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CORRELATES OF SOCIAL COMPETENCE AMONG MILDLY MENTALLY
RETARDED SCHOOL-AGED CHILDREN

The University of North Carolina at Greensboro

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CORRELATES OF SOCIAL COMPETENCE AMONG
MILDLY MENTALLY RETARDED
SCHOOL-AGED CHILDREN

by

Sallie Jenkins Person

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Approved by

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APPROVAL PAGE

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Social competence is defined as the child's ability to interact appropriately and to initiate changes within the social environment. Social success among mildly retarded individuals in adulthood is assumed to be related more to adequate development of socially competent behaviors than to hindrances imposed by their cognitive limitations.

The present study was designed to examine correlates of social competence in mildly retarded school-aged children. Social competence was operationally defined as the deviation social quotient of the Vineland Social Maturity Scale. Independent variables included age, sex, race, income level, I.Q., language ability, gross motor ability, and number of years in a preschool program. Language and gross motor abilities were operationalized in age equivalents from standardized instruments typically used in these disciplines. The hypothesis that language ability and preschool experience would account for more of the variance in social competence than would I.Q. was not supported.

The results of the analyses of 66 subjects aged 5 to 12 years indicated that number of years in preschool, age, and the highest income used (\$11,288-15,000 per year) accounted for significant amounts of variance in competence. All independent variables combined explained a total of 30%

of the variance. Partitioning of subjects into three age levels indicated significantly higher competence scores for children aged 5.0-5.11 than for those aged 9.0-12.2. This may be explained by the fact that younger children also had experienced more years in a preschool program than had older children. Other investigated issues not supported included the greater power of gross motor abilities for boys than for girls and of language for girls than for boys at each of three social competence levels. As expected, income level and race had no significant effect on competence.

Suggestions for future research included emphases on competent classroom behavior, differences in competent behavior for children in the mild range of retardation and normal children, and the possibility of later or hindered transition in cognitive ability termed the cognitive shift phenomenon. Limitations of measurement techniques and suggestions for more naturalistic observations of competence were also discussed.

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CHAPTER I
INTRODUCTION

Statement of the Problem

In recent years, many efforts have been made to describe the results of adequate social competence. Numerous correlational studies have shown that socially incompetent children manifest a variety of adjustment problems in later life such as school failure (Zigler & Trickett, 1978), delinquent behavior (Roff, Sells, & Golden, 1972), and lack of social interactive behaviors (Gottman, Gonso, & Rasmussen, 1975). Still others have attempted to define the components of social competence among various age groups within the normal population as well as those within different groups of handicapped children. The recent preponderance of research in this area can be attributed to several factors. First, behaviors such as social skills, goal orientation, and emotional stability associated with social competence are necessary for even partial functioning in society. Second, while various proposed components of competence, such as self-concept, communication, intelligence, and personality have been empirically researched at length for many years, most general competence research has been theoretical and speculative.

Among the mentally retarded population, social competence has become increasingly important to clinicians and researchers. The retarded school-aged child is now exposed to many opportunities in the regular classroom as a result of the emphasis on mainstreaming due to PL 94-142. There are obviously many social behaviors necessary for these children to function adequately on regular placements. Teachers need to be aware of these behaviors.

Purpose of the Study

The purpose of this research is to study the relation of several variables to levels of social competence of school-aged children with intelligence levels within the mild range of mental retardation. The dependent variable is social competence as operationally defined by deviation social quotients of the Vineland Social Maturity Scale. The independent variables include measures of each subject's economic status, sex, race, number of years in a preschool program, language abilities, I.Q., age, and gross motor skills.

CHAPTER II
REVIEW OF THE LITERATURE

Problems and Efforts in Defining Social Competence

Although poor adaptive behavior has been a topic of substantial interest, research in the area was limited by the lack of agreement in definition and the variety of methods used to assess competency. The works of R. W. White (1959) and later Smith (1968) were among the first to attempt to conceptualize a theoretical framework for the study of competence. These researchers suggested that children possessed an inherent motivation to affect either positive or negative changes in their environments. More recently, McClelland (1973) argued for the assessment of competence, as opposed to the sole emphasis on standardized measures of intelligence, and described a minimal relationship between these two constructs. McClelland suggested that in order to test for competence, testers should observe the subject in numerous situations requiring adaptive behavior. Further, instead of observing specific job or age appropriate behaviors, McClelland preferred that clusters of behaviors, such as general communication, patience, goal setting, and ego development be studied. He reasoned that because the goal of education was preparation for functioning in life, not solely academic achievement in which I.Q. accounts for

approximately half the variance, competence was the more logical of the two areas to be assessed.

Hilliard (1978) also included aspects of motivation and attitude, social skills, and basic store of information in describing elements of competence. He added that a child's perception of the environment, the ability to be an active learner, the experience of a sense of continuity in growth, a sense of personal and group identity, and expanded rates of exposure to objects and experiences were other intrinsic factors involved in competency. The difficulty in measuring these aspects was a limitation discussed in Hilliard's proposal.

O'Malley (1977) agreed, after his intensive review of literature related to competence, that the field was still hypothetical and rampant with numerous variables. He concluded that the first obstacle was to conceptualize at least the major components for research and then to include other variables for various groups of subjects.

While concentrating mainly on preschool subjects, B. L. White's (B. L. White, Kaban, Marmor, & Shapiro, 1972) work with the Harvard Preschool Project was included as the first naturalistic, longitudinal study with the goal of defining the characteristics of the competent child. Starting with the assumption that competence was not well-defined, these researchers also concluded that this construct could not be measured in traditional standardized ways, even if

agreement were reached on components. White found that teachers in preschool programs were adept at selecting "competent" children but were unable to state the criteria of competence. Teachers in 17 preschool classrooms nominated 400 children on varying degrees of competence, and 51 of these were classified into high and low competence groups. Fifteen trained observers recorded 1,100 three-minute samples of behavior in the home and at school weekly over an 8-month period. Results from standardized instruments assessing motor, sensory, and intellectual levels were also used. From these data on the 13 least competent and the 13 most competent children, these researchers listed 21 components in their definition of a competent preschooler. Among those components were the abilities to get and maintain adult attention, use adults as resources for information, express affection and hostility to adults and peers, lead and follow peers, compete, involve oneself in adult behaviors, communicate adequately, and to use dimensions of inherent intelligence (B. L. White, 1975). Their emphasis was on the distinction between what children can do, as measured by an I.Q. test, and what children actually do, or their daily competence.

Baumrind (Baumrind, 1971; Baumrind & Black, 1967) studied the child-rearing correlates of competence by initially assuming that children's behavior should be viewed as organized into identifiable clusters rather than single traits. She

chose self-control, approach-avoidance tendency, self-reliance, subjective mood, and peer affiliation as the behavioral dimensions and spent 14 weeks observing 110 preschool children between the ages of 3 and 4. From these observations, three subgroups of children evolved who displayed patterns of competency, withdrawal, or immaturity. The competent group was rated high on mood, self-reliance, approach, and self-control. Baumrind and her colleagues also observed the interactions between the children and their parents on the dimensions of control, maturity demands, parent-child communication, and nurturance and described three types of parents: authoritarian or controlling, authoritative, and permissive. The authoritative parents tended to encourage independence while providing nurturance, to guide rather than direct and to be willing to compromise with their children. This authoritative parenting style was found to be most related to the development of competence. Baumrind (in Maccoby, 1980) later used the terms social agency and cognitive agency to differentiate competencies because she believed competence implied a measure of I.Q.

While the B. L. White and the Baumrind studies were reviewed for their comprehensiveness, it was apparent that their findings did not easily generalize to older children or to abnormal children. Further, White included only middle-class children in his research and Baumrind excluded "anticonforming" parents, neglecting parents, and black

families from her work. Baumrind also found a higher proportion of Jewish families and relatively few only children within the sample.

In response to Zigler and Trickett's (1978) observation on the lack of appropriate measures to record success of early intervention programs, Wright (1980) studied over 100 three- and four-year-olds to attempt to identify factors of social competence. From the literature, Wright proposed that the frequency, quality, and direction of responses were necessary to consider. Using behavior observations over a 5-year period, Wright found that child-to-child interactions occurred more frequently than child-adult interactions, child-adult interactions were not stable over time and therefore were not relating to other measures of adaptive ability, and the ability of a child to receive a response as a result of an initiated contact was more related to competence than the quality of the attempt. Wright concluded that the best indicator of competence was the ability to influence the social environment, or, again, to elicit responses.

Relationship between Social Competence and Income

Due to the notion that social competence was culturally defined (McFall, 1982), its relationship to social status was relevant. Gottman, Gonso, and Rasmussen (1975) studied 198 third- and fourth-grade students from lower- and middle-income schools in part to determine the effect of social class

on measures of social skills, social behaviors in the classroom, and friendship choices or peer popularity. While no significant interaction effects were obtained for social class when analyzing the social skills variable, there was, as expected, an interaction found between social class and grade level. From the third to fourth grade, lower-income children's knowledge of how to make new friends increased, while this ability decreased for middle-income students. Based on the social behaviors in the classroom variable, it was found that middle-income children were on task more, verbalized more positive reinforcements to peers and to teacher, received and distributed less negative reinforcement, had a higher proportion of positive to total interaction, and related to the teacher more than lower-income children. Lower-income children increased the amount of negative reinforcements and also the number of interactions, positive and negative, with the teacher. These writers suggested that these class differences were the result of the different emphases between lower- and middle-income schools. Whereas lower-income schools tended to shift toward a task-oriented, academic remedial emphasis, middle-income schools tended not to be as concerned with these areas. Inherent limitations in this type of generalization, however, were amply reviewed by Silberman (1971), and Ryan (1976) in his criticisms of the Coleman Report (Coleman, 1966).

Brewer and Goodman (in Doll, 1953) also found a relationship between measures of social class and social competence. Using parental occupational levels, they found a positive correlation between Vineland social quotient scores and an index of class.

