092	-.021

Factors

Questions	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14
18	.099	-.012	.147	.127	-.231	-.203
19	-.123	-.008	-.197	.205	.019	.022
20	-.09	.102	.1	.116	-.1	.151
21	.027	.099	-.044	-.032	.767	-.014
22	.025	-.034	.095	.852	-.059	-.048
23	.231	.116	.395	.13	-.5	-.071
24	.262	-.061	.107	-.068	.182	.254
25	-.125	.07	-.395	.073	.202	-.193
26	.024	.014	.299	.295	-.034	.14
27	.068	-.007	.108	-.047	.002	.786
28	-.119	.015	-.066	.16	.075	.111
29	.043	-.179	-.101	.15	-.057	.252
30	.068	.002	.057	-.16	.07	-.176
31	.265	.114	-.076	.171	-.11	.162
32	.096	.042	.048	.023	.009	.109
33	.296	.023	-.084	.044	.076	.303
34	.079	.01	.373	.282	-.034	-.151
35	.669	-.17	-.053	-.088	-.338	-.013
36	-.048	-.141	-.053	-.074	.204	.028
37	.145	-.003	.046	.113	-.066	.158
38	-.279	-.037	-.113	-.261	.079	.33
39	.16	-.09	.582	.024	.156	-.287
40	-.009	.931	-.002	-.039	.056	-.007
41	.767	.093	.129	.098	.162	.077
42	.163	-.127	.034	-.047	-.081	-.048
45	-.027	.039	.792	.111	-.119	.187
47	-.021	.098	-.256	-.387	-.237	.035
48	.042	-.049	-.021	.014	.097	.028
49	-.005	-.091	.04	-.166	.047	-.098
50	.068	-.243	.373	.03	-.09	.042

VITA

Lawrence Thomas Williams, Jr.

EDUCATION:

Ed.D. Curriculum and Instruction, May, 1990, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

M.A. Elementary Education, August, 1974, Adelphi University, Garden City, New York.

B.S. Business Administration, June, 1968, Virginia Polytechnic Institute, Blacksburg, Virginia.

EXPERIENCE:

Graduate Assistant, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, March, 1988 - Present.

- Taught an undergraduate educational psychology class
- Substitute taught in a graduate educational psychology class
- Tutored students in LOGO and Basic programming
- Assisted computer users with hardware/software problems
- Maintained computer hardware and software

Director, Oak Meadow Educational Services, P.O. Box 712, Blacksburg, Virginia, July, 1987 - Present.

- Supervised production of K-8 home-study curricula
- Revised home-study curricula for grades K-8
- Produced audio tapes for home-schooling parents
- Trained personnel in use of computer system
- Maintained computer hardware and software

Director, Oak Meadow School, P.O. Box 1003, Ojai, California. August, 1975 - July, 1987.

- Designed and supervised the development of a national home-study program for grades K-12
- Authored home-study curricula for grades K-8
- Authored and supervised the development of a correspondence training program for teachers
- Developed a computer system for school records

- Developed a telecommunications system to expedite the return and evaluation of home-study student assignments

PROFESSIONAL ORGANIZATIONS:

Phi Delta Kappa Educational Fraternity
American Educational Research Association
Eastern Educational Research Association

COMPUTER LANGUAGES:

LOGO, Basic

ACADEMIC HONORS:

Phi Kappa Phi Honor Society
Instructional Fee Scholarship (1988-89)
Instructional Fee Scholarship (1989-90)

PUBLICATIONS:

Williams, L.T. (1987). Discipline. Mothering, 45, 22-26.

Williams, L.T. (1986). Oak Meadow Teacher Training Course. Ojai, California: Oak Meadow Publications

Williams, L.T. (1984). The Art of Education. Ojai, California: Oak Meadow Publications

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Williams, L.T. (1976). Life and Form in Education. The American Theosophist, Special Issue on Education and Children. Spring.

PRESENTATIONS:

Williams, L.T. (1989, February). Home schooling: A review of research. Paper presented at the annual meeting of the Eastern Educational Research Association. Savannah, Georgia.

Williams, L.T. (1984, April). Home schooling and the development of bi-lateral thinking. Public lecture sponsored by the Student's Association, University of California, Santa Barbara.

Williams, L.T. (1984, March). Home schooling and creativity. Keynote address at the annual meeting of the Home Educators Association, Seattle, Washington.

CONFERENCE SESSION CHAIR:

Session Chair - Conceptions and Misconceptions of Science and Math. Annual meeting of the Eastern Educational Research Association, Savannah, Georgia, February, 1989.

WORKSHOPS:

Omega Institute, Rhinebeck, New York. Summer, 1988. Conducted a five-day workshop for home-schooling parents.

Clearbrook Foundation, Afton, Virginia. Fall, 1988. Conducted a series of five one-day workshops on home schooling.