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AN EXPLORATORY STUDY OF THE CAPACITY TO
INVESTIGATE LOCUS OF CONTROL IN FOUR-,
FIVE-, AND SIX-YEAR-OLDS

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AN EXPLORATORY STUDY OF THE CAPACITY TO
INVESTIGATE LOCUS OF CONTROL IN FOUR-,
FIVE-, AND SIX-YEAR-OLDS

By

Elizabeth Butler Stapleford

A DISSERTATION

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ABSTRACT

AN EXPLORATORY STUDY OF THE CAPACITY TO INVESTIGATE LOCUS OF CONTROL IN FOUR-, FIVE-, AND SIX-YEAR-OLDS

By

Elizabeth Butler Stapleford

This study was designed to explore the efficacy of gathering and analyzing data regarding the locus of control preference in children aged four, five, and six. The Preschool and Primary Nowicki-Strickland Internal-External locus of control scale (PPNSIE), an instrument designed to assess locus of control preference in children of this age, was administered to 150 preschool and kindergarten children in a United States Department of Defense Dependents School in West Germany.

The following research hypotheses were developed to investigate the locus of control construct in very young children.

1. Children by the age of four, five, and six will indicate a preference for internal locus of control which will not change over a five week period.
2. The differences in the ages of the children will be unrelated to their locus of control preference.
3. The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.
4. Teacher academic ratings of the children will be unrelated to their locus of control preference.

A match paired t-test and a 2 x 3 x 2 analysis of variance were used to analyze the data from the control scale.

The kindergarten portion of the sample was the entire population of five- and six-year-olds on Sembach Air Base. Unlike the kindergarten children, the preschool age children were not the entire four-year-old population on the base. The four-year-olds used in this study came exclusively from the preschool classrooms.

The major findings of the study may be summarized as follows:

Results from this study do not deny that children's locus of control status is stable. It would appear to be consistent with child development theory that locus of control is established in the four-year-old child. This study was not able to deny or confirm stability, and therefore the locus of control construct in four-, five-, and six-year-olds must necessarily remain a presumption.

Age was found in this study to be a factor in locus of control preference. Four-year-old children were significantly more internally controlled than either five- or six-year-olds. This is in contrast with findings of earlier studies and development theory that older children were more internal than younger children.

Consistent with similar findings by earlier researchers, this study did not find sex to be a factor on locus of control status.

Academic ratings of children by their teachers were found to affect locus of control preference with the lower academically ranked children being more internal than those rated as high. This is in contrast with findings of earlier studies which found that students who were internal tended to be higher academically ranked.

Boys aged four, regardless of academic standing, were the most internally controlled in this study. But at five years of age regardless of academic standing, they were the most external of all groups. At six they remained external, but slightly less external than five-year-olds.

Also, low academically ranked boys, regardless of age, were the most internally controlled in this study. But low academically ranked girls were more external than girls ranked as academically high.

The nature of the test instrument, PPNSIE, from which all data was obtained may have adversely affected the reliability of the data obtained from it. Also, since the PPNSIE authors did not field test the instrument with four-year-olds, reliability of scores for this age group is questionable.

In addition to these findings, suggestions for future research are presented.

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ELIZABETH BUTLER STAPLEFORD

1980

DEDICATION

To Helen Gaunt Butler, my dear mother
and to the memory of
Hiram Kaufman Butler, my gentle father.

ACKNOWLEDGMENTS

I would like to express my appreciation and thanks to those who gave their encouragement and assistance in my work:

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CHAPTER I

PROBLEM

Introduction

The purpose of this investigation was to explore whether it is possible to examine the locus of control in the four- to six-year-old child.

Whether an individual sees himself as basically in control of the myriad situations of daily life or on the other hand at the mercy of factors outside his control, describes a personality trait that has been called locus of control (Rotter, 1954). Rather than being an either/or situation, people can be situated somewhere along a continuum between the two extremes of internal and external control. Depending on the manner in which learning has been experienced, there is a tendency for individuals to be closer to one end of the continuum than the other (Nowicki and Stirkland, 1971). Just how early this gravitating effect occurs, when we can describe someone as being internally controlled or externally controlled, has yet to be established.

Theoretical Framework

The set of ideas that led to a theory of internal and external locus of control has been around for a long time. More than two centuries ago Locke, Leibnitz, and Rousseau had given

their views as to the nature of man's mind. For Locke (1959), man's mind was essentially passive in nature. For Leibnitz (1972) and Rousseau (1976), man's mind was essentially active in nature.

John Locke assumed the mind of the individual to be a tabula rasa at birth. And the intellect itself was a passive thing acquiring content and structure only through the impact of sensation and the crisscross of associations; that is, imprinting. Locke insisted that there can be nothing in the intellect that was not first in the senses.

Like Leibnitz and unlike Locke, Rousseau theorized that the child responded actively to the world around him, engaging

his environment, using it to suit his interest. The child fits his abilities to the world in play and in the solving of problems, not as a passive recipient of the tutor's instruction . . . but as a busy, testing, motivated explorer. Knowledge is not an invention of adults poured into willing or unwilling vessels; it is a joint construction of the child in nature and natural world. . . .

The active searching child, hence, setting his own problems, stands in contrast to the receptive one (Rousseau, 1976).

To Leibnitz and Rousseau the intellect was perpetually active in its own right, addicted to rational problem solving, and bent on manipulating sensory data according to its own inherent nature. For Locke the organism was reactive when stimulated; for Leibnitz it was self-propelled. It may well be that both philosophical points of view were accurately seeing man in his process of becoming. Locke theorized that man passively received knowledge and relied on external controls to stimulate his becoming. Leibnitz and Rousseau on the other hand observed and hence theorized that man

actively engaged in the pursuit of becoming and was consequently internally controlled.

Locke, Liebnitz, and Rousseau's writings were important seminal influences in theories of child development. Contemporary theorists and researchers, like Piaget and Erikson, however, felt the need to check these hypotheses by systematic and careful observations.

Piaget's observation of autonomy in moral judgment led him to conclude that it emerged from within the child. But this has to develop, for at first the young child is egocentric and he operates in terms of moral realism. By this term, Piaget means that the child considers all rules to be sacred and unalterable. They come from without. That is, the child's morality is heteronomous (determined by the rules laid down by others, typically his parents). However, autonomous morality occurs later (between two-four years of age) and, Piaget believes, largely because of the give-and-take the child experiences in his peer group where he slowly learns others' points of view. This grows out of his egocentrism through role taking and participating in decisions. Autonomous morality comes from within. Laws are seen, not as sacred and immutable, but as social arrangements that come about through reciprocal agreement and that are for the good of all those affected by them. Thus, laws are modifiable in terms of human needs, including social change (Piaget, 1952).

Erikson's second stage of personality development, like Piaget's moral autonomy, sees the child of four emerging as the one

in charge. In the second stage, the one- to three-year-old child is faced with an important step: the development of either a sense of autonomy or a sense of doubt with which he will face his world. The child's new motor skills, as well as his mental accomplishments and his knowledge of himself as a separate being, cause him to form basic feelings about his own ability to do things for himself (Erikson, 1963). Both Piaget and Erikson see the parents or caretakers as crucial during these stages. Piaget sees that equalitarian parents who handle their children through reasoning or induction can greatly facilitate moral development (Hoffman, 1970). And likewise the parents are crucial for the development of a sense of autonomy, in that, if the parents do everything for the child, prevent his explorations, or impose too many punishments, he may leave this stage doubting his own abilities (Erikson, 1963).

Piaget went on to test his observations by carefully interviewing children. However, Erikson's theory of psychosocial development (development of autonomy or a feeling of self-control and self-determination) cannot be seen directly. That is, one cannot observe autonomy directly. But if Erikson is correct about the young child's need to direct his own behavior, we should see behavioral evidence, such as the two-year-old's emphatic "No!" to parental requests, the verbal response "Me do it." to proffered help, the temper tantrums that sometimes occur when a child's goals are thwarted, and so forth. Erikson's theoretical statement about autonomy predicts these diverse behaviors.

Piaget's observations on the development of autonomy in moral judgment and Erikson's theory of autonomy in personality (a child's sense of self-determination) are related. Also related is another dimension, internal locus of control, conceptualized by Julian Rotter and his colleagues (Rotter, 1954, 1966; Lefcourt, 1966).

The child's new motor skills, as well as his mental accomplishments and his knowledge of himself as a separate being, cause him to form basic feelings about his own ability to do things for himself. However, young children vary greatly in the amount of curiosity they experience and in the way they express it. Bright children, it has been found, are more active in exploring their environment and ask more questions than those of lower intellectual levels (Stone and Church, 1973).

The social learning theory of Julian B. Rotter (1954) carries this notion one step further.

As an infant develops and acquires more experience he differentiates events which are causally related to preceding events and those which are not. It follows as a general hypothesis that when the reinforcement is seen as not contingent upon the subject's own behavior that its occurrence will not increase an expectancy as much as when it is seen as contingent. Conversely, its nonoccurrence will not reduce an expectancy so much as when it is seen as contingent. It seems likely that, depending upon the individual's history of reinforcement, individuals would differ in the degree to which they attributed reinforcements to their own actions.

Justification for the Study

Limited Amount of Research With Young Children

The literature has been particularly rich in work done on locus of control in high school or college age groups. Beginning in recent years, upper elementary and junior high age groups have held the researchers' attention. But, the literature has been nearly void in the area of the preschooler, and to the author's knowledge nothing has been done with the age group below five.

It seems logical that the younger the age one attempts to observe a mental state, the more likely one is to find it less affected by experiences from an external world. This, of course, is not a new idea for philosophers of the mind have held that in the life of an individual it is the "patterns of behavior" perceptible in infancy that "must be the original endowment from which the purely mental states develop," and that what is later regarded as "inner," be it an emotion, an effect, or a fantasy, is "a residue" that remains when all forms of associated behavior are reduced to the vanishing point (Hampshire, 1962). Since the capacity to restrict associated behavior and influences increases with age, it is evident that the younger the subject the more likely are his behavior and mental state to be in a less affected form.

In 1920 Freud pointed out the serious limitations of the retrospective method. He said:

So long as we trace the development from its final outcome backward, the chain of events appears continuous, and we feel we have gained an insight which is completely

satisfactory or even exhaustive. But if we proceed the reverse way, if we start from the premises inferred from the analysis and try to follow these up to the final result, then we no longer get the impression of an inevitable sequence of events which could not have been otherwise determined. We notice at once that there might have been another result, and that we might have been just as well able to understand and explain the latter. The synthesis is thus not so satisfactory as the analysis; in other words, from a knowledge of the premises we could not have foretold the nature of the result.

Purpose

It was the purpose of this study to attempt to explore locus of control in four- to six-year-old children. The internal-external locus of control dimension (I-E) as derived from social learning theory (Rotter, 1954) describes the degree to which an individual believes that reinforcements are contingent upon his own behavior. According to this theory, people vary along a continuum with respect to how they perceive their ability to control events or not control events. The closer an individual is to one end or the other, the more internal or external he may be said to be. An expectancy that reinforcements depend upon one's own actions describes the internal portion of the continuum. If a person believes that events are unpredictable because of the great complexities of the forces around him, he is described as being somewhere along the external portion of the continuum.

Hypotheses

The data for the present study were provided by the entire population of 150 four-, five-, and six-year-old children enrolled

in the preschool and kindergarten on Sembach Air Base, Sembach, West Germany. A measure of locus of control, Preschool and Primary Nowicki-Strickland Internal-External Control Scale, was administered to obtain pertinent information. The following research hypotheses were pursued:

1. Children by the age of four, five, and six will indicate a preference for locus of control that will not change over a five week period.
2. The differences in the ages of the children will be unrelated to their locus of control preference.
3. The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.
4. Teacher academic ratings of the children will be unrelated to their locus of control preference.

Definition of Key Terms

For the purpose of this study the terms set forth below are defined as follows:

Internal-external locus of control dimension: This dimension (I-E) as derived from Julian B. Rotter's social learning theory describes the degree to which an individual believes that reinforcements are contingent upon his own behavior. An expectancy that reinforcement depends upon one's own actions is called internal control. If a person believes that events are unpredictable because of the great complexities of forces around him, he is described as being external in his locus of control.

Locus of control: Whether an individual sees himself as basically in control of the myriad situations of daily life or on

the other hand at the mercy of factors outside his control describes a personality trait that has been called locus of control. Rather than being an either/or situation, people can be situated somewhere along a continuum between the two extremes of internal and external control. Depending on the manner in which learning has been experienced, there is a tendency for individuals to be closer to one end of the continuum than the other.

Preschool: The term preschool as used in this study refers to four-year-old children.

Preschool and Primary Nowicki-Strickland Internal-External Control Scale: This scale (PPNSIE) was the measuring tool administered in this study. A complete copy of the test is located in Chapter II.

Primary: The term primary as used in this study refers to five- and six-year-old children.

Underlying Assumption

With respect to the theory underlying the study, the following assumption is presented:

Locus of control as theorized by Julian B. Rotter (1954) formed the theoretical framework for this study. It was assumed that his theory is valid.

Limitations of the Study

The limitations for generalizability of the findings in this study are in two areas: the population and the locus of control scale used, PPNSIE.

The population was unique in the respect that they were all children of U.S. Armed Forces personnel stationed in West Germany. This is a uniqueness not normally found in the general population. The breadwinners of each family working for the same employer and the children living in a foreign culture could have had an effect on this present study's findings.

The use of the PPNSIE, the only instrument used to measure locus of control in this study, may have affected the results obtained from the scale. A detailed discussion of these possible limitations is presented in Chapter III.

Overview

In Chapter II, a comprehensive definition of locus of control is presented as well as a comprehensive discussion of the development of the locus of control concept. In the review of the literature, the theory and research pertinent to locus of control will be explored in depth. The PPNSIE and pertinent information describing its development are also presented. Chapter III describes the subject sample, treatment procedure, materials, analysis, design, and hypotheses. The analysis of data and an interpretation of results for each hypothesis and the interaction effects are presented in Chapter IV. Chapter V includes a summary of this investigation, a discussion of the findings, and implications for further research in the area of locus of control.

CHAPTER II

REVIEW OF THE LITERATURE

Definition of Locus of Control Construct

Locus of control (Bialer, 1961), or attribution (Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1971), refers to the extent to which the individual feels that his successes or failures are due to what he himself does or else to the workings of external forces over which he has little control.

Therefore, the concept of locus of control bears on how an individual perceives the world he lives in. At one extreme, he may see it as chaotic and unpredictable; at the other, as orderly and reliable. The way in which a person's world is predicted is likely to play an important role in determining his behavior and its outcomes (Nowicki and Strickland, 1971).

Locus of control has been defined as follows:

When a reinforcement is perceived by subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relative permanent characteristics, we have termed this belief in internal control (Rotter, 1954).

In other words, when a child, a youth, or an adult believes he has primary control over his own fate--produces his own

reinforcements--and thinks that he can determine the way things turn out by the way he acts, we say he is internally controlled. When he believes that the things that happen to him are the results of the behavior of others (or of the stars, or the fates, or luck), he is externally controlled.

It must be pointed out, however, that the concept of locus of control is a very personal concept and it is intimately related to one's notion about himself.

It must also be noted that there is much variation in the nature of locus of control from one individual to another, and an individual may likely vary in the degree of internality or externality of his locus of control from one time to another. Human nature being what it is, a person will become more external following a chain of unfortunate behavior outcomes. Similarly, a person is likely to become more internal following a chain of successes.

Locus of control should be distinguished from expectation of success. Expectation of success is one's prediction of how a given endeavor will turn out: "I have a 50-50 chance of making it--or a 90-10 chance--or a 5-95 chance." Such an objective prediction has little relation to locus of control.

Development of Locus of Control

The findings to date, summarized in this section, have shown that the particular mother-infant relationship that is formed has a profound influence on various styles of personality development, one being the infant's locus of control.

The importance of the mother as a source of intellectual stimulation has been emphasized in a number of different approaches. Hunt (1963), for example, suggested that in the early months the child is responsive primarily to changes in stimulation. Therefore, the extent to which the mother provides for frequent encounters with a wide variety of situations involving change in stimulation influences the infant's early learning. This applies both to the behavior of the mother and the total environment she provides. Thus, frequency and variation of stimulation are seen as the characteristics important in early development and the extent to which the mother provides this can depress or enhance the child's subsequent development.

Another view that is represented by Gewirtz (1966) and Watson (1966, 1967) is based on the role of the mother as a source of reinforcement. The infant will tend to repeat those behaviors which are reinforced within his memory span. Since at three months it is estimated to be about five seconds (Watson, 1967), reinforcements must follow behavior fairly quickly if the child is to be aware of the contingencies involved. According to this view, the mother can encourage learning of desirable behavior by contingent reinforcement of these behaviors when they occur.

A third approach also centers on the notion of contingency but maintains that contingency is important, not only because it shapes acquisition of specific behavior, but because it enables the child to develop a motive which is the basis for all future learning. The main characteristic of this motive is the infant's belief

that his actions affect his environment. In this case, the mother is important because it is the contingency between the infant's behavior and her responses that enable the infant to learn that his behavior does have consequences. The main differentiation between this view and the operant conditioning position is that the latter predicts only change in specifically reinforced behaviors while the former predicts change in behaviors not specifically reinforced (Lewis, Goldberg, and Rausch, 1967).

Three theoretical systems have been briefly presented to account for the dynamics of mother-infant interaction: (1) amount and variety of stimulation provided the infant by the mother, (2) reinforcement of behavior of the infant by the mother, and finally (3) a contingency model involving, not the learning of a particular behavior, but a generalized expectancy. This expectancy or motive could effect the environment. This last system has important implication for the researcher's study.

Previous Studies and Their Findings

There have been many themes investigated about locus of control. This review is directed toward an evaluation of locus of control investigations which have ramifications for five inter-related areas: (1) the resistance to influence; (2) cognitive activity; (3) deferred gratification, achievement behavior, and the response to success and failure; (4) familial and social antecedents of locus of control; and (5) changes in locus of control.

It is the intent of this review to look at these themes as comprehensively as possible and to restrict the review primarily to those research studies that have used or discussed their results in terms of internal and external control of reinforcement expectancies (I-E). The writer wishes to give credit for the major part of this review to Lefcourt's review of locus of control (1974).

Resistance to Influence

The first two investigations to empirically link locus of control to influence resistance were performed by Odell (1959) and Crowne and Liverant (1963). Odell found a significant relationship between Rotter's Internal-External Control Scale and Barron's Independence of Judgment Scale, with subjects high in externality showing a greater likelihood of conformity. Crowne and Liverant also reported that externals had less confidence in their own judgment abilities when making independent rather than conforming judgments.

Gore (1963) found that internals and externals differed in their response to an examiner who was administering the TAT when the examiner, through smiles and intonation, attempted to manipulate the subjects. Internals produced shorter TAT stories than externals when the examiner's gestures indicated that subjects were expected to produce longer stories in response to the specific TAT cards being presented. When the examiner made no suggestions, this difference between internals and externals was not obtained.