In a review of previous evaluations of the Headstart Program, Washington (1975) presented perspectives of social competence intended to enhance methods of studying the positive effects of Headstart. He agreed that social competence was multidimensional and included biological as well as socio-cultural elements. By the latter element, Washington was emphasizing the necessity of viewing competence as a varying entity that must be assessed with culture-specific values and consequent behaviors taken into account. He argued that the evaluator assessing competence should not only be well informed as to the child's current environmental and racial characteristics affecting performance, but also be aware of relevant class and race historical factors. The implication here was obviously that what was competent for one group would render that individual incompetent in another. Zigler and Trickett (1978) also thought that any assessment which disregarded the child's environment could not be a multifaceted and therefore very useful measure of more than spurious behaviors in later life. Even though the I.Q. test supposedly predicts later school achievement, Zigler and Trickett pointed out that this instrument actually only accounted for approximately half the variability in achievement. They argued

further that the remaining variation must be the result of other variables, then not in use in determining the effects of the Headstart or other early intervention programs. While changes in I.Q. score had been reported among children who had attended preschool programs (Hunt, 1971), these increases resulted more from motivational changes in the subjects due to the intervention rather than to changes in actual cognitive ability. Zigler and Trickett's alternative was to add measures of physical health and well-being, academic achievement, and parental and child motivational factors to the current standard I.Q. test. This combination of factors, they believed, constituted social competence, and taken as a whole, would indicate the positive effects of preschool programs.

Race and Social Competence

In terms of racial distinctions in the use of adaptive behavior measures, the research was nonconclusive. Doll and Fitch (1939), using the Vineland Social Maturity Scale, found no difference between black and white children's social maturity scores. Among adolescent delinquents, Springer (1941) also found no difference in social maturity, using the Vineland, as a function of race. However, Gambaro (1944) reported a significant difference between the races, again using the Vineland as the measure of competence. Another interesting finding was reported by Adams, McIntosh,

and Meade (1973) in their work decades later with the Vineland. With the introduction of adaptive behavior into the definition of mental retardation in 1961 by the American Association of Mental Deficiency, these researchers investigated the differential effect of behavioral scores on white and black children. They found that when I.Q. was the sole basis on which diagnosis of retardation was made, more black children were so labeled. The discrepancy between I.Q. and social competence was significantly greater for black children, with competence being the consistently higher score. Including this behavioral measure with I.Q. for black children reduced their percentage of classified retardates.

Effect of Preschool Experience on Social Competence

A final stage of Wright's (1980) study explored the effects of preschool experience or changes in the peer interaction, quality-effectiveness score over time by sex, socioeconomic status, and age. While no age effects were found, this analysis did suggest that boys tended to score higher than girls, and higher SES subjects scored higher than the low SES subjects. Also, children with more years total in preschool, controlling for SES, were higher scorers. Low SES children with 2 years in preschool, regardless of sex, scored similarly to higher SES children with only 1 year of preschool.

In developing the Social Competence Scale and Symptom Checklists for preschool children, Kohn and Rosman (1972) assumed that social competence was the way in which children managed interpersonal relationships. Studying 407 children aged 36-70 months in six public day care centers, Kohn and Rosman asked teachers to rate the children, using the two instruments. The checklist was developed to measure observable clinical behaviors in the preschool setting and the scale to assess the child's ability to function adequately and adapt in that setting. The factor analysis yielded two factors termed Interest-Participation versus Apathy-Withdrawal and Cooperation-Compliance versus Anger-Defiance. On each instrument, these factors were highly correlated.

Kohn and Rosman concluded that these instruments measured competence in terms of the major adaptive demands made on children by preschool settings. They defined competence then as the abilities to use opportunities for learning, for pleasure, and for peer interaction and to adapt appropriately (neither submissively nor defiantly) to rules and limits which contributed to the orderly preschool experience.

These researchers also studied the persistence of social-emotional functioning from day care to first grade. They found that children who scored high on Apathy-Withdrawal in the day care also scored high on a measure of personality problems in the first grade. Preschool high scorers on Anger-Defiance were also high scorers on measures of conduct

problems and maladjustment when they reached first grade. Conversely, high scorers on Interest-Participation and Cooperation-Compliance scored low on measures of maladaptive behaviors at the first-grade level. These results suggested that later school failure was predicted by poor adjustment to peers, adults, rules and limits in the preschool placement. Further indicated was the obvious conclusion that social skills have an integral place in the preschool curriculum. Unfortunately, this study did not compare scores of children in first grade who had not attended day care at all and did not report measures of overall cognitive ability.

Palmer (1979) provided the most comprehensive review of the longitudinal effect of early intervention on numerous variables. Compiling results of several studies of children who had experienced Headstart compared to children who had received no intervention, Palmer reported positive results. Seven studies investigating percentages of grade retentions reported fewer retentions for the experimental groups. Treatment groups in five studies had significantly fewer children from low-income families placed in classrooms for special education. Five studies assessing differences in reading ability were reviewed by Palmer. One reported higher reading ability for experimental girls but not for boys by the fourth grade. Two studies found significantly higher reading scores, regardless of sex, in the treatment groups. Only one study found no difference in reading ability. One

study testing former Headstart children in the eighth grade found differences between treatment and control groups of up to one full grade equivalent. Eight studies were reviewed to determine the effect of preschool on math ability and four of these reported significantly higher scores for the experimental group. Two reported significantly higher math scores only for experimental girls and one reported nonsignificant but higher scores, regardless of sex. Palmer concluded from numerous studies attempting to assess the effect of preschool on I.Q. that there may be change, but stability of this change over time was not consistent. Palmer's emphasis in this total review was the necessity of assessing program success in terms of improved quality of life for the children as well as their families, lowered cost in total education due to fewer retentions, special class placements, or greater achievement.

Further Sex Differences in Social Competence

Inconsistent sex differences were reported in competency literature. Kohn and Rossman (1972) reported boys' scores as higher than girls' on Interest-Cooperation and no difference on the Cooperation-Compliance variable. Herrmann's (1972) study of children's perceptions of their own social power as it related to peer popularity and teacher approval found no sex-related differences on measures of peer acceptance or competence (defined as "doing well in school" as rated by

teacher). The greatest sex differences were found with the variable power. The relationship between teacher approval and power was significantly higher for girls than boys. Rothenberg (1970) found that the correlation between teacher ratings and social sensitivity among third- and fifth-grade children was greater for males than females. Ford (1982) investigated the relationship between social competence and social cognition (or behavior and social knowledge) to conceptualize the characteristics of competence in adolescents. He found that girls were judged by peers, teachers, and self-ratings to be significantly more socially competent.

Kehle and Guidubaldi (1980) examined the positive effects of formal programming versus informal procedures on enhancing the social integration of educably mentally retarded and learning disabled-behaviorally disturbed elementary school-aged children. Significant sex differences were found on 6 of the 16 criteria used; males were less interested in vocational goals, perceived as more impulsive and less outgoing by teachers, viewed themselves as more competent, liked the classroom setting less, and were perceived by others as more enterprising.

As part of the development of the Health Resources Inventory, a measure of competence of elementary school-aged children, Gesten (1976) studied 592 students to determine factors related to competence. The findings revealed that girls had consistently higher competence scores than boys.

Language and Social Competence

Language ability was cited frequently as a major component of social competence (O'Malley, 1977; B. L. White, 1979; Zigler & Trickett, 1978). Kohn and Rosman listed ability to self-express as a highly correlated factor to social competence in preschoolers. Smith and Greenberg (1979) reported that children's linguistic abilities affect the perceptions of competence made by teachers and peers. An event-sampling instrument to assess social competence, developed by Ogilvie and Shapiro (1970), included the ability of expression as one of the social behaviors which differentiated the most and least competent children.

McClelland (1973) suggested that several variables traditionally researched under the realm of personality traits might better be considered competencies. The ability to communicate or to use word, look, or gesture to accurately express thoughts was one of these variables. McClelland included in this variable the ability to write in such a way that the thought is immediately coherent to the reader and to perceive and use nonverbal cues in social interactions as well as the usual verbal communication.

Relationship between Social Competence and Gross Motor Ability

Most researchers in the social competence area seemed to be hesitant to include factors related to the child's physical health as a major component of social competence (Zigler &

Trickett, 1978). The problem seemed to focus around those children with obvious physical impairments who otherwise met all the criteria of competence. Again, the issue of the vagueness of the definition of competence interfered in that if competence were viewed as a measure of the whole child's abilities, physical problems would render that child incompetent, at least to some extent. On the other hand, if competence were viewed as an average of several multifaceted dimensions, lack of physical problems could perhaps compensate for deficits in other areas, thus allowing the child greater competence as a result.

For children with no obvious physical problems, motor skill proficiency was reported as a contributing factor to overall competency (Anderson & Messick, 1974; Foster & Ritchey, 1979). Nuttall and Nuttall (1979) selected a measure of athletic inclination and participation as a contributing factor to social competence when studying effects of child-spacing on competence and other factors. Humphrey and Kirschenbaum (1981) analyzed social competence in terms of two types of self-control--tolerance of noxious stimulation and resistance to temptation--and gross motor control. They hypothesized that children's ability to self-control through verbal self-instruction would correlate with teachers' perceptions of their degree of cooperation or interest, defined as social competence. The results showed that the tolerance of noxious stimulation variable was related only to the

teacher's perception of cooperation and there was no relationship between resistance to temptation and either cooperation or interest as assessed by classroom teachers. Interestingly, the gross motor component also did not correlate with either measure of self-control. These authors suggested, therefore, that self-control, as a component necessary for adequate social competence, needed to be conceptualized as involving behavioral-cognitive skills.

Relationship between Social Competence and I.Q.

While social competence was described as theoretical with no uniformly accepted definition (O'Malley, 1977), cognitive factors were relatively consistently mentioned as inherent in any assessment, whether the focus came from a personality trait, social interactional, educational or behavior approach. There was agreement, however, that social competence was not a construct to be measured solely by use of traditional intelligence tests (Gottman, Gonso, & Rasmussen, 1975). Many researchers attempted to separate cognitive factors to assess their role in the development of competence. Kohn and Rosman (1973) administered several instruments to the children in their study which produced factors associated with visual cognition, verbal expression, and verbal cognition. Anderson and Messick (1974) included cognitive factors related to developmental trends typically found at each age level. They also suggested that curiosity and exploratory behavior, categorizing skills, memory skills,

critical thinking skills, creative thinking skills, problem-solving skills, flexibility in use of information-processing strategies, understanding of quantitative and relational concepts, and general knowledge be viewed as the cognitive factors most related to competence. Rothenberg (1970) chose social sensitivity in terms of accurate social perceptions as her competence variable to study its relationship to intelligence among third- and fifth-grade students. Intellectual ability, along with age and interpersonal adjustment, were found to contribute most to the development of accurate social perception.

B. L. White (1975) described intellectual competence as the abilities to sense dissonance or note discrepancies, to anticipate consequences, to deal with abstractions, to take another's perspective, and to make interesting associations. Wright (1980) also found that problem-solving and perspective-taking abilities were related to social competence. Schaefer (1975) developed a hierarchical model in an attempt to describe the relationship between I.Q. and social competence and proposed that adaptation was the construct which would encompass both areas.

Hilliard (1978) also described specific aspects of cognition as relevant to understanding competence. Recognizing that few instruments were available to assess these dimensions, he nonetheless felt that store of information, active learning behavior, and accurate environmental perception were necessary to developing competence.

In his study of competence in adolescence, Ford (1982) chose nine variables to represent social cognition which included goal orientation, interest in social goals, social and nonsocial goal capabilities (or the presence of inherent abilities to obtain goals), the ability to recognize the means toward the goal, a self-evaluative ability, empathy, and two measures of consideration of consequences of behavior. Among Ford's findings was the fact that adolescents who were able to deal more effectively with challenging social situations and who were more able to identify their social goals, the means toward the goals and the outcomes of their efforts were also judged to be more competent. Ford concluded that social competence was not independent of competence in the cognitive domain.

Taylor (1982) conceptualized five components of social competence, similar to Ford's, using a process-oriented framework: (a) the individual's interpersonal goals in social interaction; (b) motivation toward the goals; (c) role-taking abilities; (d) strategies used to reach goals; and (e) the social situations necessary for social interaction. She described each of these components' success as dependent upon varying levels of cognition.

Using the term adaptive behavior, the American Association of Mental Deficiency included poor adaptive behavior along with lowered intelligence as the major criteria in the definition of mental retardation (Grossman, 1973). Consequently,

much research was reported on the adaptive behavior of retarded children. Institutionalized retarded children were hypothesized to be less socially competent than children with comparable levels of intelligence who remained at home and school. Gardner and Giampa (1970) recorded the frequency of inappropriate behaviors within three groups of institutionalized mentally retarded children--moderately, severely, and profoundly retarded. The three groups did not differ significantly in inappropriate social behaviors. Gardner and Giampa concluded that intelligence, at least among these ranges of retardation, was not a significant predictor of inappropriate social behavior.

Mitchell and Smeriglio (1970) also studied moderately and severely retarded institutionalized children and found that the control group's social maturity age equivalent predictably dropped at posttest after three years of institutionalization. Subjects in both ranges of retardation who received specialized instruction in social competency skills increased these scores and it was found that I.Q. was not related to the quantity of this improvement.

Monson, Greenspan, and Simeonsson's (1979) subjects were educable or mildly retarded children from a private school for exceptional students. Their purpose was to compare teacher versus children's measures of role-taking ability and referential communication skills and their relationship to social competence. When the teachers were raters,

significant associations between competence and the two variables studied were found. Children's ratings of competence related more to I.Q. and mental age than to role-taking and referential communication.

Based on their research of educable children, Smith and Greenberg (1979) concluded that standardized measures of social competence needed to include other than skill-oriented measures typically used. More naturalistic data were necessary in order to determine appropriate competence for retarded children at different ages, including adulthood. Baroff (1974) wrote that, by definition, persons who were diagnosed as retarded during their early school years were so labeled as a result of lowered intelligence and poor academic achievement. With school-aged children, failure in school was equivalent to insufficient adaptive behavior. Therefore, if by adulthood these children were relatively independent, maintaining a job, meeting various social roles and conforming to community mores, then, for diagnostic purposes at least, they were no longer considered retarded.

Other research had shown that adaptive behavior was not useful in conjunction with I.Q. Vacc and Atwell's (1981) sample of 22 male and 15 female children with a mean I.Q. of 83 between the ages of 62 to 137 months (mean age = 91 months) was selected to investigate the relationship between I.Q. and adaptive behavior. Their findings did not support the hypothesis of little correlation between intelligence

and adaptive behavior. Oakland's (1983) results of his investigation of the influence of I.Q., adaptive behavior, SES, and race on measures of reading and math ability indicated similar findings to Vacc and Atwell. Using the WISC-R and the Adaptive Behavior Inventory for Children, Oakland tested 345 Anglo, black, and Mexican-American children between the ages of 7 and 14. When all four variables were entered, they accounted for significant amounts of the variance in reading (.45) and math (.35). However, race and SES were not significant independently or together. Oakland found that adaptive behavior only negligibly predicted achievement beyond I.Q. He concluded that I.Q. and adaptive behavior were similar to the extent that there was no need to use measures of both. Popoff-Walker's (1982) research supported Oakland's, when I.Q., SES, and adaptive behavior were examined in relation to the performance of 30 EMR students between the ages of 7 and 11 and 30 non-EMR third-graders on Raven's Progressive Matrices. When the pretest score was controlled for in both groups, I.Q. was highly predictive of performance, with SES and adaptive behavior contributing only slightly. Conversely, Mercer (1973) reported that fewer children from low socioeconomic status groups and from racial/ethnic minorities were labeled mentally retarded when a measure of adaptive behavior was used with an I.Q. score for diagnosis. The implication from Mercer's discussion was that while poor, nonwhite children

scored low on I.Q. tests, their adaptive behavior was sufficient for nonschool activities. Campbell, Smith, and Wool (1982) found measures of adaptive behavior were significantly useful in predicting community living success versus institutionalization among retarded adults. Guntehy (1982) administered the Adaptive Behavior Scale to 45 deprived and 45 not deprived 7- to 13-year-olds in an attempt to predict school success as measured by achievement, with no regard for I.Q. He found no difference between the two groups on factors of independent functioning (dressing, toileting, eating) and physical development. However, the deprived group scored lower on language development, domestic activity, self-direction, responsibility, and socialization.

Lack of Independence Among Variables

Inherent in this type of research were the limitations imposed due to the nonmutual exclusiveness of the variables. Although traditionally mental retardation was defined and diagnosed almost solely on the basis of measured intelligence, the recent inclusion of adaptive behavior as an equally important variable was, it was hoped, only the beginning of professional interest in and consideration of the total child in determining retardation. The term developmentally disabled had been adopted by many in lieu of mentally retarded and implied deficits in other areas of development. Therefore, the current trend toward multidisciplinary

diagnoses of retardation included language, environmental, medical, educational, motoric and affective factors as well as measures of adaptive behavior and intelligence. For examples, retarded children exhibited a prominence of motor disabilities (Baroff, 1974), language delays (Cleland, 1978), and educational deficits (by definition). The variance between abilities in these areas was most evident among retarded children within the mild range (Baroff, 1974), in that many equate mild retardation with cultural deprivation, thus further confounding the issue. The area most affected by various factors was language, which was described as the single best predictor of future intelligence and adaptation among infants and preschoolers (Marquis, 1983). Not only was language influenced by intelligence, but research beginning in the sixties emphasized the role cultural requirements and conditions played in language development (Alexander, Stoye, & Kirk, 1968). The traditional thought in this area was that lower-class parents did not verbally stimulate their infants as much or as well as did middle-class parents (Deutsch, 1967). However, a number of studies intimated that while there may be class or race differences in the quantity and quality of language stimulation, they do not appear until the child was older (Tulkin & Kagan, 1972). Three studies attempted to study maternal-infant/toddler interactions and found this result overwhelming.

First, Farran and Ramey (1980) observed the social interactions of 60 mother-infant dyads in a semi-naturalistic setting when the infants were 6 months old and again at 20 months. Forty-six of the infants were labeled high risk due to the socioeconomic situations of their families. Half of these were randomly assigned to an early intervention program and the remaining 14 infants were drawn from the general population. Analyzing two components, dyadic involvement and vocalization behaviors, the researchers scored the mother's duration of talking to her child, demonstrating a toy, touching, holding, playing, reading to her child, and reading to herself and scored infant behaviors of playing alone, vocalizing, and fussing. Data were taken from videotapes of the dyads of 25-minute sessions in an experimental laboratory. The results of their data analysis indicated that mothers from different socioeconomic backgrounds did not differ in the level of their vocalizations with their 6-month-old babies. As the children aged, however, almost all of the 14 general population mothers increased their amount and complexity of vocalization, while high-risk mothers whose children were not in the intervention program decreased theirs. The group of mothers whose children were in the program did not alter their level of vocalization.

Lewis and Wilson (1972) observed 32 twelve-week-old infants (sampled to represent all five of Hollingshead's classes of socioeconomic status) for 2 hours in six 10-second

intervals. Infant behaviors scored included vocalizing, moving, fretting/crying, playing, making noise and smiling. Maternal behaviors included touching, holding, vocalizing, looking, smiling, playing, rocking, talking to others, reading, and watching television. Lower-class infants vocalized more than twice the amount of middle-class infants. Further, they found there were no vocalization differences in total between the mothers in the five classes.

A third study by Tulkin and Kagan (1972) dealt with middle-class and working-class mothers at home with 30 first-born, 10-month-old girls. These researchers observed a number of behaviors including maternal vocalization and percentages of infant-mother reciprocal vocalizations. The results indicated little difference between middle- and working-class mothers on the total amount of time spent with the infant and on the number of positive responses to infant-initiated vocalizations. While it was found that lower-class mothers vocalized less, infants of working-class mothers vocalized as much as middle-class infants. The positive responses of the working-class mothers to infant sounds were typically tactile rather than verbal.