Two other investigations employed a verbal conditioning model in which the locus of control was used to predict the

responses to verbal reinforcements. Strickland (1970) found that internality-externality was related to the denial of having been influenced by the verbal reinforcements; internals denied influence more often than externals. Strickland also found that internals who were aware of the reinforcement contingency in her study tended to exhibit less conditioning than internals who were unaware of the contingencies, and less than all external subjects regardless of whether or not they were aware of the contingencies. Getter (1966) found that the most responsive "conditioners" were his most external subjects. Getter's more internal subjects produced the conditioned response mostly during extinction trials, after the experimenter had ceased his own reinforcing responses.

In each of these studies, there is some indication that internals behave in a somewhat oppositional manner, doing the reverse of what others would coerce them into doing. Biondo and MacDonald (1971) have examined the effect of subtle versus overt influence attempts upon the tendencies of internals and externals to resist influence. These investigators found no differences as a function of the subtlety of their influence methods. Rather, externals were found to be more accepting of either influence approach in the way they rated the desirability of a given course grading system. Likewise, Hjelle (1970) found that externals manifested greater attitude change than internals when they had been exposed to standard communication advocating positions contrary to their previous attitudes.

Johnson, Ackerman, Frank, and Fionda (1968) have investigated the resistance to temptation. They employed a "complete a story" device in which the story hero experiences social pressure directing him toward the violation of some social norm. Subjects had to complete the stories in which the hero was either at the point of decision making, or had already complied with the pressure and now had to confront the consequences. Among male undergraduates, Johnson et al. found that the more internal the subject, the more likely was he to complete stories in which the hero resisted pressure. In addition, when the transgression had already occurred, internals were more likely to have the hero acknowledge guilt about his having yielded to pressure than were externals. These results were not obtained in the female sample, though internality-externality was related to a measure of stability among females, with the more internal scoring as the more stable on Eysenck's Personality Inventory.

Ritchie and Phares (1969) found that externals exhibited more conforming attitude changes regarding governmental budgeting than internals only when the influence arguments were attributable to a high-status individual. When arguments were attributed to prominent figures, externals yielded more than did internals. However, internals were not immune to the arguments presented, showing some shift in the direction of the influencer's commentary. However, internals did not vary with influencer status. Neither internals nor externals could be described as uniformly resistant or susceptible.

James, Woodruff, and Werner (1965) found that subsequent to the U.S.P.H.S. Surgeon General's report linking cancer with cigarette smoking, among male smokers, those who quit for a specified length of time were more internal than those who believed the report but did not quit smoking. Platt (1969) has reported more success at influencing the smoking behavior of internals than of externals. Platt used the role-playing procedures of Janis and Mann (1965) in which subjects perform as physician, patient, or observer during a medical examination report containing bad medical news for the patient regarding cancer and smoking. Platt found that the greatest changes in smoking behavior occurred among individuals who also believed that there were harmful effects from smoking.

A series of experiments by Lefcourt (1967) found that externals performed in accord with directions, while internals did not. Achievement-oriented patterns of performance were obtained from 91% of external subjects when task directions emphasized the achievement-relevance of the task; when achievement characteristics were not so emphasized, only 18% of external subjects responded in an achievement-oriented fashion. Internals, on the other hand, exhibited little variability with directions. In brief, externals were highly responsive to external definitions of the task, whereas internals seemed to be more moved by their own decisions to perform the task varying little with the experimenter's suggestions.

In another study Lefcourt, Lewis, and Silverman (1968) initially found no performance differences between internals and externals in response to skill versus chance directions given with

the task. However, when examining the subjects' own reports as to whether they actually perceived the task as skill or chance-determined, differences were noted between the groups. Internals were less likely than externals to have accepted directions which stressed chance determination and they were more likely to have accepted skill directions. It was concluded, therefore, that internals are somewhat more responsive to directions that concur with their own impressions and less likely to be influenced by those which challenge their own perceptions of the task at hand.

In a reaction time study designed to replicate previously reported differences between internals and externals and externals with self- versus experimenter-controlled conditions, Cromwell, Rosenthal, Shakow, and Zahn (1961), and Lefcourt and Siegel (1970a) found all subjects were quicker with the embellished directions, though externals improved even more than the internals. Again, externals shifted more with experimenter directions that did internals.

In the larger number of studies, then, evidence is found to support the contention that persons holding an internal locus of control can withstand pressures directing them to behave in a certain circumscribed manner. This is not true in all instances. Internals do yield to pressures, but not to the same pressure as externals. When acted upon as a subject in an experiment, internals appear to be negativistic, as in the verbal conditioning experiments. Likewise, statements presented by authorities do not seem to captivate them. However, internals do respond to reasoned arguments

regardless of the status of the source, readily respond to directives that are in agreement with their own perceptions, and shift their own attitudes and behavior when allowed more active participation, as in role playing which brings about internal self-directives. Externals appear to be responsive to more prestigious sources of influence, readily accepting experimenters' suggestions and directions. The merits of the arguments presented seem to be secondary to the prominence of the influencer, and, as reported in the study by Johnson et al. (1968), the desire for affiliation and dependence may be more important to externals than the maintenance of moral standards.

Cognitive Activity

Two of the earliest reported investigations providing information in regard to cognitive activity as a function of locus of control were those by Seeman and Evans (1962) and Seeman (1963). Both studies reported the fact that internals had more information relevant to their personal conditions than did externals. Among tuberculosis patients, internals had come to know more about their own personal conditions than had externals (Seeman and Evan, 1962); and among reformatory inmates, internals exhibited greater learning about the attainment of parole than had externals (Seeman, 1963). Internals did not differ from externals, however, when the information presented for learning was less personally relevant. Differences were prominent only when the learning concerned means toward a valued end.

Davis and Phares (1967) gave their subjects the task of attempting to influence another subject's attitudes toward the Viet Nam war. Subjects were led to believe that the experimenters had a file of data available about each prospective influencee. The main dependent measure consisted of the number of questions that subjects asked of the experimenter about their specific influencees. The authors had hypothesized that internals would be more likely to seek information than externals, so as to become more prepared for their task. Davis and Phares also instructed their subjects as to the likelihood of their being effective. One group received skill directions, another luck directions, and a third were offered no special instructions regarding their likelihood of successful persuasion. In the group receiving the luck instructions, no differences in information-seeking were found. However, internals did request more information than externals about their influences in both the "skill" and no-instruction groups. The results indicate that internals engage more in the preliminary steps of data gathering than externals which, in turn, might increase their probability of success were the task actually to transpire.

In another study reported by Phares (1968), internals and externals were compared in their tendencies to use information for decision-making, which all subjects had learned to a similar criterion level. Phares concluded that internals are more likely to make use of information than externals are equally aware of and that, therefore, internals should have a greater potential for effectiveness in their social environment.

Lefcourt and Wine (1969) have also reported some data about the manner in which internals and externals attend to social cues while attempting to learn about another person. These authors concluded that internal subjects are more likely than externals to attend to cues providing information which can help to resolve uncertainties.

In another study focusing upon attentiveness, Lefcourt et al. (1968) found that internal and external subjects varied considerably in their attention-related responses, depending upon whether they viewed the level of aspiration task in which they were engaged as skill or chance determined. Internals who perceived the task as skill determined exhibited less inattentiveness, and they reported that they had engaged in more task-relevant and less task-irrelevant thoughts than did internals who believed that the task was more chance determined. Differences among externals as a function of perceived controllability of the task were nowhere as pronounced. These findings were supported by results with decision time. Internals took more time to decide upon each subsequent expectancy statement when they had perceived the task as skill determined. Externals, to the contrary, were more deliberate when they perceived the task as chance determined.

Similar results, indicating that internals spend more time deliberating about decisions in skill-demanding tasks than chance-determined tasks, while externals tend to show opposite reactions, have been reported in other investigations. Rotter and Mulry (1965) found internals exhibiting longer delays in decision times with

skill as opposed to chance directions. Externals did not differ as extensively in that study. Likewise, Julian and Katz (1968) found that internals required longer decision times when the difficulty of decision making increased. Externals, as in the Rotter and Mulry study, did not differ extensively, revealing little decision time differences between easy and difficult choices. In the study by Watson and Bauml (1967), internals were found to make more errors in preparation for a task said to be chance determined. Externals showed a similar error proneness when anticipating a skill-determined task. These authors interpreted their results in terms of anxiety engendered by tasks that offer challenges which are incongruent with subjects' habitual orientation.

Rotter (1966) reported that no empirical relationship was found between the internality-externality scale and Gottschalk Figures Test (one measure of Differentiation). Chance and Goldstein (1967) likewise found an insignificant relationship between internality-externality and performance on the Embedded Figures Test, though these latter investigators did find that internals improved steadily from trial to trial as they progressed through the Embedded Figures Test.

The research regarding cognitive activity and internality-externality shows that persons with internal control expectancies tend to be more cognitively active than those with external control expectancies. Internals seem to know more about what is important to them, and seem more eager to gain information that would help increase their probabilities for success experiences. In skill

task, where control is possible, internals were decidedly more deliberate and cautious than externals. Externals, on the other hand, seem more involved in chance tasks, expending time and effort at decisions which seem of little concern to internals.

Deferred Gratification

Another research area of relevance to locus of control concerns the preference for immediate versus delayed reinforcements. Zytoskee, Strickland, and Watson (1971) found that locus of control and self-imposed delay of gratification were both related to similar demographic variables. Blacks were found to be more external and more likely to choose immediate reinforcements than were whites, and these findings were the most pronounced between the females of the black and white samples. The researchers found that the direct correlations between these variables were insignificant, and that the experimental design may have had an adverse effect on these correlations. In a subsequent study, in which Strickland (1972) contrasted results obtained from black and white experimenters, delayed reinforcement preference was found to be related to an internal locus of control within the sample of white subjects. Blacks, on the other hand, were significantly more external, as has been reported previously, and their choice between immediate and delayed reinforcement was unrelated to locus of control.

Walls and Smith (1970) have found internality-externality to be correlated significantly with the choice of a slightly larger but delayed reinforcement (7 as to 5 pennies); internals chose to

wait for the larger amount. These writers also found internality-externality to be related to a measure of time perspective; internals judged more accurately the lapse of a minute. Correctness of time judgment was, in turn, related to the preference for delayed reinforcements. This replicated study confirmed previously reported results by Mischel (1961) and Spivack, Levine, and Sprigle (1959).

In contrast, Walls and Miller (1970) found internality-externality unrelated to delayed reinforcement choice or time perspective in another study with a small sample of vocational rehabilitation and welfare clients. However, both locus of control and delayed reinforcement preference were related to grade level; the more educated persons were more internal and more likely to prefer delayed reinforcement.

In a study concerned with the prediction of school achievement, Lessing (1969) found that Strodbeck's Personal Control Scale (Strodbeck, 1958) and a delay of gratification measure were both related to grade-point average.

The studies reported suggest that locus of control and reinforcement preference are related.

Achievement Behavior

Lessing (1969) has reported that a sense of personal control predicted grade-point level of students even when IQ scores were partialled out. Lessing, as well as Chance (1965), Crandall, Katkovsky, and Preston (1962), Harrison (1968), McGhee and Crandall (1968), and Nowicki and Roundtree (1971) have found that an internal

locus of control generally accompanies various aspects of children's successful academic achievement. One exception to the rule favoring internality has been reported by Katz (1967) who found little relationship between achievement and scores on the Intellectual Achievement Responsibility Scale (Crandall, Katkovsky, and Crandall, 1965) among black children.

Except for Katz's work, the studies show positive association between internality and achievement behavior in spite of a wide range of measuring devices for the locus of control.

The strength of this association is exemplified in the study by Harrison (1968), who employed his "View of the Environment Test" and found that a sense of personal control characterized successful students regardless of the socioeconomic status of the home. That is, an internal orientation predicted academic success among both advantaged and disadvantaged children.

Although there is some consistency of findings in this area, there is an absence of research concerned with more prolonged achievement activity as might be indicated by types of careers and adult pursuits which require persistence and the willingness to defer gratification. Investigations of achievement behavior beyond the limits of a grade-school year and single administrations of achievement tests are needed to test further the generality of the link between internality-externality and achievement.

Response to Success and Failure

The earliest studies linking internality-externality to the coping with success and failure employed the level of aspiration model, in which subjects stated their expectancies for success throughout a series of trials in which they experienced failures and successes. Phares (1955) and James (1957) both studied the effect of skill and chance directions upon internals and externals. Externals were found to behave similarly to subjects who had received chance directions. They exhibited less expectancy shifts reflecting their successes and failures, and they produced more unusual shifts--that is, raising expectancies after a failure to accomplish lesser levels of achievement, or lowering expectancies after attaining success on higher levels of performance. James concluded that the unusual shift exemplifies the failure to develop a measured response to one's success and failure experiences, that such expectancy shifts indicate that a person is not using his prior experiences as a basis for predictions. It is as if one's fortunes were random and one's experiences discrete and unrelated. Investigators concerned with achievement motivation have also used the unusual shift as an indication of withdrawal from achievement challenge, finding that those who fear failure more than they hope for success are more likely to produce unusual shifts of expectancies (Moulton, 1965).

Lefcourt et al. (1968) found that failure-avoidant patterns and abnormal amounts of expectancy shifting made during performance on Rotter's level of aspiration board characterized the subject who believed that performance on that task was chance determined.

These investigators also found that unusual shifts were more common among internals who believed the task to be chance determined than among those who perceived it as a skill task, while the reverse tendency was found among externals. Lefcourt (1967) used the level of aspiration board in another study in which the instructions differed in the degree to which achievement characteristics of the task were emphasized. Internals produced fewer failure-avoidant patterns than externals when instructions were vague in regard to achievement. When the directions became more achievement-oriented, significantly fewer externals showed abnormal amounts of shifting and failure-avoidance patterns than other externals who had received nonachievement-stressing instructions. In fact, these achievement-instructed externals surpassed internals in indications of success striving.

Feather (1968) has found that internals make more typical changes of confidence statements (up after success and down after failure) than externals during a series of trials with anagrams. Likewise, Ryckman, Gold, and Rodda (1971) found more typical changes in confidence throughout a series of anagrams among internals who were also high in self-esteem. In contrast, this same research group (Ryckman and Rodda, 1971) found the reverse in a task that was obviously less skill-determined than the anagrams test; internals made less typical confidence shifts than externals.

Lefcourt and Steffy (1970a) have investigated the manner in which level of aspiration performance such as that noted above is related to performance in other tasks. These investigators found

that subjects who made a greater number of unusual shifts when performing on the level of aspiration board also shifted about more in their levels of risk-taking during a gambling task, and were less likely to write TAT-like stories containing sexual themes despite the presence of stimuli relevant to sex in the pictures presented to them. These results were interpreted as reflecting inadequate behavior across three disparate tasks (excessive shifting in risk choices is said to be a less strategic approach to the gambling task). At the same time, these authors found no relationships between performance on these tasks and the internality-externality scale, which they attempted to explain in terms of the testing conditions that may have helped to generate "defensive internality." These same authors found in a follow-up investigation (Lefcourt and Steffy, 1970b) that the more adequate or success-striving behavior each subject demonstrated on each task, the less well was she rated as a student nurse in a training program that required deference to authority.

In general, the level-of-aspiration type research indicates that internals seem to adjust their behavior more appropriately to their accumulated experiences than do externals. However, when the task seems to be more chance- than skill-determined, it is the more external individual who exhibits experience-contingent expectancies, whereas internals seem to become more random. This reversal with chance-determined tasks is found with expressions of confidence as well as in performance measures such as decision time (as exemplified in Rotter and Mulry, 1965). Internals, then, do seem to be

more measured in their responses to success and failure than externals insofar as expectancy statements made during skill-determined level of aspiration tasks are concerned. However, a few studies have presented data which raise questions as to the manner in which internals cope with failure experiences. The earliest of such studies (Efran, 1963) reported that internal high-school students were more likely to have forgotten failure experiences than externals. Rotter (1966) interpreted these results as indicating a lesser need to "repress" by externals who were not as likely to blame themselves for their failures as were internals. Lipp, Kolstoe, James, and Randall (1968) reported a related finding that handicapped externals exhibited lower recognition thresholds for tachistoscopically presented pictures of handicapped persons than more internal handicapped subjects. Externals were said to have a lesser tendency to deny "threatening" stimuli, while internals were seen as more threatened because of the challenge to control that a handicap represents. Phares, Ritchie, and Davis (1968) found a similar kind of result in that externals were able to recall more negative though spurious information that had been presented to them as feedback from their "personality assessments" than were internals. Nevertheless, internals subsequently expressed more interest in making arrangements to confront their assumed personal difficulties than externals. MacDonald and Hall (1969) have examined the perception of disabilities among internals and externals with results suggesting that, contrary to the study by Lipp et al. (1968), externals fear the difficulties associated with handicaps

significantly more than internals. Only with regard to "emotional difficulties" do internals register more anticipation of trouble for maintaining successful role fulfillments, though even then they do not exceed externals in their degree of anticipated difficulty. In regard to the ability to recall completed versus incompletd tasks, Butterfield (1965) found no differences between internals and externals. This lack of recall difference was surprising in view of the fact that when subjects were given the opportunity to return to the battery of tasks, internals chose to return to incomplete tasks more than did externals when directions had emphasized the skill nature of the task. In other words, recall and task behavior were independent, which is similar to the finding of Phares et al. (1968) whose internals, while recalling less information, were more ready to engage in ameliorative action. In one exception to this data regarding internality-externality and recall of failures, Borer (1969) found that internals recalled more incompletd than completed tasks, whereas the reverse was true of externals. Internals had a higher ratio of recall of interrupted to completed tasks than externals which produced a highly significant main effect for locus of control.

While some of the writers mentioned above have advanced the position that internals are more defensive in the face of threat than externals, the larger group of studies concerning cognitive activity, the willingness to defer gratification, and the response to success and failure experiences argue against the interpretation emphasizing defensiveness.

Familial and Social Antecedents of Locus of Control

Familial origins.--Among the earliest studies concerned with the development of control expectancies was that by Chance (1965) who matched children's scores on the Crandalls' Intellectual Achievement Responsibility Questionnaire with their mothers' attitudes toward child rearing obtained from interviews and the Parent Attitude Research Inventory. Among boys, internal control expectancies were related to permissive and flexible maternal attitudes and to maternal expectations of early independence. A weak tendency was also found for birth order; the earlier born child (male or female) was somewhat more internal than later born children. This finding was also reported by Crandall et al. (1965) who interpreted this result favoring firstborn children as reflecting upon the fact that the first born are often given more responsibilities in their families, whereas the later born are often in the position of being helped. MacDonald (1971a) obtained a similar result when restricting his analysis to one- and two-child families. Later-born children tended to be more external than first-born children and were decidedly more external than only children. The only negative data reported thus far with regard to birth order is in a study by Eisenman and Platt (1968) who found higher external control expectancies among first-born males.

Four different studies have been reported bearing some similarities, in that each reveals children's locus of control to be less related to parental behavior. Katkovsky, Crandall, and Good

(1967) compared children's scores on the Intellectual Achievement Responsibility Questionnaire with home observations of parental behavior, as well as parental attitudes expressed in interviews and on questionnaires. The overall findings indicated that internal control expectancies are related to parental protectiveness, nurturance, and the tendencies to be approving and nonrejecting.

Davis and Phares (1969) have found comparisons between extreme groups of internals and externals on the Children's Reports of Parental Behaviors Inventory. Similar to the preceding investigation, these authors found that parents of internals were judged as being more accepting, having greater positive involvement, and being less rejecting and exercising of hostile control than parents of externals. In addition, parents of internals were perceived as being more consistent disciplinarians than were parents of externals. On the other hand, these same researchers found no significant differences between parents of internals and externals when parents' attitudes were assessed on the Maryland Parent Attitude Survey. Internal children had fathers who advocated indulgence, independence and self-reliance more than did their mothers, whereas mothers of externals more strongly advocated these child-rearing goals than did their fathers.

Shore (1968) used two measures of internality-externality (Bialer and Battle-Rotter) and the Children's Report of Parent Behavior Inventory with grade school boys and had parents complete Rotter's internality-externality scale, a special scale assessing parental expectations of personal control in child rearing, and two

measures of parental attitudes. Among parental attitudes, only the fathers' internality regarding child rearing was related to children's internality-externality measures: the more internal the father, the more internal the boy. Children who perceived their parents as exerting more psychological control and being less warm and intrinsically accepting were more external. Again, children's perceptions of parental behavior were more strongly related to children's locus of control than were parental attitudes, and children's perceptions of adult behavior and parental attitudes were unrelated.

MacDonald (1971b) used large samples of college students who completed Rotter's internality-externality scale along with a Perceived Parenting Questionnaire. Again, perceived parental nurturance was positively related to internality on the internality-externality scale as was parental consistency in maintaining standards for children's behavior.

One other study employing a somewhat differing methodology has been reported by Epstein and Komorita (1971). These investigators found that black children described their parents as using excessively hostile control, and as being inconsistent disciplinarians on the Children's Report of Parent Behavior, attributed successes in a matching task to external causes.

Social origins.--With the exception of two studies in which the Intellectual Achievement Responsibility Scale was employed (Katz, 1967; Solomon, Houlihan, and Parelus, 1969) and one with Rotter's

internality-externality scale (Kiehlbauch, 1968), most studies show that blacks score in a more external direction than whites (Lessing, 1969; Owens, 1969; Shaw and Uhl, 1969; Strickland, 1972; Zytoskee et al., 1971). Solomon et al. and Katz both interpreted this failure to find differences between racial groups as being due to the nature of the test employed.

In regard to class-related differences, Gruen and Ottinger (1969) have found that middle-class children are more internal than lower class children, and Walls et al. (1970) have found educational level to be directly related to internality. Jessor, Graves, Hanson, and Jessor (1968) have found that internal control expectancies are positively associated with socioeconomic status, and that objective access to opportunities in a community is positively related to perceived control. These same authors also reported ethnic group differences: Anglo-Americans were more internal than Spanish Americans, with mean internality-externality scores for Indians falling midway between others. On the basis of their respective cultural histories, Hsieh, Shybut, and Lotsof (1969) successfully predicted internality-externality scores of Anglo-Americans, American-born Chinese, and Chinese living in the Republic of China. The results indicated that externality increased significantly from the first- to the last-named group.

Changes in Locus of Control

Two studies with relevance to changing expectancies have been reported. One demonstrated that explicit directions had a

beneficial effect upon the control-related behavior of externals (Lefcourt, 1967); the other illustrated how expectancies in a new challenging situation could be increased when a new task was linked with others in which the subjects had already enjoyed some success (Lefcourt and Ladwig, 1965).

Some change studies have examined the effect of specific public events upon internality-externality scores. Gorman (1968) found that undergraduates scored in a more external direction than Rotter's norms for university students on the day after the 1968 Democratic Party convention. A large proportion of Gorman's student sample had been McCarthy supporters for whom the convention was a severely disillusioning experience. Another national event, the draft lottery, was also found to produce certain predictable effects upon the locus of control scores of college students. McArthur (1970) reported that students who had had the good fortune to become less draft eligible through the draft lottery scored as significantly more external on the internality-externality scale than those whose fates were unchanged by the lottery drawing.

A study by Smith (1970) bears somewhat upon the changing contingencies principle. This investigation compared internality-externality scores of clinic clients who requested help in resolving crises with those intending to become engaged in long-term psychotherapy. The crisis element was defined as a person suffering with temporary but acute feelings of being overwhelmed such that self-confidence was at a low ebb. With five weeks of therapy

designed to help clients adopt more effective coping techniques, crisis patients reported a significant decrease in externality, whereas regular therapy cases remained at the same level, despite a near equivalent number of therapy sessions.

Prolonged active involvement in problem confrontation has also been found to produce internality-externality changes in non-therapy investigations. Gottesfield and Dozier (1966) found that the length of participation in a community action program among slum-dwelling poor people was related to the expression of internal control expectancies.

A few investigations have examined the effects of formal therapeutic procedures upon locus of control. Using operant conditioning, Lesyk (1969) evaluated the impact of a token economy upon the behavior of female schizophrenics. Patients received tokens for behaving appropriately and cooperatively each day, and they were asked to estimate the number of tokens they anticipated earning each subsequent day. Internality-externality-related level of aspiration indices, the Bialer scale, and interview assessments of control expectancy were obtained pre- and post-operant training. After five weeks, patients made less expectancy shifts, fewer unusual shifts, and higher internal scores on the Bialer measure. In addition, those subjects with the highest ratings of positive behavior had the most internal Bialer scores, higher internal ratings derived from the interview, and fewer unusual shifts in their expectancies.

With more conventional therapy administered to a small sample of hospitalized psychiatric patients, Gillis and Jessor (1970) found that among patients judged by their therapists as being improved, there was more of an increase in internality than among a sample of untreated patients. Those patients, on the other hand, who were not judged as being improved did not shift in an internal direction.

Locus of Control and Age Change

Age change alone has been found to influence internality-externality scores, older children being more internal than younger children (Penk, 1969; Stephens and Deleys, 1971; Mischel, Zeiss and Zeiss, 1973; Chance and Goldstein, 1967). Without exception these researchers found that scores progressively became more internal as the age of the children increased. Nowicki and Duke (1973), using the youngest subjects of any research known to this author, also found that the older the children, the more internal were their scores. Penk suggested that life experience would lead one to feel that he is more in control than he used to be. Thus, it seems quite natural that older children should score more internally than younger children.

Locus of Control Scale

The body of research presented in this paper has dealt with subjects older than five years of age. Most research had focused on subjects ranging from adolescent through adult. Of the

studies that have considered locus of control in subjects under adolescent age, only a few have used children as young as five. No studies have been found which deal with four-year-old or younger children. This researcher became intrigued by the question of just how early can locus of control be observed. A search for instruments that measured locus of control specifically in young children found only one scale which could be utilized by children as young as four. This scale, the Preschool and Primary Nowicki-Strickland Internal-External control scale, has not, however, been used in research on four-year-old subjects. It is important to note that although the test authors designed the test to be used with four-, five-, and six-year-old children, the test had not actually been used with four-year-old subjects.

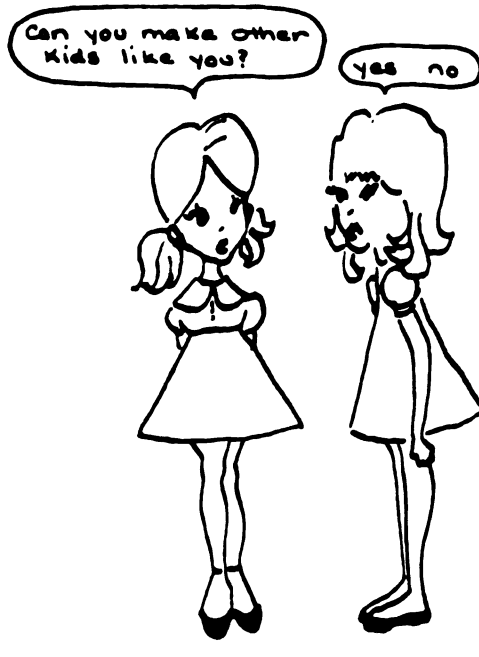
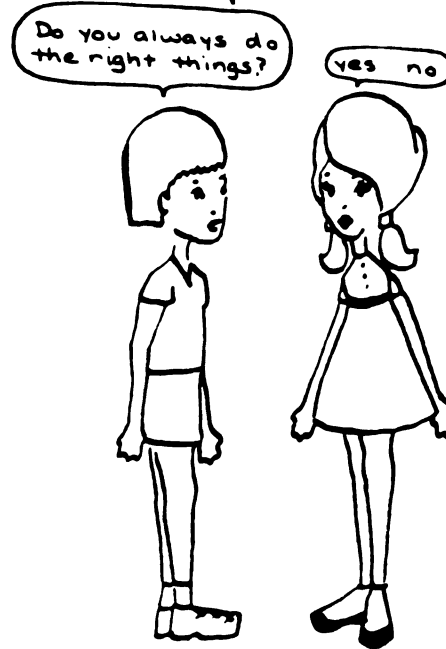
As the only available scale for measuring locus of control in children of four, five, and six years, this scale was selected by the present researcher to be used as the tool for gathering data in this research paper. This scale, the PPNSIE, is presented below because of its importance to the present investigation. All data for this presented research is derived from the PPNSIE.

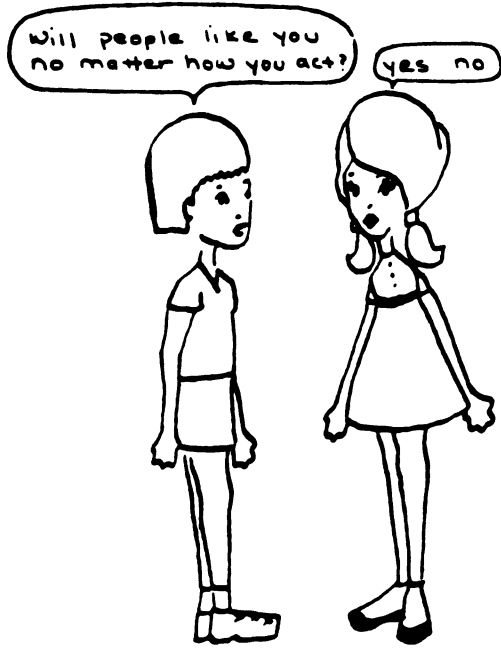
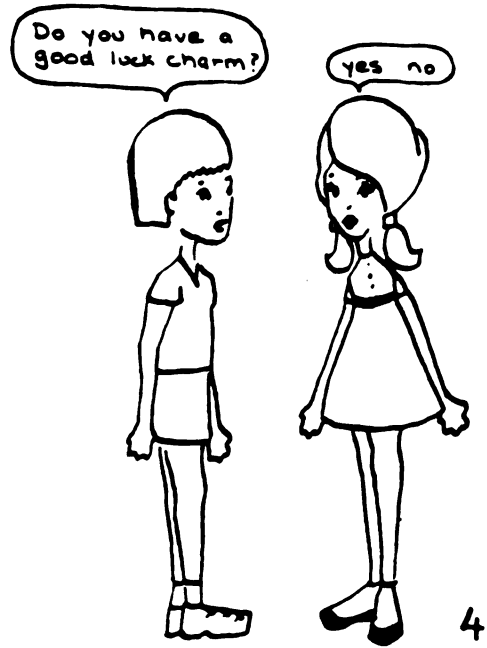
LOCUS OF CONTROL SCALE

Example

PPNSIE
for girls

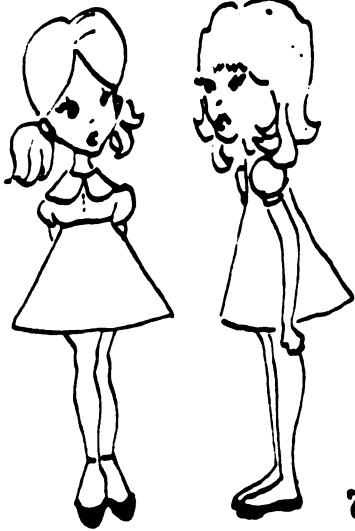
© S. Nowicki / M. Duke 1973





If you ask for something
enough, will you get it?

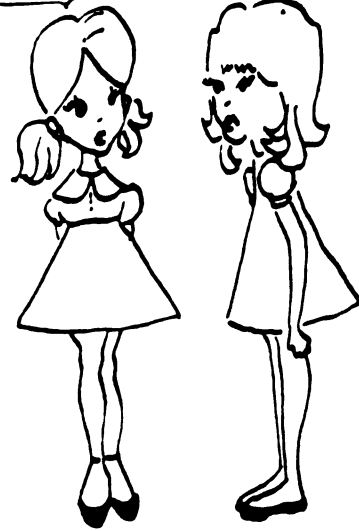
yes no



7

Do you believe that
wishing can make
good things happen?

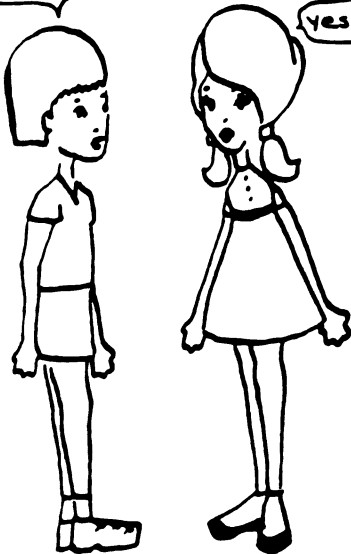
yes no



8

When a kid your age decides
to hit you, is there anything
you can do to stop him or her?

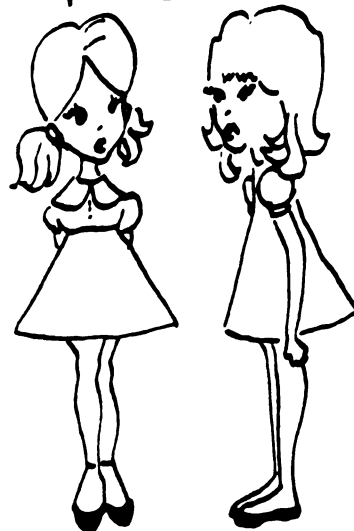
yes no



9

Can you get friends to
do what you want
them to do?

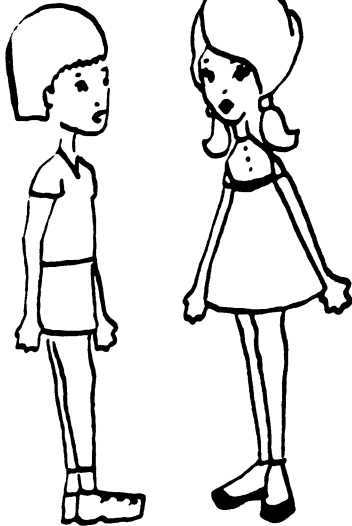
yes no



10

Do you have a lucky number?

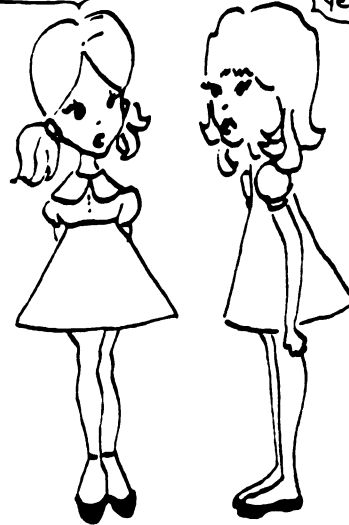
yes no



11

Can you get your Mommy and Daddy to do what you want to do instead of what they want to do?

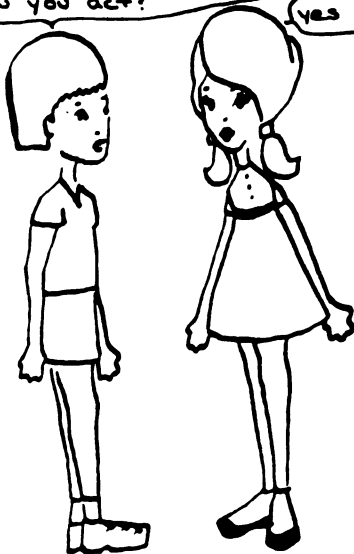
yes no



12

Does whether or not Mommy and Daddy like you depend on how you act?

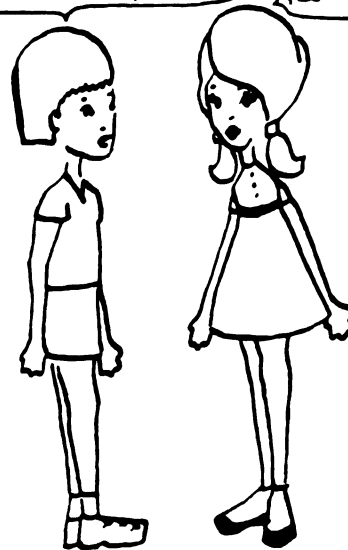
yes no



13

When people were mean to you, was it usually for no reason at all?

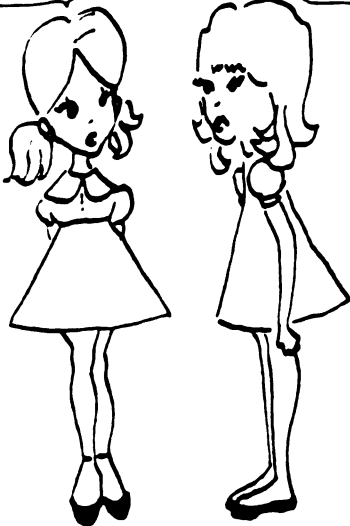
yes no



14

When you do something wrong,
is there little you can do to
make it right again?

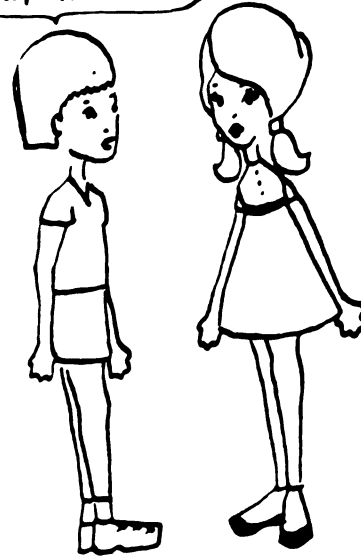
yes no



15

Most of the time do you
find it easy to get your
own way at home?

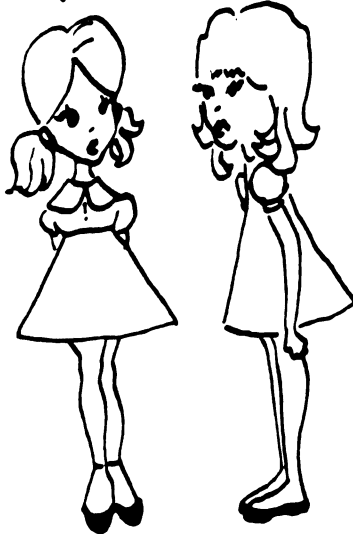
yes no



16

Are most kids just born
good at running races?