Research with older children supported the notion that there was a qualitative difference in language ability between social classes (Golden, Bridger, & Montare, 1974; Johnston & Singleton, 1977; Schachter, 1979). Hess and Shipman (1965) interviewed 163 Negro mothers of 4-year-olds from four social

classes in their homes and later involved them in teaching tasks to their children in laboratory settings. They then analyzed the number of typed lines of transcribed verbalization of the mothers and found that upper-middle-class mothers talked to their children more while teaching them. Hess and Shipman decided that punitive parenting styles and confusing, noisy environments caused the language deficits found in children from low socioeconomic homes. Bereiter and Engelmann's (1960) remedial approach with disadvantaged children involved intensive repetitive drills in standard verbal English with preschool children. Begg (1974) also observed cultural differences in the language of preschool children. Begg divided 120 children into black and white groups of low and middle income and administered a measure of articulation. He found that the low-income children, regardless of race, scored lower, or had more articulation errors than the middle-income group. The assumption was made then that deviances in speech, at least, were economically rather than racially based. Ruddell and Graves (1968) also found a significant relationship between deviant syntactical structure and socioethnic status among first-graders.

Anastasi and DiAngelo (1952) assumed, however, that the differences in language abilities observed were racial in nature. These researchers obtained samples of speech from 35 white and 25 black children all within six months of their fifth birthday. The responses were analyzed in terms of

length and structural complexity, and the results indicated that white females used longer and more complex utterances than white males, though not significantly more. Black males also scored higher on length and complexity than black females. The significant finding reported was that white children used longer and more complex sentences than black children, regardless of sex. Toliver (1971) supported Anastasi and DiAngelo's findings that black males scored higher on language measures than black females, at least among low SES children. (Toliver's results were based on receptive language of one-word stimulus.) Historically, then, the emphasis shifted from language deficits due to social class to speculation that the problem was racial, in terms of another form of English, often termed "black dialect," with the implication that this too was a substandard form of communication. Researchers began to develop strategies to change black language structure to conform better to standard English (Green, 1963; Newton, 1964). It became important to other researchers to point out that while another form of spoken English may exist among racial minorities, the difference need not imply deficit. Anastasiow and Hanes (1976) suggested that the reconstructions from standard English to black English made by black children may actually indicate rapid mental functioning and alertness.

Regardless of the appropriateness of black English, the rarely contested fact remained that the difference in spoken

language between low and middle class and between blacks and whites contributed to differences in standard measures of intelligence. Low social class and black children consistently scored lower on intelligence tests standardized on predominantly white, middle-class children and administered by middle-class professionals. Therefore, while it had been shown that alternative modes of language retained the necessary logical structures to express abstract reasoning and thought and were sufficient to handle the child's communication needs in the home, neighborhood and peer situations, it was different from that of the school or the test (Labov, 1971). Consequently, the child must decode the spoken language of the examiner and make his or her own language coincide with that of the teacher or the test administrator. Using factor analysis, Jones (1949) demonstrated three major factors in the Stanford-Binet including verbal ability, reasoning, and memory, with the first reported as the strongest factor. Ginsburg (1972) suggested the Stanford-Binet be renamed the "Test of Conventional Verbal Skill" in his review of culturally deprived children.

Fortunately, this class and race disadvantage received much emphasis, at least among those concerned with language development. Labov (1971) described three methods of assessing language in terms of functional ability rather than adherence to standard, possibly class- or race-biased modes of communication. Labov advised examiners to evaluate

spontaneous speech for coherence of thought, use open-ended sentences ending with "because" or "if," and sentence repetition. Credit was to be given if the thought was expressed so that it was obvious that the child knew to what he or she was referring. Specific tests, such as the Carrow (1973), the Token Test for Children (DiSimoni, 1978), Test of Language Development (Hammill & Newcomer, 1983), and The Test of Early Language Development (Hresko, Reid, & Hammill, 1981) included subtests with Labov's suggestions.

Expected Findings

Several issues were of interest in the present study. First, it was hypothesized that language is more related to social competence than I.Q., though both are likely to be significantly related. Second, it was expected that the addition of the preschool experience variable would help explain more of the remaining variance in social competence once I.Q. and language had contributed. Third, no significant correlations between social competence and race or economic status were expected. Fourth, gross motor skills would contribute to competence more significantly for boys than for girls. Finally, while it was thought that language would account for significant variance in competence for both sexes, it was expected that language would provide more explanation of this variance for girls than for boys.

The reviewed research indicated that while I.Q. and language contributed to social competence, it was not clear

which variable contributed more to the variance. Further, race and economic status findings in relation to social competence were inconclusive. Sex differences were reported in general competence, but specific contributing variables for each sex were not considered. These incomplete findings indicated the need for further study to determine how much of the variance in social competence could be explained by each variable.

CHAPTER III

METHOD

The major objective of this study was to examine the relationship of I.Q., language ability, number of years in a preschool program, gross-motor ability, sex, race, and income level to levels of the dependent variable social competence among mildly mentally retarded children. The variable age was included in the data analysis to determine the effect of age on social competence.

Sample

The sample consisted of 66 children between the ages of 5.0 and 12.2. The original subject pool was obtained from the North Carolina Developmental Evaluation Center Program Office and included 142 cases identified by the Concord Developmental Evaluation Center (DEC) as within the mild range of retardation. The Developmental Evaluation Center Program Office maintained data on DEC clients throughout the state which included date of birth, I.Q. level, adaptive behavior level, county of residence, sex, race, family income, environment (rural farm, rural nonfarm, urban), educational level of mother, occupation of household head, referral source, medical diagnosis, and specific client needs.

The Concord Developmental Evaluation Center was one of 19 regional centers located geographically and demographically

with staff of various disciplines who provided clinical evaluation, treatment, and case management services for children who had (or were at high risk of having) developmental disabilities. Services offered by DEC's included individual assessment and diagnosis, treatment and client instruction, case management, screening, and technical assistance to other providers about cases.

DEC's also served as the source of follow-up for disabled children who received Supplemental Security Income benefits, as a support service for the High Priority Infant Program, as a support service to local school systems, and as coordinators of training sessions for other human service agencies. Program priorities were to serve infants, preschoolers, and young children with multidimensional, severe conditions who lacked access to other resources. The ideal preschool to school-aged ratio was 80%-20%, to which the Concord center adhered. School-aged children typically had access to testing within their own local education system; school-aged referrals to the DEC were intended for those children whose problems were severe enough to warrant further testing. However, most children (n=54, 82%) participating in this study had never before been formally evaluated and were referred to the DEC due to long waiting lists at the local school system or by parents who did not want their children evaluated by school personnel. The remaining 12% (n=12) were referred for routine third-year evaluations mandated by PL 94-142.

The DEC's used a holistic approach including assessment of physical, psychological, neuromotor, socioemotional, speech, language, hearing, or learning problems. All the subjects in this study were referred with learning problems as the major deficit. Referrals were received from numerous sources including other agencies, schools, parents, and physicians. Fees were charged on a sliding scale based on annual income, medical expenses, and number in family. No client was denied service because of inability to pay.

The Concord DEC began developmental assessments in May, 1976. The list provided by the Program Office in Raleigh, North Carolina, indicated that from May, 1976, to September, 1983, the Concord Center had evaluated 142 mildly retarded children. Twenty-three of these subjects (16%) were excluded from the study because they were 4 years of age or younger at the time of their evaluation. Forty-seven of the remaining 119 (33% of the original pool) school-aged children were excluded due to the absence of a Vineland Social Maturity Scale score. Six cases (4%) were excluded due to other missing data. The remaining cases (46%) constituted a sample of 66 children between the ages of 5 and 12 years. There were 16 black males, 5 black females, 31 white males, and 14 white females.

The annual level of income of each family was an independent variable and was categorized into three levels: income from \$0.00 to \$5,059 was low, \$5,060 to \$11,287 was

median, and \$11,288 and above was high. No incomes reported were above \$15,000, indicating that all cases were within the middle, lower middle, upper lower, and lower income levels. This five-county region (including Rowan, Stanly, Iredell, Union, and Cabarrus Counties) was predominantly rural with only six towns of populations over 15,000. The largest city had 29,600 people and the next largest had approximately 19,000. The majority of the population within these counties was employed by large textile related and aluminum manufacturing companies. The cost of living was considerably lower than the national average, implying that the above reported incomes between \$11,288 and \$15,000 were considered within the middle income for the region.

All children were enrolled in public school at the time of the evaluations and were referred for assessment with suspected cognitive deficits as the major presenting problem. There were varying numbers of years in a preschool program (see Table 1).

Instruments

Social competence was the dependent variable which indicated the child's ability to interact appropriately within the social environment. For the purpose of this study, social competence was operationally defined as the deviation social quotients (DSQ) (Silverstein, 1971) of the Vineland Social Maturity Scale (Doll, 1965). The Vineland

Table 1

Income Levels and Preschool Experience Based on Sex and Race

	<u>Income Levels</u>			<u>Years in Preschool Program</u>				
	<u>Low</u> \$0.00-5,059	<u>Median</u> \$5,060-11,287	<u>High</u> \$11,288-15,000	0	1	2	3	4
Black males n=16	5	4	7	7	4	2	2	1
Black females n=5	2	0	3	2	1	0	2	0
White males n=31	10	11	10	19	4	0	4	4
White females n=14	6	3	5	6	7	1	0	0
	n=23	n=18	n=25	n=34	n=16	n=3	n=8	n=5
Black	n=21							
White	n=45							
Male	n=47							
Female	n=19							

yielded standard scores called social quotients as well as a social age equivalent. These scores were not comparable when used in research with children of different ages. Silverstein statistically created constants which converted the social quotients to scores (DSQ) which took into account the child's age. The DSQ was formed by multiplying the child's social quotient by a constant, then adding the product to another constant. The constants were different values for each age level, in 6-month increments (see Appendix A). A DSQ of 82 or below was designated as the cut-off point for retardation. The Vineland social quotient was found useful in other research with the mentally retarded (Anastasi, 1968) and was considered the best indicator of adaptive behavior until the publication of the AAMD Adaptive Behavior Scale (Nihira, Foster, Shellhaas, & Leland, 1969). However, the Vineland remained the instrument of choice for many psychologists due to the complexity and length of time involved in the Adaptive Behavior Scale (Adams, 1973).