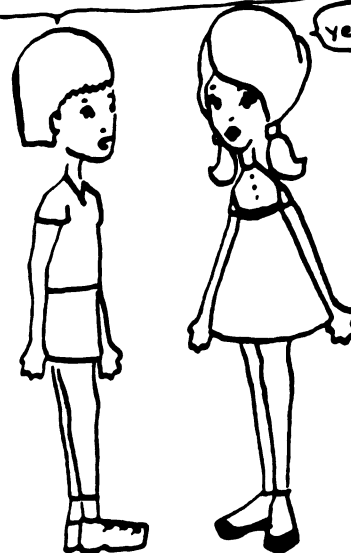
yes no



17

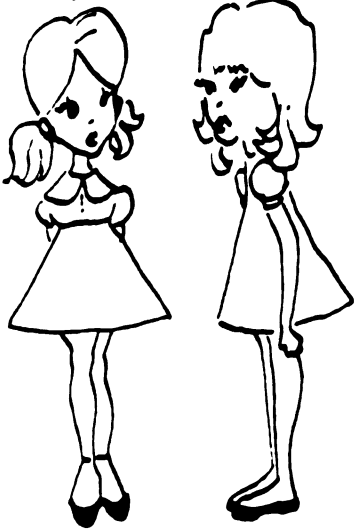
When somebody your age wants
to be your enemy, is there anything
you can do to make him or her
like you?

yes n



Should your Mommy and
Daddy decide what you
should do?

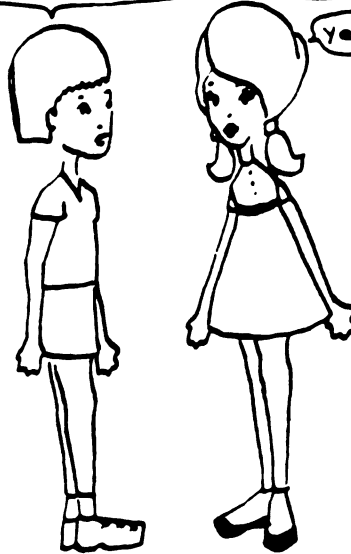
yes no



19

Is it almost impossible to try to
win a game because most of the
other kids are just plain better than
you are?

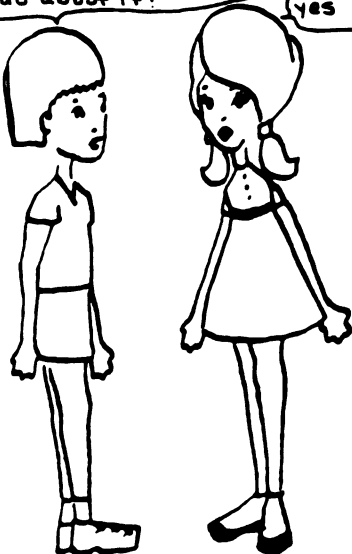
yes no



20

When a person doesn't
like you, is there anything
you can do about it?

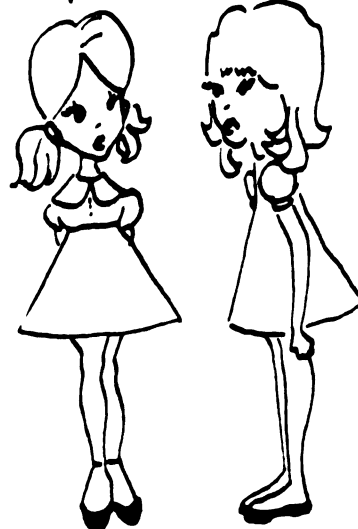
yes no



21

Are most of the other girls
your age stronger than
you are?

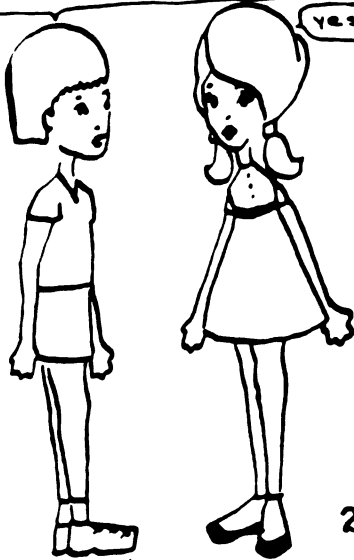
yes no



22

Are you the kind of child who believes that thinking about what you are going to do makes things turn out better?

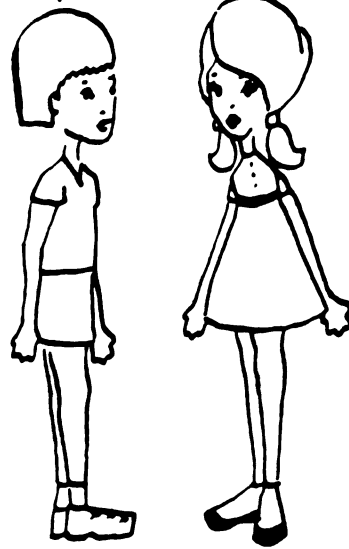
yes no



23

Do you think it's better to be smart than to be lucky?

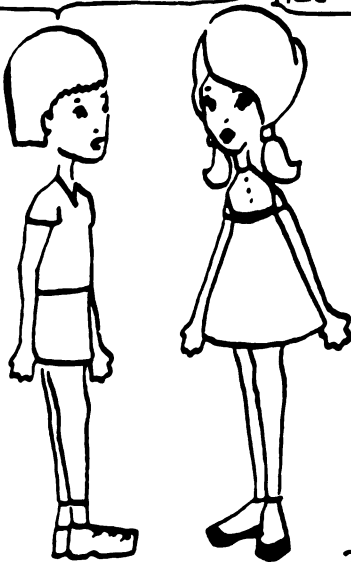
yes no



24

When another child hits you, is it usually because of something you did?

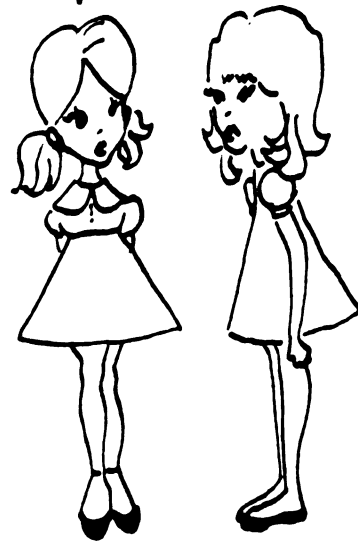
yes no



25

Is one of the best ways to handle a problem just not to think about it?

yes no



26

As the only tool available for measuring locus of control in four- through six-year-old children, the test validity and reliability as well as the appropriateness of the test format were investigated as the next logical step in the research. The test authors presented information relevant to these concerns in an article in Developmental Psychology (Nowicki and Duke, 1974). Because of its importance to this paper, the entire article is included as Appendix A and the reader is urged to examine there Nowicki and Duke's full discussion. In the pages immediately following below, a critical review is presented of key passages from the article.

"The purpose in the present study was to construct a pre-school and primary form of an internal-external control scale that would be comparable to already completed forms for older subjects." For the authors it would then be possible to do research concerning locus of control preference on subjects from four years of age through geriatric years. Research questions concerning just how early locus of control orientation begins and how malleable this orientation is could then be explored. A test was developed in cartoon format for non-readers which research indicated met internal and external validity requirements.

"The purpose of this article is to present a reliable and valid measure of locus of control for measure of locus of control for children from four to eight years of age. The authors will present a rationale, based on logic and previous work, for the

construction of a measure of locus of control for this age range of children."

Although there are two children's locus of control scales in existence for children below third grade, neither one has comparable forms for younger subjects. Hence the need for one was obvious.

The test was constructed on the basis of Rotter's definition of locus of control. There already existed a scale based on Rotter's work for children as young as nine. Therefore, this scale, Children's Nowicki-Strickland Internal-External scale (CNSIE), was used as a foundation on which to construct comparable forms for younger aged subjects.

"Comparable instruments allow for replication of children's findings in adults, and vice versa, without the added confound of unknown relations between noncomparable locus of control instruments.

In adherence to the philosophy of construct validation procedures (see Cronbach and Meehl, 1955), certain requirements were generated concerning the performance of the Preschool and Primary form of the CNSIE (PPNSIE). These are to be met for the scale to be tentatively acceptable as a measure of locus of control for this age group:

1. The PPNSIE should be group administered, largely for the sake of efficiency in gathering data.
2. The PPNSIE should be constructed in such a manner to hold the interest of young children which, in turn, would lead to higher reliability estimates.

3. To maximize its potential discriminative ability, the PPNSIE should show item means between .3 and .7, as well as moderate item-total correlations.
4. PPNSIE scores should become more internal with age, as it is assumed that individuals gain more control with maturity.
5. PPNSIE scores should not be related to social desirability scores.
6. The PPNSIE, because it is a down-ward extension of, and supposedly comparable to, the CNSIE, should be significantly related to the CNSIE.
7. Factor analyses of PPNSIE scores should show a similar factor structure to that found with the CNSIE (Nowicki, 1973).
8. PPNSIE scores should be related to variables in the same way that scores from the CNSIE and ANSIE are. In the present study, the variables chosen for comparison were achievement and interpersonal distance. Using the CNSIE and ANSIE it has been shown that internal locus of control was positively related to less distance from others (Duke, Nowicki, 1972; Wilson, Duke, and Nowicki, 1973) and to greater academic achievement (Nowicki and Strickland, 1973; Nowicki and Roundtree, 1971). These same relations were predicted for the PPNSIE scores."

Method

Development of Item Pool

Having generated these construct validation requirements, Nowicki and Strickland proceeded to develop a scale for the preschool-primary aged child. The first step was the development of an item pool. That is, from a definition of locus of control (Rotter, 1966) a number of items were constructed appropriate to children aged four through eight. The items consisted of words geared to a four year aged level. Because four-year-olds were

to use this scale the questions were also kept short and in a yes-no format.

After adherence to construct validation procedures (see Conbach and Meehl, 1955) a final 26 item scale was developed that had means in the .3 to .7 range and moderate item-total correlations.

The Preschool and Primary Form

"The 26 items obtained from the analysis of the pilot study (Wilson, Duke and Nowicki, 1972) formed the primary pool of items.

"The items of the Preschool and Primary Nowicki-Strickland Internal-External control scale (PPNSIE) were arranged so that when keyed for an external response, no more than three "yes" or "no" responses occurred in sequence. When keyed in an external direction, 13 items were keyed "yes" and 13 items were keyed "no."

"To make administration easier and to increase attention, alternate methods of presenting the items were considered. Since cartoons seem to be implicitly interesting to children and have been used successfully in testing procedures elsewhere (e.g., Battle and Rotter, 1963; Rotter, 1972), it was decided that they could be used successfully to increase attention in young children. This would meet requirement one and two."

The PPNSIE format is a booklet of cartoon drawings of two children facing each other talking via cartoon bubbles. While one child presents a question the other child answers. The children are instructed to mark either the yes or no response in the cartoon bubble for each item. In the male form of the test, a

little boy is asked the questions. The opposite is true for the female form. Having devised this form for their test, the authors began further validation of the items and investigation of the value of their cartoon format.

Subjects

Subjects were 240 children ranging in age from five to eight years. All but the highest socioeconomic level were represented. However, there were two restrictions of subject selection: subjects scoring below an IQ of 80 and blacks were excluded from their testing.

Procedure

"The subjects were tested in same sex groups (n=10) in their classrooms by either a male or female examiner (presenters were counterbalanced for sex). The examiner introduced himself or herself as a person who was attempting to find out what little boys and little girls think about things. The cartoon form of the PPNSIE was then handed out. The examiner presented two examples of items and how to respond to them. The children practiced answering these two examples. When the examiner was sure that the children understood the task, he or she read each item aloud, twice. The examiner checked periodically to make sure the children were following instructions. This concluded the first testing session.

"The second testing session included readministering the appropriate form of the PPNSIE to all seven-year-old children

six weeks after the first testing. This was for test-retest reliability purposes. For use in validation, the second testing also included obtaining interpersonal distancing information from these children."

Validity Measure

The Comfortable Interpersonal Distance scale (CID) (Duke and Nowicki, 1972; Eans and Howard, 1973) is a paper-and-pencil scale where the subject is asked to mark on a graph, which is easily measurable in millimeters, just where they want an imaginary person to halt. That is, where they think they might begin to feel uncomfortable with the stranger's closeness. Subjects' responses are scored as the distance in millimeters between the mark on a specific radius and the center of the CID. Distance between the center point and any location on a given radius reflects the assumption that interpersonal space is a continuous variable.

Achievement test data (Iowa Basic Skills) and socioeconomic data (Hollingshead, 1957) were obtained from school records.

Discussion

"The results, which can be seen in their entirety in Appendix A, suggest that the PPNSIE has met the minimal requirements of construct validity. Internally, the instrument shows high item-total correlations, item means in the prescribed middle ranges, and a similar factor structure to the CNSIE. Externally, the instrument demonstrated significant test-retest reliability,

a significant relation to CNSIE. Externally, the instrument demonstrated significant test-retest reliability, a significant relation to CNSIE scores, nonsignificant relation to social desirability, and positive and significant relations to higher achievement and less distancing. The scale, thus, possesses much the same pattern of psychometric properties as its comparable forms for older subjects. With the development of the PPNSIE, researchers now have available reliable and valid measures of locus of control which form a continuum from age four through old age. Research dealing with such things as parent-child locus of control relationships and sibling relationships is now possible as are cross-sectional and longitudinal designs heretofore plagued by differential measurement techniques and the hoary problems they produced.

"It is the authors' belief that locus of control research has been ensconced in instrumental development long enough. There are now available several good measures at every age level of interest. The current authors feel that with the development of the PPNSIE, there are available for the first time parallel, age-appropriate, reliable and valid measures of locus of control. Research utilizing these measures will hopefully result in better research designs and, eventually, a clearer understanding of human behavior and its development."

This researcher questioned the appropriateness of some of the test items as well as the manner in which the scale was to be

presented to four- and five-year-old children. Would children of this age comprehend, for example, item 12 which asks, "Can you get your Mommy and Daddy to do what you want to do instead of what they want to do?" Would four- and five-year-olds be able to manipulate test materials (pencil and test booklet) adequately and also maintain their attention on the task? Although Nowicki and Duke stated that this test was designed to be used by four-year-olds, they did not use it on four-year-olds. Despite the serious implications of these questions, this researcher decided to utilize the PPNSIE as it was the only available scale for the age group under study. A further discussion of this topic is presented in Chapter III, Limitations.

Summary and Implications for Present Study

There exists a facet of personality increasingly explored in the past 25 years called locus of control. This review of the research into locus of control has shown that it is a definite construct of personality and is readily quantifiable. Its presence seems to have a pronounced effect on the individual's response to his world. The situation surrounding an event and the set of recent experiences influence one's degree of internality-externality. Thus, one's position on the I-E continuum can fluctuate with respect to variables. But one's basic orientation toward life in general remains stable. At what age the gravitating effect toward a stable position on the I-E continuum occurs, one's basic life orientation has yet to be established.

Hence, the research hypothesis was formulated that:

1. Children by the age of four, five, and six will indicate a preference for internal locus of control which will not change over a five week period.

With the knowledge from previous research that variables affect the degree of internality, it seemed logical to investigate locus of control with respect to variables that are natural such as age and sex, or commonly occurring, such as ability to do academic tasks. Therefore, the following research hypotheses were formulated:

2. The difference in the ages of the children will be unrelated to their locus of control preference.
3. The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.
4. Teacher academic ratings of the children will be related to their locus of control preference.

CHAPTER III

PROCEDURE

Introduction

The purpose of this study was to investigate the efficacy of gathering and analyzing data regarding the locus of control preference in the young child aged four, five, and six. This chapter describes the sample, treatment procedures, and the design and analysis used to meet this purpose. Limitations that may have affected the validity of this study are also presented.

Sample

All of the children used in the study were dependents of U.S. Air Force personnel assigned to Sembach Air Base, Sembach, West Germany. They represented a wide geographic cross-section since they had come to Sembach from all sections of the United States.

The Sembach Preschool is organized and administered by volunteers, all preschool parents, from the Sembach Air Base community. As this school is not a free service provided by the military as is the kindergarten, all preschool children are charged a tuition of thirty dollars per month. The kindergarten is a part of the Sembach Elementary School, Department of Defense Dependents Schools, Europe. Except for all the children being dependents of

U.S. Air Force personnel in Germany, it is similar to public school kindergarten in the United States. The kindergarten portion of the sample was the entire population of five- and six-year-olds on Sembach Air Base. Unlike the kindergarteners, the preschool age children were not the entire four-year-old population on the base. The four-year-olds used in this study came exclusively from the preschool classrooms. In addition, for those parents that were interested in having their children attend preschool and were willing to pay the \$30 per month fee, a waiting list was maintained to determine the order to entry into preschool classes. Admittance was based solely on date of registration.

The study concerned itself with all of the 150 preschool and kindergarten children at Sembach. The two preschool and five kindergarten classes together are placed into subsamples as follows: four-year-olds, $N = 27$; five-year-olds, $N = 72$; six-year-olds, $N = 51$. The sample consisted of 74 males and 76 female subjects. By age the breakdown was as follows: 12 four-year-old males and 15 four-year-old females; 36 five-year-old males and 36 five-year-old females; 26 six-year-old males and 25 six-year-old females. By academic standing the breakdown was as follows: four-year-old low boys, 7; four-year-old high boys, 5; four-year-old low girls, 7; and four-year-old high girls, 8; five-year-old low boys, 22; five-year-old high boys, 14; five-year-old low girls, 15; and five-year-old high girls, 21; six-year-old low boys, 15; six-year-old high boys, 11; six-year-old low girls, 11; and six-year-old high girls,

14 (see Appendix B for a tabular representation of this information).

All of the preschool children were four years old. All of those in kindergarten were either five or six years old. No four-year-olds were in the kindergarten groups and no five- or six-year-olds were in the preschool groups.

Procedures

The present study was conducted in all the preschool and kindergarten classes on Sembach Air Base, Sembach, West Germany in May and June of 1978. Permission to conduct the study was obtained from both the principal of the elementary school and the director of the preschool. Upon approval all the classroom teachers were contacted to arrange for times which were convenient for the investigator to collect data. The investigator collected data from all the children.

Each of the two preschool classes, one with 13 and the other with 14 pupils, was alphabetized for the purpose of forming test groups. The first seven pupils from each list were selected to form one group within each class while the remaining six or seven pupils on each list formed a second group within each class. Thus, four preschool test groups were formed. The kindergarten classes, five in all, were divided into test groups similarly. Each class, which had either 24 or 25 pupils, was alphabetized. The first 12 pupils on each list were selected to form one group within each class leaving the remaining 12 or 13 to form the second test group within

each class. This produced a total of ten test groups for the five kindergarten classes. In all, 14 test groups were created to facilitate data collection.

The same PPNSIE control scale was administered twice to yield scores for Measure 1 and Measure 2, referred to as pretest and post-test although no treatment was administered after the pretest. The same grouping was utilized for both pretest and post-test. All of the children were tested in their own classrooms sitting at their own tables. There were a total of 14 pretesting sessions over a period of 3 days. All of the four-year-olds were tested on the first day. The five- and six-year-olds were tested on the second and third days. This was accomplished during the first week of May, 1978. The post-testing sessions were organized exactly as the pretesting sessions but were conducted during the second week in June. Each testing session lasted approximately 30 minutes. The first 15 minutes of all sessions for both pretest and post-test involved instructing the children on how to take the test. The children were instructed in recognition of "yes" and "no" with guided practice following instruction. They were also shown how to follow along in the test booklet and mark their desired responses. Guided practice was given to check their manipulation of test materials, a pencil and a test booklet. Those who required extra assistance were helped by this researcher and the aide from the particular classroom in which testing was taking place. This is described in greater detail in Appendix C. During the remaining 15 minute period, the test was administered with both the aide and

the researcher giving assistance when needed. The children in the group not being tested played outside supervised by their teacher.

The PPNSIE is accompanied by no set of instructions for administration. Therefore, this researcher developed a set of instructions for administration as well as procedures to teach the non-readers of the sample the words "yes" and "no" so that they could take the test as originally designed. This information is shown in Appendix C.

Considering the ages of the children being utilized, all the instructions were read orally to each group. Each child was given one sample question so that his comprehension of the directions could be checked. Subject anonymity was assured by assignment of a number to each subject. All tests were hand scored by the investigator. Five weeks later all the children were retested using the same procedures outlined above. These two testing sessions yielded, hence, Measure 1 and Measure 2.

The instrument used for this study was the Preschool and Primary Nowicki-Strickland Internal-External Control Scale (PPNSIE) which attempts to measure a child's belief that reinforcements are contingent upon his own behavior. The instrument, in cartoon format, has drawings of two small children facing each other. One child presents the item in a cartoon bubble above its head while the other child has above his/her head a bubble with the words "yes" and "no" in it. The child is instructed to answer the questions.

Both a female (PPNSIE-F) and male (PPNSIE-M) form were used. The PPNSIE-F, for example, has a little girl to whom either a little

girl or a little boy asks the "yes" or "no" questions. The opposite is true for the male form. The number of questions asked by the girls and boys is the same, and those questions are varied randomly. A complete copy of the PPNSIE can be found in Chapter II.

The PPNSIE has demonstrated significant test-retest reliability and has met minimal requirements for construct validity according to the authors of the instrument. They have reported in Developmental Psychology detailed information regarding reliability and validity. This article is presented in Appendix A.

In order to ascertain an academic rating for each child, the author had all the classroom teachers rate each of their children as being either a one, two, three, four, five, or six (one being lowest academic standing and six being highest academic standing). The preschool teachers were asked to make their ratings based on their opinions of how successful they thought a child would be in doing reading readiness and math readiness work in kindergarten. Similarly, the kindergarten teachers were asked to make their ratings based on their opinions of how successful they thought a child would be in doing reading and math work in first grade. This then was used as a rating of low and high standing (AS). Children rated as either a one, two, or three were the children labeled as having a low academic standing (LAS). Children rated as either a four, five, or six were the children labeled as having a high academic standing (HAS).

Design and Analysis

In order to investigate the main and interaction effect of sex, age, and academic standing on both the pre and post-test (Measure 1 and Measure 2), the present study employed a 2 x 3 x 2 factorial design. This design was used because there were three independent factors of sex, age, and academic standing.

The statistical analysis employed for the present study comprised a three-way analysis of variance design. In order to determine the statistical significance of the pre and post scores (Measure 1 and Measure 2) on the PPNSIE and to check for stability of the children's locus of control, a matched paired t-test was employed. In order to test for interaction of the three independent variables an F-test was used. To determine whether a finding was statistically significant, the .01 level of significance was used.

CHAPTER IV

RESULTS

Introduction

An analysis of the data and the findings resulting from this analysis are presented in this chapter. The four research hypotheses, which help to investigate locus of control stability and relationships between age, sex, and academic standing, are stated. The data for the dependent variable of locus of control preference and for the independent variables of age, sex, and academic standing are presented. The data for the interaction effects among the independent variables are presented.

The data presented in this chapter were collected by administration of the Preschool and Primary Nowicki-Strickland Internal-External Control Scale to 150 children aged four, five, and six in the two preschool and five kindergarten classes of Sembach Elementary School, Sembach, West Germany during the spring of 1978. The PPNSIE is designed to measure the locus of control preference in very young children. The data were processed using the Control Data Corporation Computer at the Michigan State University Computer Center.

Procedure

A match paired t-test and a 2 x 3 x 2 analysis of variance was performed on the PPNSIE scores. Research hypotheses were either accepted or rejected using the .01 level of significance.

The analysis of data from the PPNSIE is presented as follows:

1. Each hypothesis is presented in the same order as in Chapter I.
2. The statistical findings are stated for each hypothesis along with the appropriate data tables.
3. The .01 level of significance was used to accept or reject each research hypothesis.
4. A discussion of the findings for each research hypothesis follows the presentation of the data.
5. Significant interaction effects are presented and discussed along with appropriate data tables.
6. Distributions of PPNSIE scores for four-, five-, and six-year-old boys and girls are presented in Appendix D.

Hypothesis 1

Children by the age of four, five, and six will indicate a preference for internal locus of control which will not change over a five week period.

A match paired t-test was employed to evaluate this research hypothesis. The results are reported in Table 4-1.

TABLE 4-1.--Means and Standard Deviations on PPNSIE Control Scale.

Measure	M	SD	T
1	12.080	3.282	-1.15
2	12.420	2.888	

Findings

There is not a significant difference between the mean scores for Measure 1 and Measure 2 on the PPNSIE Control Scale at the .01 level of significance.

Discussion

The research hypothesis that children by the age of four, five, and six indicate a preference for internal control that does not change over a five week period is accepted.

Hypothesis 2

The differences in the ages of the children will be unrelated to their locus of control preference.

Analysis of variance was used to evaluate this research hypothesis. The results are reported in Table 4-2.

TABLE 4-2.--Analysis of Variance on the PPNSIE Control Scale.

Source	Measure	SS	df	MS	F
Age	1	226.614	2	113.307	13.680*
	2	123.951	2	61.976	8.656*

*F is significant at the .01 level.

Findings

There is a relationship between age and locus of control status on Measure 1 and Measure 2. This relationship is significant at the .01 level on the F-test.

Discussion

The research hypothesis that the ages of the children are unrelated to their locus of control preference is rejected.

Hypothesis 3

The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.

Analysis of variance was used to evaluate this research hypothesis. The results are reported in Table 4-3.

TABLE 4-3.--Analysis of Variance on the PPNSIE Control Scale.

Source	Measure	SS	df	MS	F
Sex	1	4.563	1	4.563	.555
	2	13.003	1	13.003	1.816

Findings

There is not a significant relationship between sex and locus of control status on the F-test for Measure 1 or Measure 2.

Discussion

The research hypothesis that the sex of the children is unrelated to their locus of control preference is accepted.

Hypothesis 4

Teacher academic ratings of the children will be unrelated to their locus of control preference.

Analysis of variance was used to evaluate this research hypothesis. The results are reported in Table 4-4.

TABLE 4-4.--Analysis of Variance on the PPNSIE Control Scale.

	Measure	SS	df	MS	F
Academic Standing	1	127.100	1	127.100	15.344*
	2	39.430	1	39.430	5.507*

*F is significant at the .01 level.

Findings

There is a significant relationship between academic standing and locus of control status on Measure 1 and Measure 2. This relationship is significant at the .01 level on the F-test.

Discussion

The research hypothesis that the teacher academic ratings of the children are unrelated to their locus of control preference is rejected.

Interaction Effects

In addition to determining whether the four hypotheses were true, the three independent variables of age, sex, and academic standing were examined using a 2 x 3 x 2 analysis of variance to discover any interaction among them (see Table 4-5).

TABLE 4-5.--Analysis of Variance on PPNSIE Control Scale.

Source	Measure	SS	df	MS	F
Sex by Age	1	62.344	2	31.172	3.763*
	2	4.669	2	2.334	.326
Sex by Academic Standing	1	3.744	1	3.744	8.283
	2	53.642	1	53.642	7.160*
Age by Academic Standing	1	17.921	2	8.960	1.082
	2	18.353	2	9.177	1.280
Sex by Age by Academic Standing	1	19.646	2	9.823	1.186
	2	1.474	2	.737	.103

*F is significant at the .01 level.

Findings

The data presented in Table 4-5 show that there is a significant interaction effect for sex by age on Measure 1 only and sex by academic standing on Measure 2 only on the F-test at the .01 level of significance. These were the only interaction effects among the three independent variables.

Summary

In this study four research hypotheses were developed to investigate the locus of control of children aged four, five, and six. A locus of control scale for very young children was administered to 150 preschool and primary students. Mean scores were analyzed using a match paired t-test and a 2 x 3 x 2 analysis of

variance. T-test results were used to accept or reject hypothesis 1 and the analysis of variance results were used to accept or reject hypotheses 2, 3, and 4.

The four research hypotheses and the findings pertinent to each are summarized as follows:

H₁: Children by the age of four, five, and six will indicate a preference for internal locus of control which will not change over a five week period.

The results of the analysis of mean scores for the first hypothesis showed no significant difference between Measure 1 and Measure 2. Hypothesis 1 was accepted.

H₂: The differences in the ages of the children will be unrelated to their locus of control preference.

A significant relationship was found at the .01 level between age and locus of control status. Hypothesis 2 was rejected.

H₃: The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.

There was no significant relationship between sex and locus of control status. Hypothesis 3 was accepted.

H₄: Teacher academic ratings of the children will be unrelated to their locus of control preference.

A significant relationship was found at the .01 level between academic standing and locus of control status. Hypothesis 4 was rejected.

The interaction of the independent variables of sex, age, and academic standing were analyzed to determine any effects among

them. Significance at the .01 level was found between sex and age on Measure 1 only and between sex and academic standing on Measure 2 only.

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

Introduction

In this chapter a summary of the study is presented, followed by a discussion of the findings for the four research hypotheses and the interaction effects along with implications for further research.

Summary of the Study

The purpose of this study was to explore the efficacy of gathering and analyzing data regarding the locus of control preference in children aged four, five, and six. Four research hypotheses were developed to investigate the stability of locus of control and the relationships between age, sex, and teacher academic ratings of children. A sample of 150 four-, five-, and six-year-olds enrolled in the two preschool and five kindergarten classes of Sembach Elementary School, Sembach, West Germany, provided the data for the study. Data were collected from a locus of control scale designed especially to measure internality-externality in children aged four through six. Mean scores were analyzed using a match paired t-test and a 2 x 3 x 2 analysis of variance.

Discussion of the Findings for the Hypotheses

- H₁: Children by the age of four, five, and six will indicate a preference for internal locus of control which will not change over a five week period.

Hypothesis 1 was formulated because the researcher was interested in the question of whether locus of control preference was stable or not stable in children of four-, five-, and six-years-of-age. Based on the data found, it is not possible to assert that the locus of control construct is stable. But the absence of data to the contrary does not deny stability of the construct for four-, five-, and six-year-old children. That is, this study has not found instability either. Also, it is not possible to assert that evidence was not found that stability exists. So the presence of stability is neither confirmed nor denied. The essential finding, then, is that the results from this study do not deny that children's locus of control status is stable. Therefore, at present, stability of the construct in four-, five-, and six-year-olds must perforce retain its status as presumption.

If future studies in this area continue to produce findings that are consistent with and similar to the findings of the present study, the presumption that this age child is stable with respect to locus of control preference should become stronger.

H₂: The differences in the ages of the children will be unrelated to their locus of control preference.

Whether age had any effect on locus of control preference was another concern of this study. The results indicate that four-year-old children regardless of sex were significantly more internally controlled than either five- or six-year-olds.

This finding runs counter to all research and development theory. Chance and Goldstein (1967), Penk (1969), Stephens and

Deleys (1971), Mischel, Zeiss, and Zeiss (1973), and Nowicki and Duke (1973) all found that internality increases with age. All previous research is consistent with child growth and development theory in finding that the older the subjects the more internal were their scores. With an increase in age, one can be expected to show an increase in maturity and the feeling of confidence with oneself. Sharpened skills, attainment of new skills, and an increase in knowledge all tend to give one the ability to deal with life situations more successfully than when one or two years younger. One might expect five- and six-year-old children to have lower scores on the PPNSIE than four-year-olds since lower scores on this test indicate a greater degree of internality. In this study, however, four-year-old boys and girls scored significantly more internally than either five- or six-year-olds. Figure 1 (page 82) shows that the mean score for four-year-old boys on the PPNSIE was 8.09 and for four-year-old girls the mean score was 10.53. Five-year-old boys and girls had mean scores of 13.30 and 12.20 respectively while six-year-old boys and girls had mean scores of 13.12 and 12.32 respectively. These scores indicate as Figure 1 graphically depicts that the four-year-old child is significantly more internally controlled than either the five- or six-year-olds. These findings are contrary to all previous research data and with what one might expect based on development theory. That this study found opposite indications is cause for close examination.

This researcher considered the limitations of the PPNSIE control scale to be the most likely cause of such opposite findings.



Figure 1.--Interaction of Sex and Age on Measure 1 Only Keyed for Externality (computed from cell means in Appendix E, Table E-1).

Having worked for more than ten years with preschool and primary children, this researcher is of the opinion that most four-, five-, and six-year-old children cannot read nor recognize the words "yes" and "no" well enough to consistently respond with accuracy on the PPNSIE. In taking this test, a nonreading child as were the children of this study must listen to a question, find and mark the desired response, and wait for the next question. This cycle must be followed twenty-six times to complete the test. The number of children with attention spans sufficiently long to allow them to consistently respond with accuracy throughout the entire twenty-six cycles of the test may not have been large enough to yield reliable results. It was this researcher's opinion that nearly all four-year-old and many five- and six-year-old children could not manipulate the test materials well enough to assure reliable scores. During the actual test administration, the researcher and the aide were required to assist each four-year-old with each question. Thirty-eight of the 72 five-year-olds required assistance with most of the test. All but 40 of the 51 six-year-olds were able to complete the test independently without assistance once the test was underway. The children had to be dexterous enough to mark with a pencil either a "yes" or "no" appearing in a cartoon balloon in a certain one of four cartoon blocks on a given page. While this physical dexterity skill is necessary, the child must also be sufficiently mentally dextrous to coordinate making a decision to choose either "yes" or "no" in answer to the dictated question, locate the proper one of four cartoon blocks on the page, locate the proper one of two

balloons in that block, and decide which of the two words represents his choice. Finally the child has to draw a line around that response without including the other possible response and then get ready for the next question. Although these mental and physical skills may not be too much for such young children to learn, these are skills that require practice for proficiency. Such practice usually only occurs in a first grade curriculum which the sample of this study would not receive until either one or two years after they had taken the PPNSIE. It is significant to note that both preschool teachers stated that this was the first time their children had held a pencil. Because of the lack of exposure to practice at least the physical and probably the mental decision making skills as well, the reliability of the test scores is questionable.

If the scale, while designed to be used with four- through six-year-old children, had not actually been field tested with four-year-olds in the sample, claims for its reliability become suspect. The authors of PPNSIE describe its development in an article appearing in Developmental Psychology (reprinted in Appendix A). There is no indication in the article that four-year-olds took part in the development of the test. Should scores obtained from four-year-olds in the sample be considered accurate indicators of their position on the I-E continuum? Such scores would be of questionable reliability.

Within the PPNSIE itself are a number of items which children may not have comprehended because of the difficulty of concepts expressed or the vocabulary used. In addition the meaning of certain

questions may have been unclear to some children because of possible confusion over the phrasing used. This researcher believes four-, five-, and six-year-old children would not likely understand what good luck charms and lucky numbers were as mentioned in items 4 and 11. "Can you get your Mommy and Daddy to do what you want to do instead of what they want to do?", item 12, and "Are you the kind of child who believes that thinking about what you are going to do makes things turn out better?", item 23, may be phrased in such a way that some children become confused by the question. Perhaps the concept as well as the ability of introspection and self-evaluation required by item 23 is beyond children four- through six-year-old. This researcher questions whether any of the items could be understood by the sample either because of inappropriate phrasing or too complex or too abstract questions. It follows that data obtained from such items is of questionable reliability.

H₃: The sex of children between the ages of four, five, and six will be unrelated to their locus of control preference.

The sex of the child was not found to have an effect on locus of control preference. This is consistent with similar findings by earlier researchers. Crandall et al. (1965) found that with eight-year-old and older children sex appeared not to be related to position on the I-E continuum. Also, MacDonald (1971a), again working with older children, found incidentally in his research no evidence that sex related to locus of control preference. Knowing how other personality traits have been affected by the influence of society toward the sex of the child, it could have been conceivable

to expect that sex might have an influence on locus of control preference. For example, the drive for academic achievement has long been associated with the sex of the child. In the younger grades it is the female who has been found characteristically more achievement oriented and in the secondary and college levels it is the male who usually exhibits the greater drive for academic achievement. In past research and in this study, though, no evidence that sex affects the child's preference for internality or externality was found. Just why there is no apparent relationship between sex and locus of control, why a reinforcement is perceived as contingent or not contingent upon one's behavior without respect to one's sex, has yet to be determined.

H₄: Teacher academic ratings of the children will be unrelated to their locus of control preference.

The academic ratings of children were a factor in determining locus of control preference, with the lower academically ranked students being more internal than those rated as high.

Figure 2 (p. 80) depicts an interaction between sex and academic standing. This figure shows that for Measure 2 the mean score for girls of high academic standing was 12.68, and for girls of low academic standing the mean score was 12.76. This relative position was not the same for the boys. The mean score for boys of high academic standing was 12.92, and for boys of low academic standing the mean score was 11.22. That is, girls of high academic standing were more internal than girls of low academic standing as would be predicted from earlier research by Chance and Goldstein (1967).