Scores on the Vineland were obtained through responses to an interview with the subjects' parent(s) or legal caretaker (e.g., foster parent, grandparent). The scale consisted of 117 items grouped into year levels from birth to 25 years. The items fell into eight categories including general self-help, self-help in eating, self-help in dressing, self-direction, occupation, communication, locomotion, and socialization. The interviewer asked the parent if the

child was able to do specific activities beginning below the age level at which the examiner suspected the child was functioning and continuing until sufficient items had been missed to discontinue testing. Scoring the responses took several forms. First, the examiner continued questioning to discern the difference between what a child was capable of doing and what the child actually did day to day. Full credit was given if it seemed clear that the essentials for a particular item were satisfied routinely. Second, "+F" scores were given if the child was typically able to do an activity but had not done so recently due to a temporary restraint such as illness. Credit was not given if the impairing condition made the completion of the item permanently unlikely. A third form of scoring, "+N.O." (no opportunity) was given to those items the subject had not performed because of special restraint such as parental domination or deprivation. The "+F" and the "+NO" scores were given full credit, with the conditions known to the interpreter. A fourth score, " \pm " (plus or minus) was given on activities which were emerging or in transition and were assigned half-credit. Minus scores were assigned to those items the child was not yet able to do at all. The total score was computed by adding to the basal score (the highest group of continuous pluses) the scattered credits above the basal. This raw score was then converted to a social age score based on the year-score values on the record booklet. The social quotient was obtained by dividing the social age

by the chronological age. Again, the social quotient was converted, for the purposes of this study, to the more workable deviation social quotient (DSQ).

Due to the subjectivity of the Vineland, the manual provided numerous guidelines to employ in the interview process. The interviewer was encouraged to obtain as much detail as possible from the informant to be able to make adequate judgments on the item credit. Items did not have to be asked in precise order and the examiner noted information pertinent to other items. The recorder was expected to question the parent in a sympathetic manner avoiding expressions of credulity or skepticism. Doll (1965) stated that the interview method by trained examiners, the emphasis on habitual or actual performance, and the progression of the items served as controls and statistical analysis had shown the reliability of the instrument.

The Vineland was standardized on 620 subjects with 10 males and 10 females at each age level. Comparisons between age groups and between normal and retarded subjects, and judgments of observers who knew the subjects well were used to determine age-appropriate behaviors. A retest reliability coefficient of .82 was reported in 123 cases with retest intervals of 1 day to 9 months. Vineland scores had been operationally defined elsewhere as social competence (Krippner, 1964; Mitchell & Smeriglio, 1970).

This instrument was originally published in 1935 and while an updated version, the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1983), will become available in 1984, current use necessitated subjective revision of items on the part of the examiner. Items up to the 2- to 3-year level were basically universal for infants and toddlers. However, at the 3- to 4-year level, the term "plays cooperatively at kindergarten level" was usually altered to determine if the child played appropriately in the preschool setting or with age contemporaries in the home environment. There were several items at various age levels involving locomotion around the neighborhood and the town which were considered unsafe for children in many communities by today's standards. (Examples included "goes about neighborhood unattended" at the 4- to 5-year level, "goes to school atattended" at the 5- to 6-year level, and "goes about the home town freely" at the 9- to 10-year level.) Alterations to these items included determining the child's ability to negotiate himself or herself around the immediate environment, such as going next door alone at 4-5, going to the bus stop from home and then from the bus to the classroom unattended at 5-6, and being left for several hours at a shopping mall at the 9- to 10-year level (see Appendix B).

Other standardized instruments were used to assess various independent variables and were considered instruments of choice in their respective disciplines The Stanford-Binet

Intelligence Scale (Terman & Merrill, 1937) was typically used with the 5-year-olds in the sample. Children 6 and older were administered the Wechsler Intelligence Scale for Children-Revised (WISC-R) (Wechsler, 1974). An overall language age equivalent assessing the child's receptive and expressive language was obtained by various standardized scores on several instruments including the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981), the Detroit Tests of Learning Aptitude (Baker & Leland, 1967), Test of Language Development (Hammill & Newcomer, 1982), The Token Test for Children (DiSimoni, 1978), Expressive One-Word Picture Vocabulary Test (Gardner, 1979), Test for Auditory Comprehension of Language (Carrow, 1973), Test of Early Language Development (Hresko, Reid, & Hammill, 1981), and Goldman-Fristoe Test of Articulation (1969).

Gross motor skills were reported in age equivalents as well and included measures of age-appropriate developmental gross motor abilities. The Bruininks-Oseretsky Test of Motor Proficiency (Bruininks, 1978) was the usual instrument used in this assessment.

Procedure

Each child's deviation social quotient (DSQ) from the Vineland, age, sex, income level, and race were obtained from permanent DEC folders. The number of years in a preschool program including Headstart, church day care centers, private franchised day care, and public centers funded by local Departments

of Social Service were obtained through social history interviews with the caregivers. Children whose preschool experience involved supervised care away from home without specific programming (such as stayed with a relative or neighbor) were recorded as 0 years of preschool experience. Any portions of years were rounded down or up to the nearest full year.

Scores on I.Q. tests were gleaned from psychological reports and were self-explanatory on the Stanford-Binet. The WISC-R provided a Verbal I.Q., a Performance I.Q., and a Full Scale I.Q. In all cases, the Full Scale I.Q. was recorded as the best indicator of the child's overall level of intelligence.

Language age equivalents were obtained by standardized conversions of language quotients to language ages on the various instruments. When overall language age was not available due to lack of administration of an instrument which yielded this index, this age equivalent was determined by averaging expressive and receptive language age equivalents from other standardized tests.

Gross motor age equivalents were available for all subjects evaluated from 1979 to the present. The physical therapy reports from 1976 to 1979 included precise explanations of the child's abilities in various gross motor activities. The success or failure of these activities was recorded on the Bruininks-Oseretsky record booklet by the DEC physical therapist and gross motor age equivalents were computed by this therapist.

Data Analyses

Descriptive statistics were applied to all the continuous variables in order to determine the characteristics of the sample. The three income levels were recoded for statistical purposes into three dichotomous variables of low income-not low income (including moderate and high levels), moderate income-not moderate (including low and high levels), and high-not high (including moderate and low levels). A correlation matrix with the levels of significance was produced on the dependent and independent variables. Three backward multiple regression equations, each including one recoded income level with all other variables, were computed to determine the total amount of variance in competence accounted for by all the variables. A stepwise regression was computed to determine the variables' individual contributions.

The sample was then divided into three age groups of 5.0 to 5.11 (n=24), 6.0 to 8.11 (n=24), and 9.0 and above (n=18). A separate analysis of variance was performed to determine if there was a significant difference in social competence by age and number of years in preschool.

The sample was divided again into three groups of low competence scores (DSQ = 54-78, n=23), moderately competent (DSQ = 79-87, n=25), and highly competent (DSQ = 88-102, n=18). Separate ANOVAs were performed to determine any significant effects of gross-motor abilities, language

ability, I.Q., and preschool experience on these levels of competence. For these ANOVAs the age equivalents in gross motor and language ability were converted to standard scores with $\bar{X}=100$ and standard deviation=15 to permit comparisons across age levels.

The three competence levels were each partitioned again by sex, and t tests were computed to observe the mean differences between males and females on gross motor and language, at each competence level. A separate t test between DSQ means of males and females was performed using the entire sample.

Because the sample constituted a narrow range of competency, cognitive, language, and gross motor abilities with little statistical variance, two groups of cases were formed for further analysis to include the 20 most competent and the 20 least competent children. This procedure produced greater variance among this relatively homogeneous group. T tests were used to compare the two groups' means on DSQ, language, gross motor ability, preschool experience, and I.Q. (see Appendix C).

CHAPTER IV

RESULTS

The purpose of this study was to examine the relationship between the dependent variable social competence and I.Q., language, preschool experience, gross motor ability, age, sex, race, and income level. The 66 subjects were clients of the Concord Developmental Evaluation Center and had been diagnosed as mildly mentally retarded. It was hypothesized that the language variable would explain more of the variance in social competence than would I.Q. It was also hypothesized that preschool experience would contribute significantly to competence, after language and I.Q. had entered their predictive power.

Descriptive Statistics

Sample means on independent variables and descriptive statistics are presented in Tables 1 and 2.

Correlation Matrix

The correlation matrix (see Table 3) established a significant relationship only between age and DSQ ($-.275$ at the $.024$ level of significance). Other significant relationships were found between age and gross motor ability ($+.731$, $.000$ level of significance), gross motor and language ($+.538$ at $.000$ significance), gross motor and I.Q. ($.250$ at $.041$

Table 2
 Mean DSQ, I.Q., Gross Motor Standard Score, and
 Language Standard Score by Three Levels
 of Competence

	<u>Mean DSQ Scores</u>		
	Low Competence $\bar{x}=72.96$ $n=23$	Moderate Competence $\bar{x}=83.84$ $n=25$	High Competence $\bar{x}=94.17$ $n=18$
I.Q.	60.56	61.6	63.22
Gross Motor	101.61	99.48	98.44
Language	104.04	96.4	98.66

Table 3

Correlation Matrix and Level of Significance of Relationship
Between Dependent and Independent Variables

	DSQ	LANG	I.Q.	Preschool	Sex	Income	Gross-Motor	Race	Age
DSQ	1.000	-.197	.189	-.205	-.142	0:0	-.020	.220	-.275*
sig.level	.999	.109	.125	.096	.251		.871	.074	.024
LANG		1.000	.334*	-.035	.027	0:0	.538*	-.079	.777*
sig.level		.999	.006	.777	.826		.000	.525	.000
I.Q.			1.000	-.096	.029	0:0	.250*	.044	.090
sig.level			.999	.440	.815		.041	.721	.467
Preschool				1.000	.089	0:0	-.309*	-.070	-.218
sig.level				.999	.474		.011	.573	.076
Sex					1.000	0:0	.062	-.049	.094
sig.level					.999		.621	.696	.451
Income						1.000	0:0	0:0	0:0
sig.level						.999			
Gross-Motor							1.000	.051	.731*
sig.level							.999	.680	.000
RACE								1.000	.051
sig.level								.999	.802
AGE									1.000
sig.level									.999

*significant results

level of significance), gross motor ability and preschool experience (-.309, at .011 level of significance), between I.Q. and language (.334 at .006 level of significance) and between age and language (.777 at .000 significance level).

Multiple Regression Analysis

Backward multiple regression analysis was performed with I.Q., age, income level, language, gross motor ability, race, sex, and preschool experience as independent variables. Scores on the Vineland Social Maturity Scale (DSQ scores) ranged from 54-102 with a mean score of 82.88 (N=66) and were used as the dependent variable.