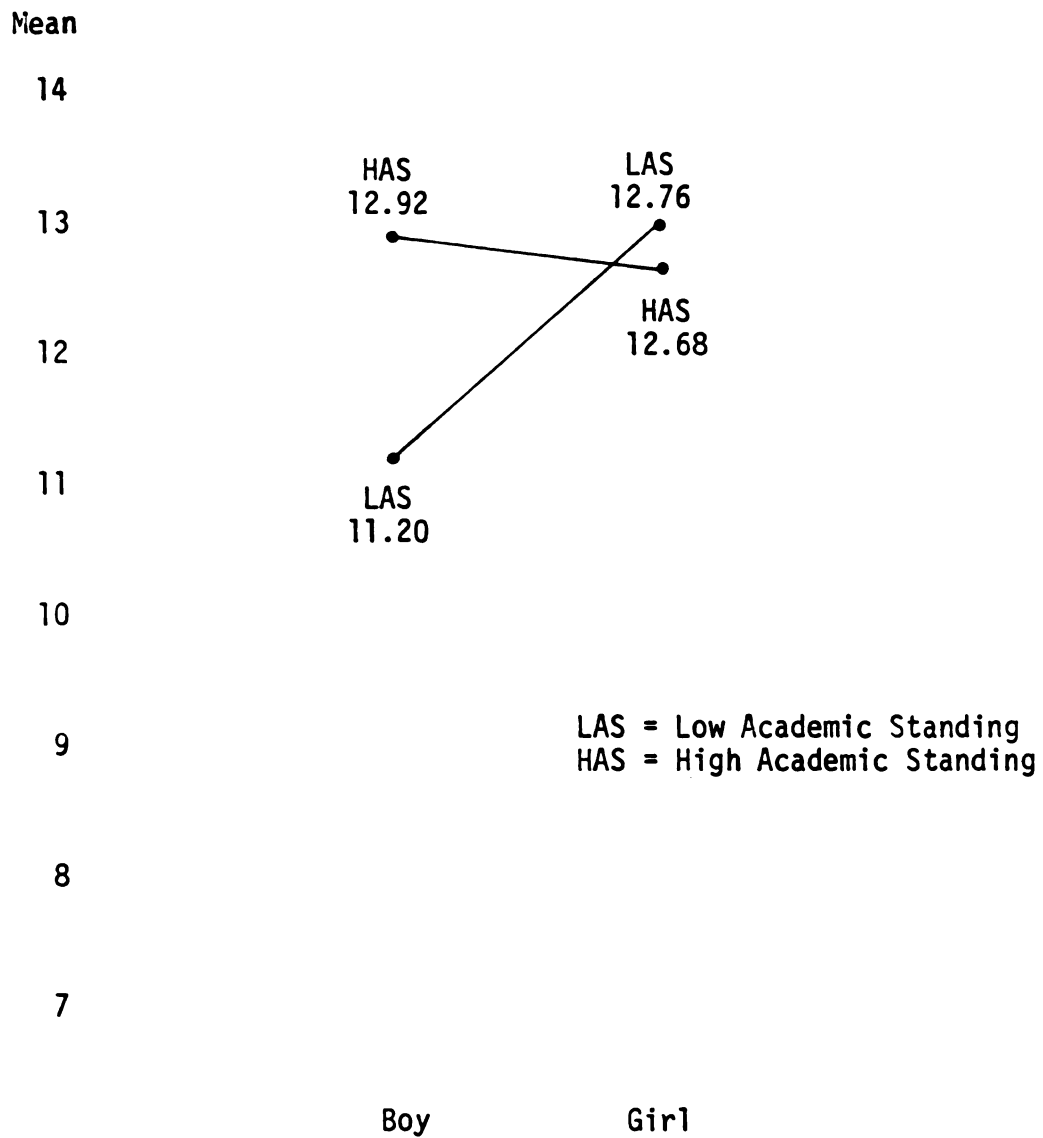


Figure 2.--Interaction of Sex and Academic Standing on Measure 2
Only Keyed for Externality (computed from cell means in
Appendix E, Table E-2).

They found regardless of sex that high academically ranked students were more internal than low ranked students. But with the boys of this study on Measure 2, those of low academic standing scored more internally than boys of high academic standing. One would expect to find that boys as well as girls of high academic standing scored more internally with smaller mean scores than boys and girls of low academic standing. This expectation was not realized for Measure 2. Just why there was an interaction between sex and academic standing may be due to questionable reliability of the PPNSIE control scale. It may be beyond the skill of four-, five-, and six-year-olds to manipulate and coordinate a test booklet and pencil well enough to consistently respond with accuracy. Then, too, the abstract quality and complexity of some items as mentioned earlier may interfere with their comprehension by such young children. The reliability of scores from such items is questionable. Further research is needed to clarify any question of influence of academic standing on locus of control preference.

Discussion of Findings for the Interaction Effects

Some interesting results were found having to do with the interaction among the variables of sex, age, and academic standing. Sex interacted with each of the other two variables, age and academic standing, but no interaction was found between those other variables themselves. There was an interaction discovered between sex and age on Measure 1 only and not on Measure 2. Figure 1 (page 75) shows that with a mean score of 8.09 boys aged four, regardless of

academic standing, were the most external of all groups (mean score, 13.30). At six years of age, boys (mean score, 13.12) were slightly less external than the five-year-old boys, but were more external than all other groups.

Earlier in this discussion it was mentioned that age appeared to have an effect on locus of control preference, and, again with the analysis of variance, age was found to be related along with sex to locus of control preference. But here it is the four-year-old boys who were the most external of all groups. Sex by itself was not found to have a bearing on the locus of control preference, but when combined with age an interaction was found. As this was not a cause and effect study, why boys are this way was not discovered.

An interaction was discovered between sex and academic standing, but on Measure 2 only and not on Measure 1. Figure 2 (page 80) shows that low academically ranked boys, regardless of age, were the most internally controlled (mean score, 11.20). But low academically ranked girls (mean score, 12.76) were more external than girls ranked as academically high (mean score, 12.68). Again, because this was not a cause and effect study, why low academically ranked students changed their locus of control preference with respect to sex was not determined. Likewise, it was mentioned earlier in this discussion that the academic standing of a child did have an effect on locus of control preference, and again with analysis of variance, academic standing was found to be related. The child with the low academic standing was more internal than

all other groups. Sex by itself was not found to have a bearing on the locus of control preference, but when combined with academic standing an interaction was found.

Limitations

It appears that use of the PPNSIE to assess children's locus of control status might affect the results obtained from the scale. There were no instructions for the administration of the PPNSIE. An individual who used the scale with children would be obliged to give them some instruction as to what to do on the test booklet. One administrator's instructions might differ significantly with those of another test administrator with a possible result being that those different groups of children viewed their tasks on the test in a manner different enough to produce erroneous information.

For example, consider the following hypothetical situation. Suppose one administrator were to tell students that to answer a question in the affirmative they were to "mark the answer you want," but another administrator were to direct students to "mark a line around the 'yes' to answer yes." It is possible that one of the two sets of directions could be more clearly understood than the other and could result in some students responding differently than if they had more clearly understood. It seems reasonable that such differences could have an effect on the results obtained from the test. Standardized instructions could help to avoid this situation by providing all children with the same directions to interpret.

This researcher developed a set of instructions that was used for all of the groups in this study. These instructions are contained in Appendix C. Although these instructions may not have been standard with respect to all users of the PPNSIE, all groups within the sample of this study did receive the same directions.

There also exists the possibility that the set of instructions developed by this researcher was not as clearly understood by the children as it need to have been. The results obtained from the test could have been affected by such a possible flaw, with some children responding randomly without regard for the question, or in ways designed to please the researcher, or to create equity in the number of "yes" and "no" responses.

In order to properly respond to items contained in the PPNSIE, a child needs to have a minimal skill of recognizing the printed words "yes" and "no." The PPNSIE included no provision for assessing whether the children could distinguish between these two words. Children without this skill would not likely provide accurate data for research. This researcher developed procedures for the PPNSIE administrator to use for the purpose of teaching those who did not recognize "yes" and "no." These procedures are contained in Appendix C.

There exists the possibility that those procedures were not effective in teaching all of the non-readers "yes" and "no." Although attempts were continually made by the researcher and an aide throughout the instruction period and test period to assist the children in recognizing the words, it is possible that some

children did not yet successfully discriminate between "yes" and "no." Data obtained from tests of such children would not likely be very reliable.

Moreover, it is possible that children of four-, five-, or six-years old did not understand the manner in which all of the questions were phrased. For example, PPNSIE item 15 asks, "When you do something wrong, is there little you can do to make it right again?" It is possible that this question might have been too complex for such a young child to comprehend. Also, it is possible that the thought expressed in some of the questions may have been beyond the ability of children of this age group to comprehend. For example, PPNSIE item 23 asks, "Are you the kind of child who believes that thinking about what you are going to do makes things turn out better?" The tests of children who experienced comprehension problems of this type would not likely provide reliable scores.

The preschool children in the study had limited experience in paper and pencil tasks. Their teachers explained to the researcher that no activities using paper and pencil had been attempted. Because of this it is possible that some children were preoccupied with the materials of the test so that their thinking wandered from the PPNSIE task to the experience of using a pencil and paper. It is possible that some of these children had not mastered control of a pencil well enough to mark the test as they wanted. Marking their choice might have been physically difficult and at the same time mentally taxing as some might have tried to do

two things at once. That is, some may have been trying to consider and identify their response and at the same time trying to manipulate the pencil to indicate their choice. For some children, this might have been either confusing or difficult. It is possible that not only some of the preschool children experienced these difficulties but also that some of the primary children experienced these difficulties as well. Data obtained from tests of such children suffer from lack of reliability.

Although the researcher and an aide made attempts to prevent it, some children may have either lost their place on the page or not followed the item blocks in sequence thereby applying a response to one item in the balloon of another item. Possibly the younger children might have experienced this because of the newness of following group directions. It could be that the attention span of some of the younger children used in this study may not have been sufficient to allow them to consider all items before responding. Some may have marked responses arbitrarily instead of considering their answer. If any of the children in this sample experienced one or more of the difficulties described here, the data from their tests might not be accurate.

Here have been presented the possible limitations of the instrument and procedures utilized in this study as well as some of the characteristics of the children which might possible weaken the power of PPNSIE to measure locus of control status. In any case, the researcher and her aide attempted to overcome these problems insofar as they were able. At the present point in time, the

PPNSIE is the only instrument which has been developed to measure young children's perceptions of locus of control.

Another area of concern is that some of the teacher ratings of the children may be erroneous. If a child was rated as low but should actually have been rated as of high academic standing, the results could have been affected.

Since the researcher assigned a low academic rank to those children who were rated as either a one, two, or three and a high academic rank to those who were rated as either a four, five, or six, the results could have been affected by this decision. It is possible that another way of dividing the ratings into high and low rankings could have yielded more reliable results.

Though this research entails a number of sizeable difficulties in procedure, it nevertheless represents an initial exploration of the factor of locus of control among very young children.

Suggestions for Future Research

This researcher encountered significant problems while conducting the research for this paper. As has been discussed, the reliability of the PPNSIE for the four- through six-year-old age group is in doubt. But since little work has been done to date on locus of control in such young children, this researcher feels that continued research in this area could add greatly to the understanding of the young child.

If this study should be replicated, some changes would benefit future study. Although the sample size in this study was

150 children, an even larger sample would tend to yield more reliable results. An increased sample size is recommended.

Another area which would offer improvement for future studies has to do with the composition of the sample. The members of the present sample had significant factors in common. All came from families whose fathers were in the U.S. Armed Forces in Germany, all lived in a military community in Germany, and all of the four-year-olds attended a preschool that required a tuition. Fathers' employers and family living environment were virtually all the same. The preschool itself may have screened the four-year-old portion of the sample by requiring tuition and therefore could be an influencing factor. A beneficial change for subsequent studies would well include a more diverse population. This would yield results more readily generalizable.

Another change that would benefit future research involves the manner in which age groups were set up. The present study utilized an age breakdown of whole year groupings. Because children change so rapidly at four through six, a breakdown by year and month would offer more specific age related information.

The most serious problems encountered during the course of this investigation came about as a result of the instrument used to determine the children's positions on the I-E continuum. Although it was developed specifically as a group test for preschool and primary children, the PPNSIE carries with it inherent difficulties. The test requires that the children follow directions that may be too detailed for this age group, listen and follow along in a test

booklet, interpret questions some of which may be either too abstract or too ambiguous for such young children, and utilize a pencil to indicate their responses in prescribed spaces in the test booklet. All of these tasks seem to have presented significant difficulties for the four- through six-year-old children. Future researchers into locus of control with this age group might well consider the development of another instrument which would avoid the complications and difficulties brought about by the use of the PPNSIE. To individualize the test would produce the greatest single improvement over the PPNSIE. Further, test format would be much improved by eliminating the test booklet and replacing the situations it presents with colorful, realistic scenes on a 35 mm filmstrip with prerecorded narration.

A super-8 film or a video tape presenting the situations to which the children respond would be more difficult to produce but may be more beneficial. These audio-visual formats would standardize the test and at the same time increase the children's interest. If a higher level of interest were maintained and if the children felt more closely involved with the situations, the data produced from such an improved test would be more reliable.

In addition to the further investigations already suggested, several questions have developed from considering the results of this study that might well be pursued in future research into the area of locus of control and the young child. Although this study did not find whether or not locus of control exists as a stable

personality trait at four years of age, more research might well be conducted in this area.

Research to develop other measures for locus of control in the preschool and primary child would be greatly beneficial. There is a dilemma regarding the PPNSIE control scale. That is, should one use it in research realizing that the many limitations of the scale discussed in Chapter III might significantly affect the results, or should one discard the scale as unusable? To this researcher's knowledge, no other measure was available at the time of the study for measurement of locus of control in the preschool and primary child. This research was thought to be more important than the possibility that some of the limitations might adversely affect any results obtained through its administration. So it was decided that the PPNSIE would be used despite the possible limitations associated with it. To make it possible for future research into the early development of locus of control to yield results with less possibility that they might be affected by the scale itself or its administration, other scales might well be developed.

APPENDICES

APPENDIX A

A PRESCHOOL AND PRIMARY INTERNAL-EXTERNAL
CONTROL SCALE

APPENDIX A

A PRESCHOOL AND PRIMARY INTERNAL-EXTERNAL CONTROL SCALE*

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The purpose in the present study was to construct a preschool and primary form of an internal-external control scale that would be comparable to already completed forms for older subjects. On the basis of construct validation procedures certain requirements were established for the new measure. After pilot work, yielding a 26 item cartoon format, the scale was administered to 240 children. Data reflecting achievement, interpersonal distance and social desirability were also gathered. Results indicated that the test met internal and external validity requirements.

It is not necessary to document at great length the importance of the locus of control construct. Perusal of the four major reviews (Rotter, 1966; Lefcourt, 1966, 1971; and Joe, 1971) indicates the wide variety of behaviors to which locus of control orientation has been related.

The purpose of this article is to present a reliable and valid measure of locus of control for children from four to eight years of age. The authors will present a rationale, based on logic and previous work, for the construction of a measure of locus of control for this age range of children. On the basis of this rationale, requirements critical for meeting construct validity criteria will be presented. The rationale and consequent requirements form the basis for the particular methodology and procedures used to develop the present scale.

*S. Nowicki and M. Duke, "A Preschool and Primary Internal-External Control Scale," Developmental Psychology, 1974, 10, 874-880.

MacDonald (1971, 1972, 1973) has reported that there are presently ten adult and six children's locus of control scales in existence. One might probably wonder then, why the authors are presenting still another scale. There are compelling reasons. Of the many scales, only two are available for children below the third grade (Stephens & Deleys, 1971; and Mischel, Zeiss & Zeiss, 1973). Further, although these two scales show evidence of acceptable reliability and validity, one has to be individually administered and neither has satisfactory comparable forms for older subjects. In fact, only Crandall's Intellectual Achievement Responsibility scale (Crandall, Katkovsky & Crandall, 1965) which focuses specifically on an academic locus of control, has comparable forms available for older age groups, but then it is only appropriate down to the third grade. The present authors have been involved in a program of test construction to eradicate this deficiency, and have constructed comparable locus of control scales for subjects from elementary school (9 years of age) to geriatric subjects. This project began when one of us was involved in the construction of the children's Nowicki-Strickland Internal-External control scale (CNS-IE, Nowicki & Strickland, 1973). The scale was constructed on the basis of Rotter's definition of locus of control (1966). The CNS-IE has been reviewed by MacDonald (1973) who stated: "In short, it (the CNS-IE) appears to be the best measure of locus of control as a generalized expectancy presently available for children" (p. 231).

It seemed logical to use this instrument as a foundation on which to construct comparable forms for other aged subjects. To this end, scales were devised and data gathered for both college and non college adults (Adult Nowicki-Strickland Internal-External Control ANSE-IE--Form C for college; and Form NC for non college adults; Nowicki & Duke, 1973) and geriatric adults (Geriatric Nowicki-Strickland Internal-External Control Scale GNS-IE; Duke, Shaheen & Nowicki, 1973). The advantages of having comparable assessment instruments across age are obvious. Comparable instruments allow for replication of children's findings in adults, and vice versa, without the added confound of unknown relations between noncomparable locus of control instruments. It seemed obvious that the next logical step in our research program was to construct a measure of locus of control appropriate for children of nursery school age through second grade. With such a form, there would then be available, comparable assessment instruments for subjects four years old through elderly adults.

In adherence to the philosophy of construct validation procedures, (see Cronbach & Meehl, 1955), certain requirements were generated concerning the performance of the Preschool and Primary

form of the CNS-IE (PPNS-IE). These are to be met for the scale to be tentatively acceptable as a measure of locus of control for this age group:

1. The PPNS-IE should be group administerable, largely for the sake of efficiency in gathering data.
2. The PPNS-IE should be constructed in such a manner to hold the interest of young children which, in turn, would lead to higher reliability estimates.
3. To maximize its potential discriminative ability the PPNS-IE should show item means between .3 and .7, as well as moderate item-total correlations.
4. PPNS-IE scores should become more internal with age as it is assumed that individuals gain more control with maturity.
5. PPNS-IE scores should not be related to social desirability scores.
6. The PPNS-IE, because it is a downward extension of, and supposedly comparable to, the CNS-IE, should be significantly related to the CNS-IE.
7. Factor analyses of PPNS-IE scores should show a similar factor structure to that found with the CNS-IE (Nowicki, 1973).
8. PPNS-IE scores should be related to variables in the same way that scores from the CNS-IE and ANS-IE are. In the present study, the variables chosen for comparison were achievement and interpersonal distance. Using the CNS-IE and ANS-IE it has been shown that internal locus of control was positively related to less distance from others (Duke, Nowicki, 1972; Wilson, Duke, & Nowicki, 1973) and to greater academic achievement (Nowicki & Strickland, 1973; Nowicki & Roundtree, 1971). These same relations were predicted for the PPNS-IE scores.

Method

Development of Item Pool

The first phase of item construction work paralleled the construction of the Nowicki-Strickland scale. That is, from a definition of locus of control (Rotter, 1966), a number of items were constructed appropriate to children aged four through eight.

The items were devised by two Ph.D. level psychologists and two preschool teachers. The items consisted of words geared to a four year age level. Items from the CNS-IE were included in this pool. In addition, there was an effort to make the questions short and to use a yes-no answer format in order to make the items easier.

The list of items ($n = 78$) thus obtained was then circulated along with a definition of locus of control (Rotter, 1966) to five Ph.D. psychology staff members and five graduate psychology students. The raters were asked to answer the items in an external direction. Those items on which there was any disagreement in scoring among the raters were dropped. The remaining items ($n = 44$) made up the preliminary pool. Their adequacy was tested in a study performed by Wilson, Duke & Nowicki (1972).

The subjects for this investigation were 36 male and 44 female white pre-school students from a private school in a large southern metropolitan area. The children were predominantly from the middle to upper socioeconomic levels (Hollingshead, 1957). The experimenter read aloud each question of the locus of control scale to the individuals tested and marked down the "yes" and "no" response of the subject. Subjects were told to answer the question in either direction and assured that there was no right or wrong answers.

Analysis of these data was primarily done to assess which of the 44 items had means in the .3 to .7 range and moderate item-total correlations. In addition, an item analysis was performed using the 10 highest and 10 lowest scores. Based on these criteria, 36 of the 44 items were deemed acceptable. The stability of these 36 items were assessed by cross-validating them in a comparable population of preschool children ($n = 21$). Items ($n = 26$) acceptable in both groups were included in the preliminary form of the PPNS-IE.

The Preschool and Primary Form

The 26 items obtained from the analysis of the pilot study (Wilson, Duke & Nowicki, 1972) formed the primary pool of items. Of these 26 items, 14 were taken verbatim from the CNS-IE and six were DNS-IE items that were altered slightly.

The items of the Preschool and Primary Nowicki-Strickland Internal-External control scale (PPNS-IE) were arranged so that when keyed for an external response, no more than three "yes" or "no" responses occurred in sequence. When keyed in an external direction, 13 items were keyed "yes" and 13 items were keyed "no." The total score was the number of external responses. To assess the effects of social desirability and to disguise the intent of

the locus of control questions, eight questions from Crandall's scale (Crandall, Katkovsky & Crandall, 1965) were interspersed among the other test questions.

To make administration easier and to increase attention, alternate methods of presenting the items were considered. Since cartoons seem to be implicitly interesting to children and have been used successfully in testing procedures elsewhere (e.g., Battle & Rotter, 1963; Rotter, 1972), it was decided that they could be used successfully to increase attention in young children. This would meet requirements one and two.

For the purpose of constructing a cartoon form of the PPNS-IE, two artists were contacted and asked to make cartoon drawings of two small children facing each other. The cartoon drawings selected had one child presenting the item in a cartoon bubble above its head while the other child had above his/her head a bubble with the words "yes" and "no" in it. The child was instructed to draw a line through or circle around "yes" or "no" in answer to the question. Each of the 26 locus of control items and eight social desirability items was placed into this cartoon form.

A male form (PPNSIE-M) and a female form (PPNSIE-F) of the test were constructed to make it more personal and interesting. The PPNSI-M, for example, had a little boy to whom either a little girl or little boy asked the questions. The opposite is true for the female form. The number of questions asked by girls and boys was the same and were varied randomly. Having devised this cartoon form, an investigation was begun with the two-fold goal of further validation of the items and assessing the value of the cartoon format.

Subjects

Subjects were 240 children (120 males and 120 females) ranging in age from 5 to 8 years. These subjects were randomly chosen from two schools in the Gwinnett County, Georgia school system. Gwinnett County borders the metropolitan area of Atlanta and based on previous research (Nowicki & Strickland, 1973) has all but the highest socioeconomic level amply represented. There were two restrictions of subject selection: subjects scoring below an IQ of 80 and blacks were excluded from the present study. (This is not to say that intensive validation work with other race subjects should not be conducted, but just that it was beyond the scope of this very limited study.)

Procedure

The subjects were tested in same sex groups ($n = 10$) in their classrooms by either a male or female examiner (presenters were counterbalanced for sex). The examiner introduced himself or herself as a person who was attempting to find out what little boys and little girls think about things. The cartoon form of the PPNS-IE was then handed out. The examiner presented two examples of items and how to respond to them. The children practiced answering these two examples. When the examiner was sure that the children understood the task, he or she read each item aloud, twice. The examiner checked periodically to make sure the children were following instructions. For eight year old children the CNS-IE scale was also administered in its usual fashion, i.e., reading each item aloud. This concluded the first testing session.

The second testing session included readministering the appropriate form of the PPNS-IE to all seven year old children six weeks after the first testing. This was for test-retest reliability purposes. For use in validation, the second testing also included obtaining interpersonal distancing information from these children.

Validity Measures

The Comfortable Interpersonal Distance scale (CID) (Duke & Nowicki, 1972); Eans & Howard, 1973) is a paper-and-pencil measure corresponding to and derived from actual body-boundary rooms as used by Rawls, Trego and McGaffey (1969) and Frankel and Barrett (1971). The figural layout is in the form of a plane with eight radii emanating from a common point, each 80 mm radius being associated with a randomly numbered "entrance" to what is presented as an imaginary "round room." Distance between the center point and any location on a given radius is easily measurable (in millimeters) and reflects the assumption that interpersonal space is a continuous variable. Typical instructions ask subjects to imagine themselves at the center point of the diagram (room); to respond to imaginary persons (stimuli) approaching them along a particular radius by making a mark on the radius indicating where they would prefer the specific stimulus to halt, i.e., where they think they might begin to feel uncomfortable with the stimulus' closeness. Subjects' responses are scored as the distance in millimeters between the mark on a specific radius and the center of the CID.

Achievement test data (Iowa Basic Skills) and socioeconomic data (Hollingshead, 1957) were obtained from school records.

Results

The data analyses had two main purposes: to evaluate the consistency of items and total test scores and to evaluate the construct validity of the total scores.

Table 1 presents the item-total correlations and means for 5 and 6 and 7 and 8 year old groups. As can be seen most of the items had item means ranging between .3 and .7 and most had item-total correlations in the moderate range. These results suggest optimal conditions for discrimination and support requirement 3.

PPNS-IE means and standard deviations for male and female, 5 and 6, and 7 and 8 year old groups are shown in Table 2. Inspection of the table shows the means to become more internal with age. This supports requirement 4.

Consonant with requirement 5, the correlations between PPNS-IE scores and social desirability scores were nonsignificant (range - .08 to +.11, median $r = .30$).

The correlations between the PPNS-IE and the CNS-IE for eight year olds was significant ($r = .78$, $n = 60$), $p < .001$) as was the six week test-retest reliability for the seven year olds ($r = .79$, $n = 60$, $p < .001$). This supports requirement 6.

Responses to the 34 items were intercorrelated and the resulting matrix factored by the principal components methods with a minimum eigen-value of .8 for computation of components. Squared multiple correlations were entered in the diagonal and the components rotated to orthogonal simple structure by means of Kaiser's (1958) Varimax method. The minimum eigen-value for factor rotation was 1.0.

Factor analyses of the PPNS-IE indicated that none of the social desirability items loaded into any of the I-E factors. The first three I-E factors accounted for 60% of the variance and inspection of the items indicates a similar factor structure to that reported by Nowicki (1973) for the CNS-IE. The series of items loading high on factor 1 (#7, 8, 16, 20, 25, 27, 34) dealt with making people and things do what you want them to do. Examples of items are "Can you make other kids like you?" and "When you do something wrong is there little you can do to make it right again?" We have called this a power vs. helplessness factor.

The eight items loading high on factor 2 (#5, 6, 9, 12, 17, 22, 26, 28) dealt largely with persistence in obtaining goals and in dealing with powerful others namely parents. Examples of items are "If you ask for something enough will you get it?" and "Most

of the time do you find it easy to get your own way at home?" We call this a persistence in dealing with parents factors.

The third factor, included six items (#1, 3, 4, 10, 11, 20) relating to fate, luck and/or chance. For example, "Are most kids just born good at running races?" and "Do you have a lucky number?" This factor we call luck.

The relation between PPNS-IE scores and standardized achievement test scores is presented in Table 3. As can be seen, for males there is a tendency for internality to be related to achievement test scores; that relationship reaches significance with the females. This partially supports the eighth requirement.

In addition PPNS-IE scores were correlated with total interpersonal distance scores. The results indicated further support for requirement eight; internality was related to less distancing (males, $r = .44$, $df = 28$; females, $r = .33$, $df = 26$).

Discussion

These results suggest that the PPNS-IE has met the minimal requirements of construct validity. Internally, the instrument shows high item-total correlations, item means in the prescribed middle ranges, and a similar factor structure to the CNS-IE. Externally, the instrument demonstrated significant test-retest reliability, a significant relation to CNS-IE scores, nonsignificant relations to social desirability, and positive and significant relations to higher achievement and less distancing. The scale, thus, possesses much the same pattern of psychometric properties as its comparable forms for older subjects. With the development of the PPNS-IE, researchers now have available reliable and valid measures of locus of control which form a continuum from age four through old-age. Research dealing with such things as parent-child locus of control relationships, and sibling relationships is now possible as are cross-sectional and longitudinal designs hertobefore plagued by differential measurement techinques and the hoary problems they produce.

It is the authors' belief that locus of control research has been ensconced in instrumental development long enough. There are now available several good measures at every age level of interest. If physicists had spent all their time studying the ruler they would not have been able to measure and learn of the earth. The current authors feel that with the development of the PPNS-IE, there are available for the first time, parallel, age-appropriate, reliable and valid measures of locus of control. Research utilizing these measures will hopefully result in better research designs and, eventually, a clearer understanding of human behavior and its development.

Table 1

Preschool and Primary Nowicki-Strickland Internal-External Control Scale, item means and item total correlations for groups 5 and 6 as well as 7 and 8 years old.

	Male				Female			
	Item Mean		Item Total Correlations		Item Mean		Item Total Correlations	
	<u>5 & 6</u>	<u>7 & 8</u>	<u>5 & 6</u>	<u>7 & 8</u>	<u>5 & 6</u>	<u>7 & 8</u>	<u>5 & 6</u>	<u>7 & 8</u>
1	.83	.51	.43	.20	1.0	.51	1.0	.16
2	.07	.33	-.23	.24	.12	.40	.13	.05
3	.14	.42	.15	.25	.20	.41	.33	.04
4	.37	.68	.19	.04	.42	.68	.14	.07
5	.32	.39	.20	.20	.35	.40	.21	-.06
6	.63	.44	.16	.41	.50	.43	.38	.31
7	.70	.55	.24	.18	.52	.46	.34	.12
8	.21	.24	.51	.07	.57	.24	.21	.25
9	.75	.42	.31	.32	.75	.53	.39	.44
10	.68	.72	.11	.15	.63	.73	.09	.16
11	.90	.87	.28	.19	.93	.90	.07	.20
12	.39	.35	.22	.25	.42	.38	.16	.19
13	.51	.30	-.10	.08	.38	.21	-.01	.15
14	.26	.36	-.02	.27	.38	.40	.26	.31
15	.61	.33	.11	.22	.57	.45	-.30	.23
16	.63	.76	.16	.19	.57	.84	.29	.06
17	.56	.62	.34	.13	.80	.62	.54	.33
18	.95	.76	.02	.04	.77	.86	.03	.11
19	.46	.30	.07	.17	.40	.41	.09	.07
20	.43	.39	.36	-.10	.25	.40	.61	.26
21	.24	.42	.30	.15	.45	.20	.15	.21
22	.75	.86	.14	.08	.87	.85	.44	.16
23	.43	.54	.21	.01	.47	.50	.44	.26
24	.46	.18	.13	.13	.47	.24	.10	.10
25	.41	.62	.31	.41	.67	.45	.17	.41
26	.56	.56	.01	.28	.45	.51	.23	.27
27	.24	.30	.03	.24	.42	.31	.21	.17
28	.29	.17	-.16	.24	.47	.11	.05	.20
29	.87	.74	.02	.09	.65	.88	-.12	.03
30	.43	.41	-.11	.41	.47	.36	.02	.22
31	.87	.69	.08	.08	.87	.86	-.08	.26
32	.65	.60	-.09	.26	.72	.36	.33	.15
33	.19	.02	.02	.14	.17	.04	-.16	.08
34	.39	.33	.18	.31	.62	.38	.00	.52

Table 2

Means and Standard Deviations for Nowicki-Strickland Preschool and Primary Internal-External Control Scores for 5 and 6, 7 and 8 year old males and females.

		<u>Male</u>		<u>Female</u>	
Age	5 & 6	12.31	(2.33)	14.13	(2.20)
	7 & 8	11.45	(2.81)	11.45	(2.92)

Table 3

Correlations Between PPNS-IE Scores and Iowa Basic Skills Scores.

	Male (66)			Female (67)		
	PPNS-IE	Verbal	Math	PPNS-IE	Verbal	Math
PPNS-IE		-.17	-.20		-.34**	-.45**
Verbal			.85**			.84**

**p < .01_L

APPENDIX B

BREAKDOWN OF POPULATION BY SEX,
AGE, AND ACADEMIC STANDING

APPENDIX B

BREAKDOWN OF POPULATION BY SEX, AGE, AND ACADEMIC STANDING

Sex	Total
Boy	74
Girl	76

Age	Sex	n
4	Boy	12
	Girl	15
5	Boy	36
	Girl	36
6	Boy	26
	Girl	25

Age	Sex	LAS	HAS
4	Boy	7	5
	Girl	7	8
5	Boy	22	14
	Girl	15	21
6	Boy	15	11
	Girl	11	14

APPENDIX C

INSTRUCTIONS FOR PPNSIE CONTROL SCALE

APPENDIX C

INSTRUCTIONS FOR PPNSIE CONTROL SCALE

The following is the set of directions and procedures developed and utilized by the researcher for administration of the PPNSIE.

The examiner introduced herself as a person who was attempting to find out what little boys and little girls think about things. The children were then arranged so that they could not see one another's papers. To each in the group being tested, a paper was given out with a cartoon balloon containing the words "yes" and "no" on each side of the paper. As this sample paper was to be used to teach the meaning of words as they appeared on the PPNSIE, the balloons and the words within were made the same size as they were found on the test. The teaching of "yes" and "no" then proceeded with the following being said:

On the chalkboard I have put just what you have on your papers. This is the word "yes" and this is the word "no." "Yes" is longer, isn't it? "No" is shorter, isn't it? Today on your papers, "yes" will always be the first word and "no" will always be the last word. Now you're going to help answer some questions. Are there any elephants on my head? No, of course not. So to answer no, you touch "no" in the balloon on your paper and hold your finger there.

At this time the researcher and an aide quickly checked the children's responses and gave assistance when needed. (Note: The researcher's general impressionistic perception of the children's patterns of responding were, as might be expected, that the more

immature children did require relatively more assistance in following the instructions. This observation would tend to apply at each point below where the instructions indicate that the researcher and aide provided assistance.)

You did that very well. Now let's answer this question. Are there any children in this room? Yes, of course there are. So to answer yes, touch "yes" in the balloon on your paper and hold your finger there.

Responses were checked and assistance was given if necessary.

You did that very well. Now I'm going to give you each a pencil to use instead of your finger to mark your answer. When you get yours, hold it very still.

Pencils were then given out.

Let's answer a question using the pencil to help. Are there any elephants on my head? No, of course not. So make a line around "no" in the balloon just like I'm doing.

The "no" response was encircled on the chalkboard. The researcher and the aide quickly checked the children's work giving assistance when needed.

You did very well. Let's answer another question using your pencil to help. Turn your papers over and there you see another balloon with "yes" and "no."

The researcher and aide quickly checked to see that all students had their papers correctly positioned.

Are there any children in this room? Yes, of course there are. So make a line around "yes" in the balloon just like I'm doing.

The "yes" response was encircled on the chalkboard. The researcher and the aide quickly checked the children's work giving assistance when needed.

You did very well. I'll collect these papers and give out these booklets. We'll make lines around "yes" or "no" in this booklet to answer questions just as we've done already. For now just leave the booklet on the table when I give it to you and wait for me before marking it.

The sample sheets were collected and the booklets were distributed. An aide followed and recorded the predetermined identification number for each child on the front of the PPNSIE booklet. These numbers were used to protect subject anonymity.

In this booklet there are a lot of pictures with two children just your age talking. We're going to pretend that the child saying "yes" and "no" each time is you. So when the other child asks you a question, you answer the question by making a line around what you believe the answer is. You make a line around "yes" or "no." Look at this cartoon picture on your booklet. Now in this picture, point to which child we're pretending is you.

The researcher held a booklet and indicated the sample box and with the assistance of the aide checked the children's responses giving help where needed.

You did that very well. The other balloon with a lot of words is the question the other child will ask you. I'll read those words to you so you'll know what the other child is asking you. After you know what the other child asks, you can answer "yes" or "no" with your pencil. Let's start now.

I'll read what this other child is asking you.

The sample question was read.

Now what do you think the answer is? Answer the question with your pencil.

The researcher and the aide checked to see that the children made a line around either "yes" or "no" only. Assistance was given when needed.

You did that very well. Now, let's go on with some more questions for you to answer.

The remainder of the PPNSI was administered with the researcher and the aide continually monitoring the children's marking of their responses and giving help when needed. To help the children avoid losing their places, a sample test booklet was held up so the correct page and the position on the page for each item could be seen. The booklets and pencils were collected at the conclusion of the test.