Because the independent variable income level formed three separate variables, three backward regressions were computed. Low and moderate incomes did not account for enough of the variance in competence to be entered in the regression equations. Inclusion of low income in the first equation and moderate income in the second equation also did not significantly alter the effects of the other independent variables, precluding discussion of the results of these two regressions.

The multiple regression (see Table 4) including the independent variable highest income established that all eight variables accounted for 30% (using rounded figures) of the total variance of competence scores. Removal of the variable language reduced the total amount of predictive

Table 4

Multiple Regression Analyses with DSQ

as Dependent Variable

 $(R^2 \text{ all 8 variables} = .30506)$

		<u>Backward Regression</u>			
<u>Dependent Variable</u>	<u>Independent Variables</u>	<u>R</u>	<u>R²</u>	<u>F</u>	<u>df</u>
Deviation , Social Quotient N=66	Language	.55068	.30325	3.66	7/59
	Sex	.54277	.29460	4.18	6/60
	Gross Motor	.53237	.28342	4.82	5/61
	Race	.50181	.25181	5.22	4/62
		<u>Stepwise Regression</u>			
	Age	.27515	.07571	5.32	1/65
	Preschool	.38658	.14944	5.62	2/64
	High Income	.45496	.20698	5.48	3/63

 $p < .05$

ability by less than 1% (0.18%). Sex was removed next with a loss of less than 1% (0.86%). Approximately 3% of variance was lost with the removal of the variable gross motor ability. The removal of the variable race reduced the total variance explained by 3.16%. The remaining variables included in the equation were age, I.Q., high income level, and preschool experience. The total R^2 for these variables was .25 or explained 25% of the variance in DSQ.

The stepwise regression analysis established age as the best predictor of competence. The R^2 column indicated that age accounted for 7.4% of the variance of DSQ scores. The number of years in a preschool program accounted for 7.4% more of the variance. High income level contributed another 5.7% to the total amount of variance (see Table 4). Though I.Q. passed the point-of-entry criterion ($p < .05$), its level of significance ($t = .0585$) precluded its entrance into the stepwise regression.

Additional Analyses

The results of the correlation matrix and multiple regressions failed to yield satisfactory significant findings. Therefore, additional analyses on partitioned samples were computed to obtain more information.

To assess the comparability of competence scores, a one-way analysis of variance was performed on three age groups. This ANOVA revealed statistically significant age

differences on DSQ scores, $p < .05$. Scheffé's multiple comparison tests showed that most of the age differences were between children aged 5.0-5.11 and children aged 9.0-12.2, with a mean score of the younger group of 86.57 and a mean score of 79.28 for the older group. However, none of the mean comparisons with Scheffé's test were significant (see Table 5).

An ANOVA on the means of preschool experience for the three age groups was computed to determine which age group had been to more years of preschool. The mean years of the three groups were 1.29, .75, and .5. These means were not significantly different.

In order to determine the significant effects of several variables on the dependent variable competence, the sample of 66 was divided in low, moderate, and high competence groups for further analysis. The results of several ANOVAs indicated no significant group differences on I.Q., $p < .05$, gross motor ability, $p < .05$, or language ability, $p < .05$. Significant group differences were found for the preschool variable. Scheffé's multiple comparison test showed that the mean number of years in a preschool program was more related to competence scores within the low DSQ group (see Table 6).

An ANOVA was also computed on DSQ scores between the three groups (mean low group = 72.96, mean moderate groups = 83.84, and mean high group = 94.17). The difference among all three groups was significant at $p < .05$. Scheffe's test

Table 5
 Significant Differences in DSQ Scores of
 Three Age Groups

Source of variation	<u>df</u>	<u>MS</u>	<u>F</u>
Between groups	2	270.97	3.2597
Within groups	63	83.128	

F .05 = 3.142

Table 6
 Significant Differences in Means of Years in Preschool
 Program of Three Levels of Competence

Source of variation	<u>df</u>	<u>MS</u>	<u>F</u>
Between groups	2	5.525	3.97
Within groups	63	1.39	

F .05 = 3.142

showed the greatest difference, as expected, between the low and high competence groups; the next highest difference was between the low and moderate groups (see Table 7).

The three levels of competence were each analyzed by sex on language and gross motor ability to assess the hypothesized effects on males and females of low, moderate, and high competence. T tests were computed between the means of males and females at each level; none of the mean differences were significant (see Table 8). A t test was also used for the entire sample to compare DSQ means of total males and females. Again, the difference between boys and girls was not significant, which supports the exclusion of the variable sex from the stepwise and backward regression equations.

The final series of analyses involved using t tests to compare the mean differences on DSQ, language, gross motor ability, and I.Q. between the 20 least competent and the 20 most competent subjects. This partitioning indicated that the greater DSQ for higher I.Q. children, even within this relatively narrow 15-point spread, was significant at $p < .05$. Also, there was a significantly ($p < .05$) higher DSQ score for the children with greater DSQ (see Table 9). Based on the results of the other t tests performed on the low- and high-competence groups, gross motor ability and language ability were not significantly related to competence at either level.

Table 7
Significant Differences in Means of Three
Levels of Competence

Source of variation	<u>df</u>	<u>MS</u>	<u>F</u>
Between groups	2	11290.48	969.14
Within groups	63	11.65	

F .05 = 3.142

Table 8
Mean Scaled Scores of Males and Females on Language
and Gross Motor Abilities by Levels of Competence

		<u>Levels of Competence</u>		
		Low n=23	Moderate n=25	High n=18
Gross Motor	males	$\bar{X} = 100$	$\bar{X} = 100$	$\bar{X} = 95$
	females	$\bar{X} = 105$	$\bar{X} = 97$	$\bar{X} = 110$
Language	males	$\bar{X} = 101.6$	$\bar{X} = 95.3$	$\bar{X} = 95.7$
	females	$\bar{X} = 108.9$	$\bar{X} = 95.25$	$\bar{X} = 109$

Table 9

Significant Differences in I.Q. and DSQ of Low and High Competence Children

	Low Competence Means n=20	High Competence Means n=20	<u>t</u> Value	<u>p</u> Value
I.Q.	60.85	63.4	2.04	.05
DSQ	72.2	93.5	13.31	.05

CHAPTER V
DISCUSSION

This study attempted to investigate the components of competent behavior among mildly retarded children. As discussed, competency in the field of retardation had traditionally centered around adaptive behaviors necessary for life functioning. Among the lower levels of retardation, these behaviors typically involved self-help skills such as basic communication, toileting, bathing, eating, dressing, and least restrictive locomotion around home, school, and neighborhood. The mildly retarded child and adult were somewhat caught between what was expected of children with lesser intelligence and what was expected of normal children. With the enactment of P.L. 94-142, the trend was to encourage as much independence as possible from mildly retarded children as evidenced from full-scale efforts at mainstreaming. Unfortunately, mildly retarded children usually also had deficits in social skill development as well as cognitive deficiencies, precluding their total involvement in social situations. This problem increased as the children grew into young adulthood because they were expected to locate jobs, maintain households, and interact socially with normal adults. The difficulty in fulfilling these roles was intense enough for people of normal intelligence; for retarded adults, it became even harder.

School Factors Related to Competence

Social competence might be described as the effectiveness with which the individual mastered the environment. For children, the environment to be mastered was mainly the school situation with the majority of social interactions taking place there. The fact that schools promoted cognitive growth and development was widely accepted. Yet, traditionally, schools attempted to teach specific skills, which often became obsolete soon after children left school, especially in recent times of rapid technological growth. That schools also socialized children by less direct teaching of appropriate (or perhaps inappropriate) social behavior was less intuitive. Therefore, even though teachers may not have stated they were socializers of their students, there did not appear to be a way to teach even impersonal facts without interpersonal interactions and directions occurring as well.

The development of cognitive and social/behavior skills seemed to be helical in that children needed to have attained certain levels of self-confidence and sense of achievement before they were able to venture into new areas of learning. For the mildly retarded child, the development of self-confidence and consequently, competence, was perhaps even more crucial for several reasons. First, the mildly retarded child was typically not diagnosed until first or second grade. These children may or may not have shown early signs of delays in terms of later developmental milestones. Children with

retardation secondary to obvious traumas such as hypoxia, spinal meningitis, and severe seizure disorders or to physically manifested chromosomal abnormalities such as Down's Syndrome, Freeman-Sheldon Syndrome (Whistling Face), fetal alcohol syndrome and achondroplasia typically fell more often into moderate to severe ranges of mental retardation than within the mild range. Therefore, most mildly retarded children were not referred for intelligence testing until they had already experienced failure in school.

Also, most school systems preferred to wait until at least first or second grade to evaluate children experiencing learning problems. This tendency was based on the assumption that most children mature enough after kindergarten to alleviate the problems. By the time those children were identified as handicapped, they may have already experienced one or more years of failure and not fitting in with the other children.

Even after identification, EMH children usually received only from 1 to 3 hours per day of specialized instruction. The remainder of their day was spent in the regular classroom with grade-appropriate expectations. The fact that these children appeared normal in many ways may have tended to inflate the expectations made of them, thereby increasing the opportunities for failure. The role of the school then must be to foster both cognitive growth and an appropriate sense of confidence in these children's ability to effect change and control in their environment.

Findings Related to Competence and I.Q.

Because schools did invariably socialize children, it seemed the ultimate goal, especially with retarded children, to know what was involved in fostering competence. This study included variables which were believed to be contributing to later competence.

Traditionally, research reported significant relationships between intelligence and competence, inferring a certain degree of understanding at the cognitive level was necessary for accurate social perceptions. By definition, children with I.Q.'s of two or more standard deviations below the mean were considered retarded. Lower adaptive behavior scores were also predicted by inclusion of delays in adaptive behavior in the retardation definition.

The findings in the present study showed the mean score of DSQ of the top 20 EMH subjects to be 93.5, which was within normal limits ($\bar{X} = 100$, S.D. = 9) for the entire population. Almost one-third of the sample children who were -2 to -3 standard deviations below the mean in intelligence had competence scores which were within normal limits. The mean DSQ score for the entire sample, 82, was the cut-off point below which the score would be considered within the range of retardation. The median score of 83.5 was also slightly within the normal range of competence, indicating further that at least half of these EMH children had normal competence scores. There were 12 (18%) children whose DSQ scores were within one standard deviation of the mean.

These findings supported the hypothesis that I.Q. was not the major predictor of competence. Also, I.Q. did not explain enough of the variance in competence to enter the stepwise multiple regression equation at $p < .05$.

Findings Related to Competence and Language

It was hypothesized that language would account for more of the variance in competence than I.Q. Yet the correlation between language and DSQ was $-.197$ which when squared indicated that language ability explained only 3% of the variance. This value also indicated an unexpected negative correlation between these two variables. Language failed to relate to DSQ significantly when mean scores of low- and high-competence groups, of low-, moderate-, and high-competence groups, and of males and females at each level of competence were analyzed. As expected, language was positively correlated with I.Q., but not to the degree found by other studies. Using these intelligence and language instruments, r^2 indicated only an 11% explanation. Interestingly, language was also positively correlated with gross motor ability ($r^2 = .29$). An expected correlation was found between language and age ($r^2 = .60$).

However, the relationship between language and competence may not be this inconsequential when further analysis of the Vineland was made. Vineland items assessing communication ability involved verbal responses only up to the 3-4

year level. The communication component at the 5-6 year level assessed the ability to print simple words; at the 6-7 year level, communication included the ability to use a pencil for writing; at the 8-9 year level, the communication component was "reads on own initiative." For children 10 years of age and older, communication items included wrote short letters, made telephone calls, answered ads by mail, and enjoyed books, magazines, and newspapers. No assessment (excluding telephone calls) of components of competent verbal ability was made. Also, none of the items beyond the 1-year level directly involved assessment of receptive language skills. Thus, while this study did not support the hypothesized relationship between language and competence, theoretical relationships did exist between competence and the child's ability to manipulate the environment orally.

Findings Related to Competence and Preschool Experience and Age

The preschool experience hypothesis assumed a positive relationship between number of years in a preschool program and competence, based largely on findings of research of the Headstart program. Several analyses helped explain the negative correlation between years in preschool and competence ($r^2 = .042$). Based on this correlation, the more years in a preschool program the child had experienced, the lower his or her competence score was. Yet, the analysis of

variance between DSQ means of younger (5.0-5.11), middle (6.0-8.11), and older (9.0-12.2) children was significant, with younger children's scores an average of 7.09 higher than the older group and an average 4.29 higher than the middle group. Also, while not statistically significant, the younger group had been involved in a preschool program an average of one year longer than the older group and six months longer than the middle group. Preschool experience entered the stepwise equation as a significant contributor to the variance in competence, adding approximately 7.4% to total variance explained. Age had entered first, explaining slightly more than 7.4%. However, age was also negatively correlated with DSQ, confirming the results of the ANOVA on DSQ by age group.

In summary, the relationship between preschool experience and competence appeared to be strongest for the younger 5-year-olds, just entering school. The fact that day care experience was not as accessible when the 9-12 year old group was younger was thought to explain at least part of this finding. Also, the possible social skill development benefits of a preschool program were more recently experienced by the younger group. Because of these factors, the data could not be analyzed conclusively to support or reject the theory that competency behaviors learned in preschool tended to taper as the child grew older.

While statistical explanation could not be determined with this sample, the evidence remained that competence

decreased with age. Again, an item analysis of the Vineland and of home and school expectations of older children was necessary to interpret this finding. On the Vineland, items appropriate for 6-7 year olds for example, included using a table knife, using a pencil for writing, bathing self with assistance, and going to bed unassisted. These were items most 6-7 year old EMH children could accomplish because they were routine, well-established behaviors. Yet, as the EMH child ages, the discrepancy between chronological age and expected behaviors widens due to the more complex tasks required. On the Vineland, for example, the 10-11 year old was expected to write letters, make telephone calls, do small remunerative work and answer ads by mail. The average 10- to 11-year-old EMH child, however, would have much difficulty with these tasks, when it was considered that reading ability at this age would be at approximately the second grade level.

Again, while EMH children may have appeared somewhat slower in the earlier grades, it was not until the cognitive shift occurred, usually in the third grade for all children, that the discrepancy truly became evident. The cognitive shift theorized that changes in learning expectations occurred during the third grade from children's taking in information to their having to process and express information verbally or motorically. The result of the shift, whether of inherent cognitive maturation or of children's response to differing expectations and curriculum designs of school programs,

was relevant for normal children. For retarded children, however, the assumption remained that this shift was not typically mastered until much later. The discrepancy, then, which was less evident in young children, increased after the third grade for these children, who again were still attempting to function at least marginally in the regular classroom.

As discussed, cognitive and social development were intertwined, indicating that the discrepancy between normal and EMH children increased in the upper elementary grades on social behaviors. Competent school behaviors expected of a normal 5- to 6-year-old included labeling colors, counting to 10, reciting the alphabet, recognizing shapes, writing first names, and understanding the concept of same and different and directions in space.

Social behaviors related to academic behaviors expected of a 5- to 6-year-old included interactive play, sitting at a desk and listening to others, being responsible for toileting and dressing, and keeping up with a few personal items, such as coats or toys. Most mildly retarded 5- to 6-year-olds were able to approximate these behaviors well enough. Yet, academic behaviors expected of normal 10-year-olds, such as report writing, multiplication, division, parts of speech, geography and history were not within the realm of understanding for retarded children. Similarly, while a normal 10-year-old could be expected to be responsible for younger children for short periods of time, partially prepare meals,

earn and be responsible for money, and be involved in group sports outside the neighborhood, a retarded 10-year-old would need direct adult supervision to approximate these behaviors.

Sex Differences in Competent Behavior

The variable sex was not entered into either the stepwise or the backward regression equations. The mean DSQ score for boys was 84 and for girls was 80. The difference in these two means was not significant at $p < .05$. Several sex differences were expected in relation to competence. First, it was hypothesized that language would be a better predictor of competence for girls than for boys, based on accepted research that girls develop language more proficiently than boys. Within the mildly retarded group, however, there was no significant difference between the sexes on language abilities of children within each of three levels of competence (see Table 2). This lack of gender difference in language may have been more related to language deficits among this population than to the accepted observation of more efficient language development among girls.

Findings Related to Competence and Gross Motor Ability

It was also expected that gross motor ability would explain more of the variance in competence for boys than for girls. For the entire sample, gross motor ability was not significantly related to competence. This finding was unexpected because the Vineland included several items

related to what was termed locomotion, which involved gross motor abilities. For example, the ability to walk down-stairs one step at a time was listed at the 3-4 year level. However, analysis of locomotive items for children between 5 and 12 years of age included abilities which were more directly related to cognitive and social maturity than to actual ability to use large body muscles in movement, balance, and coordination. For example, at the 5-6 year level, locomotion involved going to school unattended. At the 9-10 year level the task was to get around the hometown freely. When the sample was partitioned, significant differences were not found between the 20 least and 20 most competent children, or between the means of scaled scores of low, moderately and highly competent children. The gross motor difference by sex hypothesis was also not supported when boys and girls were compared at each level of competence (see Table 2).

One contributing factor to this lack of significant findings was the relationship between gross-motor and cognitive ability. The correlation between I.Q. and gross motor ability was significant at $p < .041$ with $r = .250$. This result was not surprising in that although the instrument used to determine gross motor age equivalents (The Bruininks-Oseretsky Test of Motor Proficiency) assessed gross motor function at various age levels, many of the items required a definite cognitive component. Consequently, a distinction

between what a retarded child was actually able to do bodily and what he or she may have been able to do had the specific task requirements been understood was often difficult to determine, warranting a lack of credit on that item. Also, the tasks required were designed in an attempt to include nonsex stereotypic activities.

Findings Related to Competence and Race

As expected, race was not a factor in predicting competence, nor was it significantly related to any other independent variables. Race explained only 3.16% of the variance in competence.

Findings Related to Competence and Income Level

In that mild mental retardation had been labeled as synonymous with cultural deprivation, the effect of income on competence was considered. Family income of less than \$11,287 per year did not account for a significant amount of variance in DSQ. Incomes between \$11,288 and \$15,000 were significantly related to competence and accounted for 5.75% of total variance. Again, an income of \$11,000-\$15,000 was considered within the middle income level given regional restrictions.

CHAPTER VI
SUMMARY AND CONCLUSIONS

This study analyzed relationships between several variables and social competence. With components of competence more clearly defined, remedial strategies to be used with mildly retarded children would be easier to develop. For those variables which were unchangeable, further investigation of competencies by sex, race, or age may lead to greater global understanding.

These analyses determined significant negative relationships between number of years in a preschool program, age, and competence. The criteria used to determine competence may not be appropriate for retarded children. By definition, EMH children do not succeed as well as normal children in academic areas. This suggests that their competencies may lie in other areas, which need to be further explored. Over half of this sample of EMH children received competence scores above the delineation used to denote retardation. This supports the belief that EMH children have specific competencies which schools do not typically formally foster.

This research also indicates a strong need to define, assess, and remediate competent classroom behavior. If no

or few retentions, less time in specialized classrooms, and fewer suspensions due to discipline problems are indeed components of school competence, as Palmer (1979) suggested, is preschool experience the only or major causative factor? This study also indicated that gross motor ability was not related to competence. Alternative methods of assessment, such as Humphrey and Kirschenbaum's (1981) work, which studied group sports participation or desire to participate, may be more contributory. Also, even though language, as defined in this study, was not related to competence, the child's ability to express himself or herself among peers or among regionally or culturally similar adults is probably a better indicator of competent language.

Another factor significantly related to competence was income at the middle level. In defining adult competence, variables such as maintaining a job with an adequate income and assuring at least minimal sustenance levels for one's family are included. The fact that low-income children were less competent may be directly related to parental incompetence. It is suspected that the lack of internal locus of control, contributed to by feelings of powerlessness in effecting changes in one's environment, is strongly related to child and adult incompetence and is a necessary construct for future investigations.

There was no clear indication as to why these eight independent variables together explained only 30% of the

variance in competence. Limitations inherent in the instruments chosen to define specific variables were, again, perhaps not true indices of necessary competent behaviors. More naturalistic observations of children's day-to-day home and school behavior would help alleviate these limitations. Additionally, the Vineland may not be accurately assessing those behaviors necessary for adequate social functioning. It is more likely that the age level items on the Vineland are appropriate, but need expansion or revision to assess competence of today's children better.

One factor not analyzed in this study which has been shown to be vital to the development of competence is parental attitudes and child-rearing behaviors. Much information could be learned from studies similar to Baumrind's (1971) and B. L. White's (1972), with other children and with mildly retarded children.

An interesting finding of the present study was the high levels of competence among younger children as compared to children aged 9-12 years. The most plausible explanation and area of further research involves the relationship between the cognitive shift phenomenon and social competence development. If children's cognitive behaviors do become more planful and strategic after the shift occurs, an assumption to follow may be that their dealings with other people and their social environment may also take on planful characteristics. It would be useful to examine

the way in which retarded children shift their cognitive behaviors to better understand this reasoning. It may be that retarded children do not make the necessary cognitive adjustments, and consequently, also do not learn how to deal in planful behaviors in social situations as they get older.

The major emphasis in this study was that as older children and adults, mildly retarded individuals typically become self-supporting and socially functional. It was inherently believed that those mildly retarded adults who did not achieve these minimal levels of social functioning failed not as a result of their limited cognitive abilities, but as a result of the lack of development of competent behaviors. This study explored several correlates of competence within this population and pointed out the need for further investigation of specific school and young adult behaviors which contribute to competence.

Recommendations for further study include:

1. This study revealed that older children (aged 9-12) were less competent than younger children (aged 5-6). It may be that this finding was the result of the difficulty of Vineland items for older children compared with the relatively simpler items found in the younger age range. The cognitive shift phenomenon also warrants further investigation in that older EMH children may not have successfully bridged that gap cognitively or socially.

2. Preschool experience also was a better predictor of competence for the younger group. Longitudinal studies comparing types and length of day care experience to levels of competence among various age groups would be enlightening.

3. No differences among males and females were found. In the literature, however, there are bases for the effects of language and gross motor abilities which need to be investigated using instruments measuring competence which include five language and motoric items.

4. The Vineland proved to be an inadequate instrument in the assessment of social competence among mildly retarded children. Development of more naturalistic scales is necessary to adequately assess competence behaviors in this population. Also, specific school behaviors determined as competent need delineation.

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APPENDIX A
CONSTANTS FOR CONVERTING SQs TO DSQs
BASED ON VALUES SMOOTHED BY
CURVE FITTING

Age	a	b	Age	a	b	Age	a	b
0	.49	50.05	10.0	.83	16.61	20.0	1.10	-10.85
.5	.51	48.64	10.5	.84	15.05	20.5	1.10	-10.85
1.0	.52	47.46	11.0	.87	12.60	21.0	1.10	-10.85
1.5	.54	45.89	11.5	.88	10.88	21.5	1.10	-10.85
2.0	.55	44.57	12.0	.90	9.10	22.0	1.10	-10.85
2.5	.56	43.19	12.5	.92	7.24	22.5	1.10	-10.85
3.0	.58	41.35	13.0	.94	5.31	23.0	1.08	-9.52
3.5	.60	39.80	13.5	.96	3.30	23.5	1.08	-9.52
4.0	.61	38.16	14.0	.97	2.26	24.0	1.07	-8.21
4.5	.63	36.88	14.5	.99	.11	24.5	1.07	-8.21
5.0	.64	35.07	15.0	1.00	-1.00	25.0	1.06	-6.94
5.5	.65	33.16	15.5	1.02	-3.30	25.5	1.05	-5.70
6.0	.68	31.65	16.0	1.03	-4.48	26.0	1.03	-4.48
6.5	.70	29.53	16.5	1.05	-5.70	26.5	1.01	-2.13
7.0	.71	27.86	17.0	1.06	-6.94	27.0	1.00	-1.00
7.5	.73	26.10	17.5	1.07	-8.21	27.5	.99	.11
8.0	.75	24.25	18.0	1.07	-8.21	28.0	.97	2.26
8.5	.77	22.31	18.5	1.08	-9.52	28.5	.95	4.32
9.0	.79	20.26	19.0	1.10	-10.85	29.0	.94	5.31
9.5	.80	18.84	19.5	1.10	-10.85	29.5	.92	7.24
						30.0	.90	9.10
						30.5	.88	10.88

Note: $DSQ = a SQ + b$.

APPENDIX B
VINELAND SOCIAL MATURITY SCALE

Age Periods

0-I

1. "Crows"; laughs
2. Balances head
3. Grasps objects within reach
4. Reaches for familiar persons
5. Rolls over
6. Reaches for nearby objects
7. Occupies self unattended
8. Sits unsupported
9. Pulls self upright
10. "Talks"; imitates sounds
11. Drinks from cup or glass assisted
12. Moves about on floor
13. Grasps with thumb and finger
14. Demands personal attention
15. Stands alone
16. Does not drool
17. Follows simple instructions

I-II

18. Walks about room unattended
19. Marks with pencil or crayon
20. Masticates food
21. Pulls off socks
22. Transfers objects
23. Overcomes simple obstacles
24. Fetches or carries familiar objects
25. Drinks from cup or glass unassisted
26. Gives up baby carriage
27. Plays with other children
28. Eats with spoon
29. Goes about house or yard
30. Discriminates edible substances
31. Uses names of familiar objects
32. Walks upstairs unassisted
33. Unwraps candy
34. Talks in short sentences

II-III

35. Asks to go to toilet
36. Initiates own play activities
37. Removes coat or dress
38. Eats with fork
39. Gets drink unassisted
40. Dries own hands
41. Avoids simple hazards
42. Puts on coat or dress unassisted
43. Cuts with scissors
44. Relates experiences

III-IV

45. Walks downstairs one step per tread
46. Plays cooperatively at kindergarten level
47. Buttons coat or dress
48. Helps at little household tasks
49. "Performs" for others
50. Washes hands unaided

IV-V

51. Cares for self at toilet
52. Washes face unassisted
53. Goes about neighborhood unattended
54. Dresses self except tying
55. Uses pencil or crayon for drawing
56. Plays competitive exercise games

V-VI

57. Uses skates, sled, wagon
58. Prints simple words
59. Plays simple table games
60. Is trusted with money
61. Goes to school unattended

VI-VII

62. Uses table knife for spreading
63. Uses pencil for writing
64. Bathes self assisted
65. Goes to bed unassisted

VII-VIII

66. Tells time to quarter hour
67. Uses table knife for cutting
68. Disavows literal Santa Claus
69. Participates in pre-adolescent play
70. Combs or brushes hair

VIII-IX

71. Uses tools or utensils
72. Does routine household tasks
73. Reads on own initiative
74. Bathes self unaided

IX-X

75. Cares for self at table
76. Makes minor purchases
77. Goes about home town freely

X-XI

78. Writes occasional short letters
79. Makes telephone calls
80. Does small remunerative work
81. Answers ads; purchases by mail

XI-XII

82. Does simple creative work
83. Is left to care for self or others
84. Enjoys books, newspapers, magazines

XII-XV

85. Plays difficult games
86. Exercises complete care of dress
87. Buys own clothing accessories
88. Engages in adolescent group activities
89. Performs responsible routine chores

XV-XVIII

90. Communicates by letter
91. Follows current events
92. Goes to nearby places alone
93. Goes out unsupervised daytime
94. Has own spending money
95. Buys all own clothing

XVIII-XX

- 96. Goes to distant points alone
- 97. Looks after own health
- 98. Has a job or continues schooling
- 99. Goes out nights unrestricted
- 100. Controls own major expenditures
- 101. Assumes personal responsibility

XX-XXV

- 102. Uses money providently
- 103. Assumes responsibility beyond own needs
- 104. Contributes to social welfare
- 105. Provides for future

XXV+

- 106. Performs skilled work
- 107. Engages in beneficial recreation
- 108. Systematizes own work
- 109. Inspires confidence
- 110. Promotes civic progress
- 111. Supervises occupational pursuits
- 112. Purchases for others
- 113. Directs or manages affairs of others
- 114. Performs expert or professional work
- 115. Shares community responsibility
- 116. Creates own opportunities
- 117. Advances general welfare

APPENDIX C
OUTLINE OF STATISTICAL PROCEDURES
AND SAMPLE GROUPINGS

- I. Nonpartitioned total sample N=66
 - A. Stepwise Regressions
 1. With variable low income level
 2. With variable moderate income level
 3. With variable high income level
 - B. Backward Regressions
 1. With variable low income level
 2. With variable moderate income level
 3. With variable high income level
 - C. Correlation matrix and level of significance with dependent variable, independent variables, and one collapsed income variable
- II. Sample partitioned by age
 - A. Groups--less than 5.11 (n=24), 6.0-8.11 (n=24), and 9.0+ (n=18)
 - B. Statistical procedure--ANOVA on mean differences of DSQ and preschool experience
- III. Sample partitioned by level of competence (DSQ)
 - A. Groups--low competence (n=23), moderate competence (n=25), high competence (n=18)
 - B. Statistical procedure--ANOVA's on mean differences of scores
 1. DSQ
 2. I.Q.
 3. Language standard score
 4. Gross-motor standard score
 5. Number of years in preschool program
- IV. Sample partitioned by sex
 - A. Groups--males (n=47), females (n=19)
 - B. Statistical procedure--t-test comparing two groups means on DSQ scores

V. Levels of competence partitioned by sex

- A. Groups--low competence males (n=14), low competence females (n=9)
- B. Statistical procedure--t test comparing means of males and females of low competence
 - 1. Gross-motor ability
 - 2. Language ability
- C. Groups--moderate competence males (n=17), moderate competence females (n=8)
- D. Statistical procedure--t test comparing mean of males and females of moderate competence
 - 1. Gross-motor ability
 - 2. Language ability
- E. Groups--high competence males (n=14), high competence females (n=4)
- F. Statistical procedure--t test comparing means of males and females of high competence
 - 1. Gross-motor ability
 - 2. Language ability

VI. Sample partitioned by extremes of competence

- A. Groups--20 most competent, 20 least competent
- B. Statistical procedures--t-tests comparing means of most and least competent children
 - 1. DSQ
 - 2. I.Q.
 - 3. Language ability
 - 4. Gross-motor ability
 - 5. Preschool experience