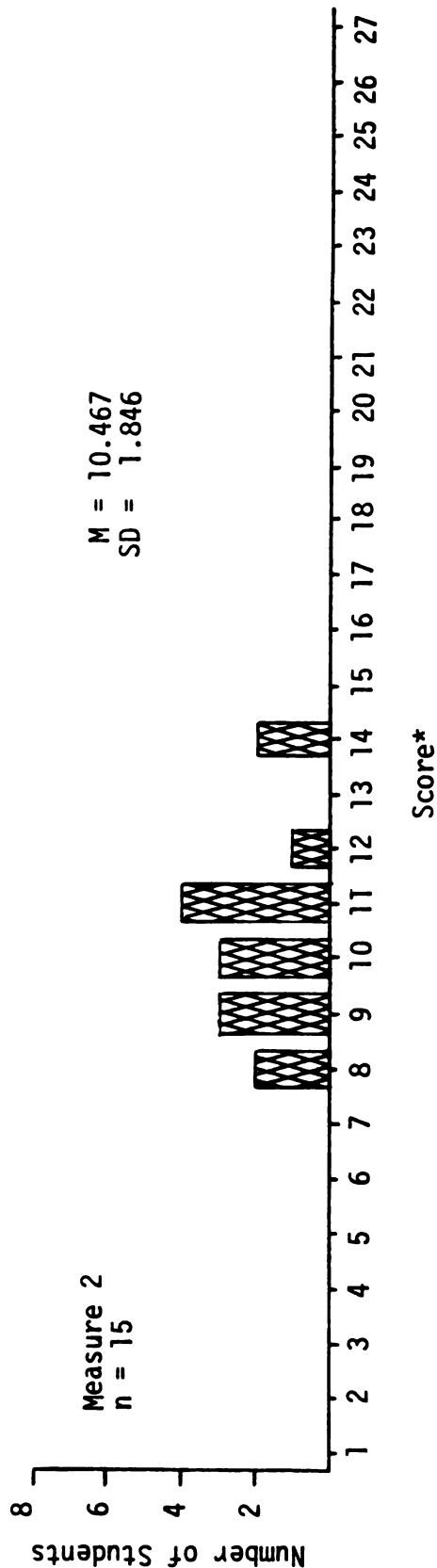
APPENDIX D

DISTRIBUTIONS OF PPNSIE SCORES FOR FOUR-,
FIVE-, AND SIX-YEAR-OLD BOYS AND GIRLS



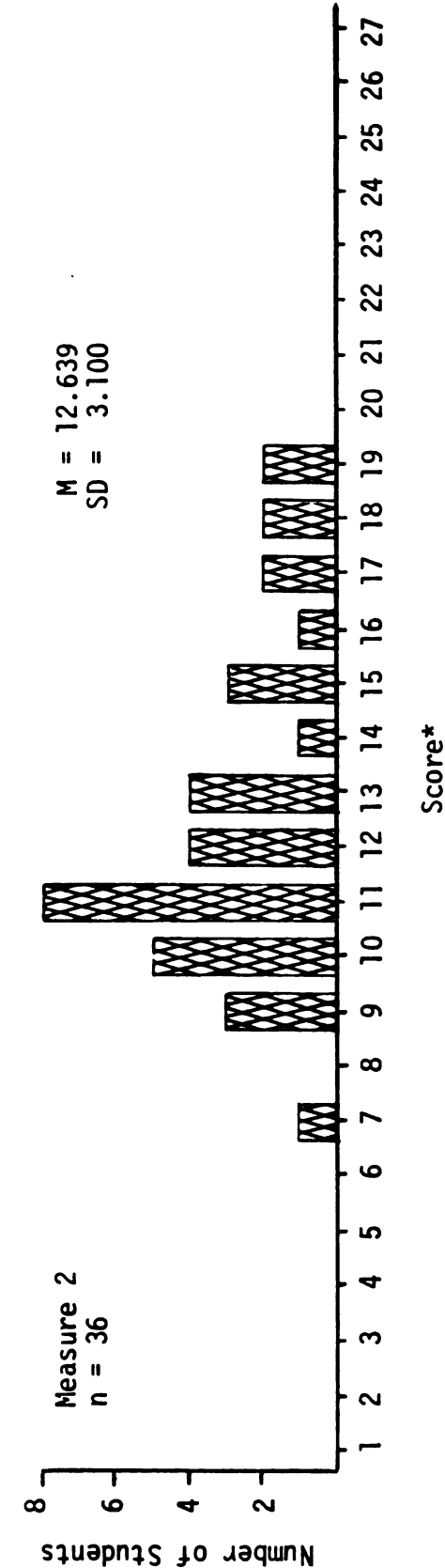
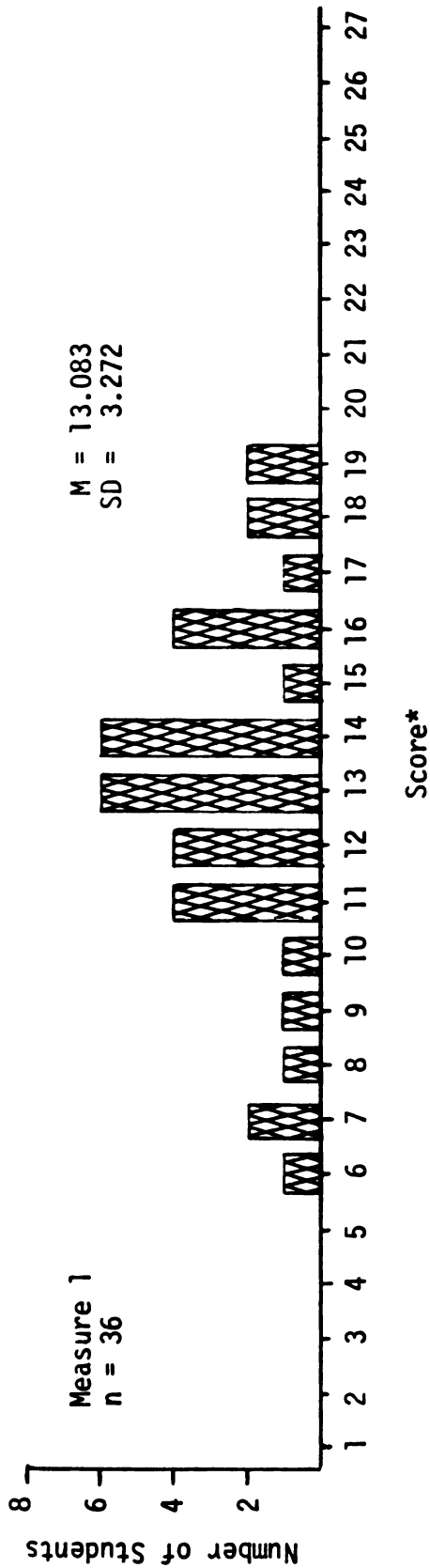
* Keyed for externality

Figure D-1.--Distribution of PPNSIE Scores for 4-Year-Old Boys.



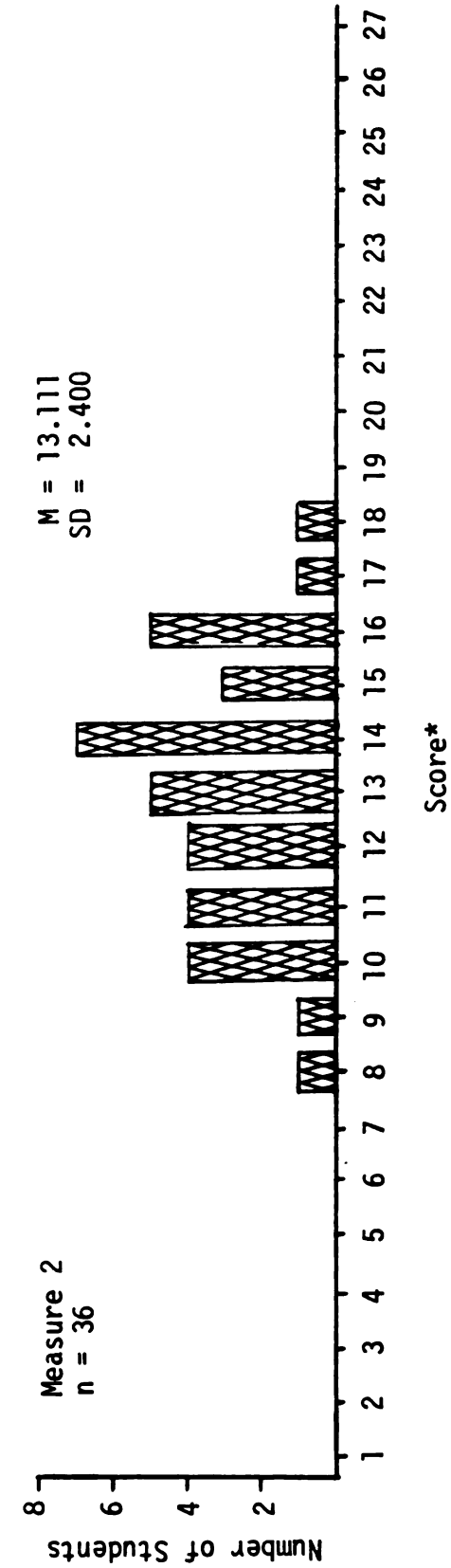
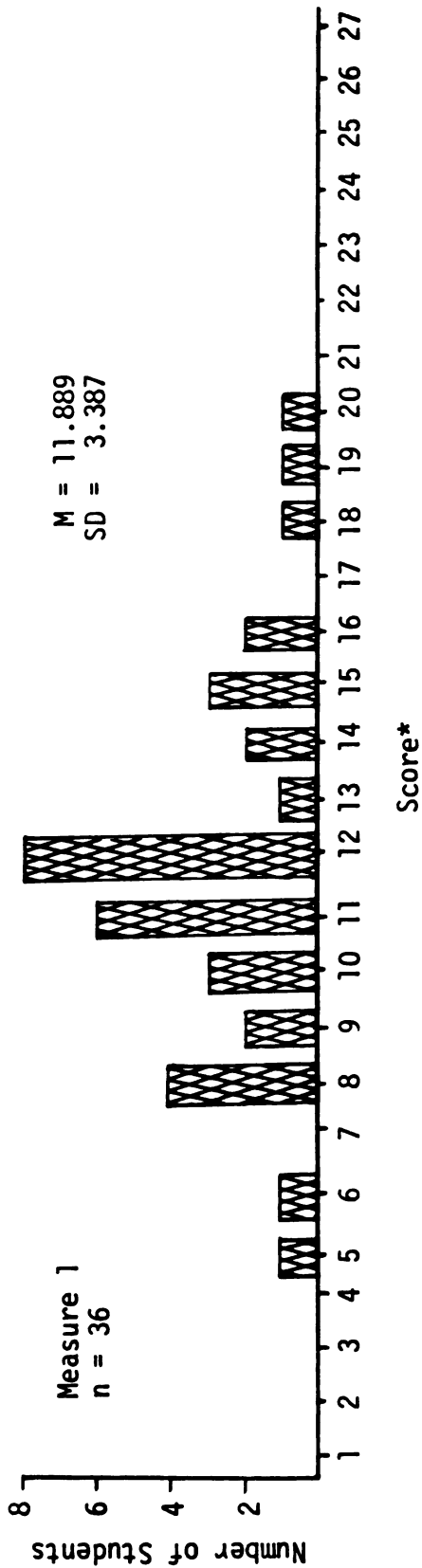
* Keyed for externality

Figure D-2.--Distribution of PPNSIE Scores for 4-Year-old Girls.



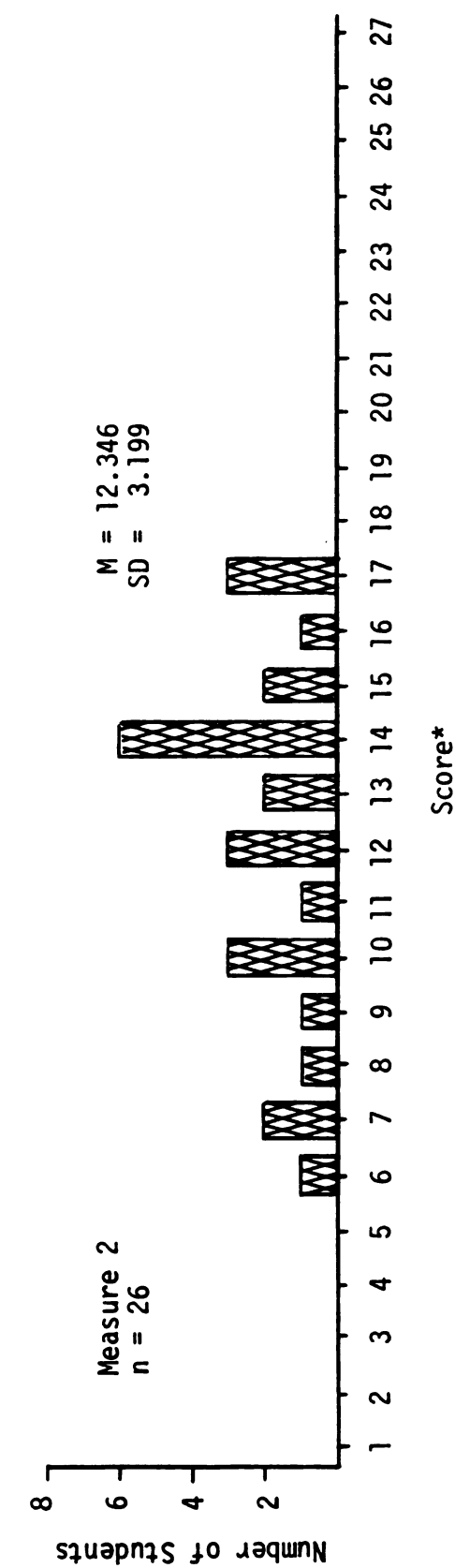
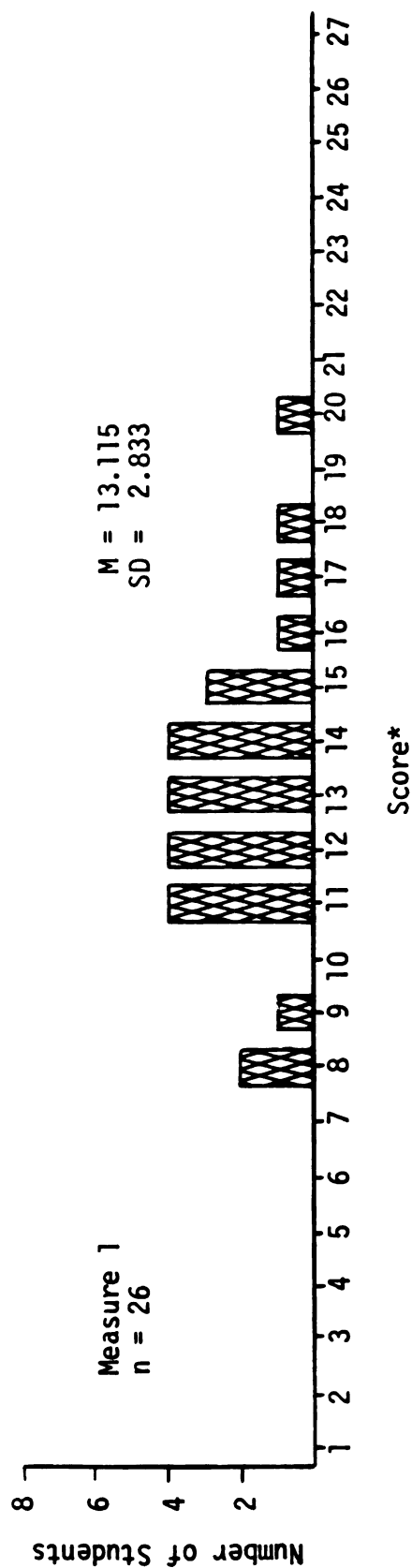
*Keyed for externality

Figure D-3.--Distribution of PPNSIE Scores for 5-Year-Old Boys.



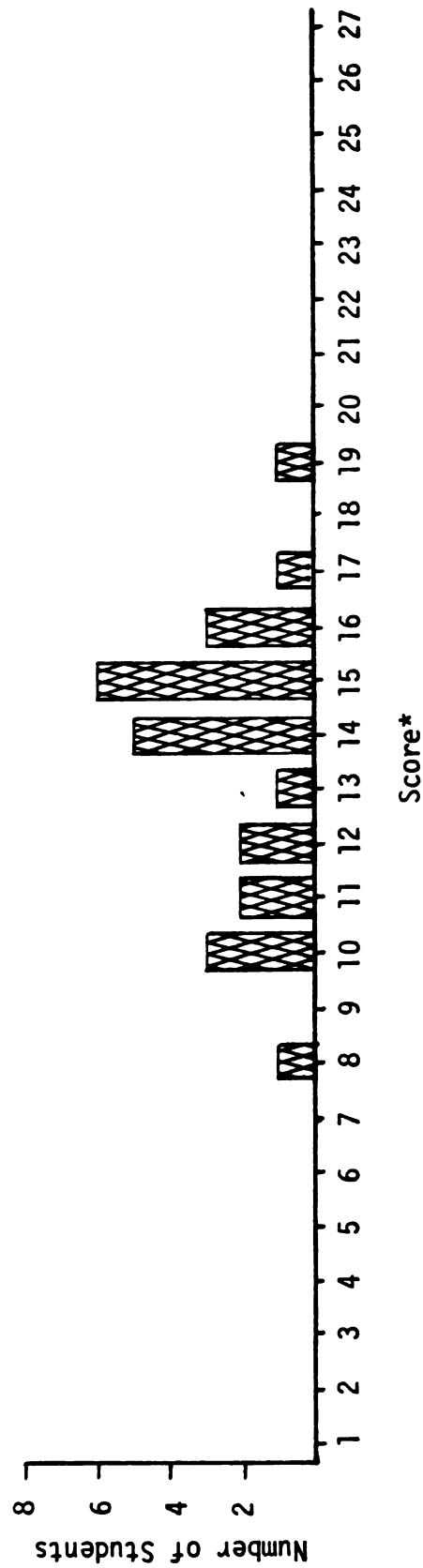
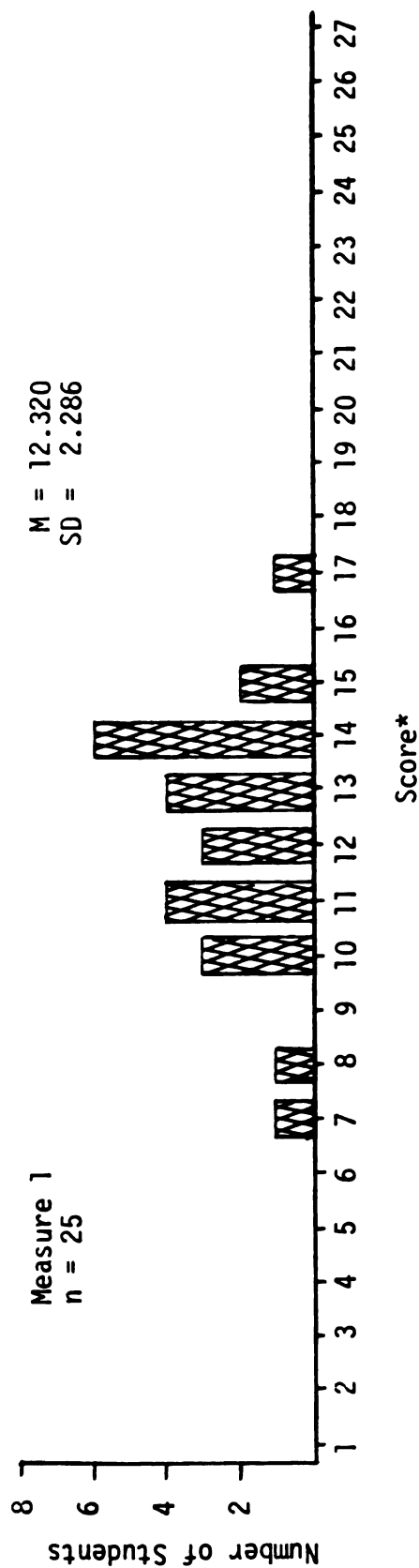
* Keyed for externality

Figure D-4.--Distribution of PPNSIE Scores for 5-Year-Old Girls.



* Keyed for externality

Figure D-5.--Distribution of PPNIE Scores for 6-Year-Old Boys.



* Keyed for externality

Figure D-6.--Distribution of PPNSIC Scores for 6-Year-Old Girls.

APPENDIX E

TABLES E-1 AND E-2

APPENDIX E

TABLE E-1.--Cell Means and Standard Deviations on PPNSIE Control Scale--Measure 1.

Sex	Age	Academic Standing	M	SD
Boy	4	Low	7.286	3.147
		High	9.200	2.775
	5	Low	12.500	3.609
		High	13.857	2.627
	6	Low	12.400	1.957
		High	14.090	3.590
Girl	4	Low	8.571	2.760
		High	12.250	2.435
	5	Low	10.468	2.875
		High	13.429	2.993
	6	Low	12.182	2.136
		High	12.429	2.472

TABLE E-2.--Cell Means and Standard Deviations on PPNSIE Control
Scale--Measure 2.

Sex	Age	Academic Standing	M	SD
Boy	4	Low	9.429	1.272
		High	12.200	3.701
	5	Low	11.318	2.679
		High	14.000	2.689
	6	Low	11.867	2.900
		High	13.364	3.472
Girl	4	Low	9.857	1.345
		High	11.000	2.138
	5	Low	13.133	2.615
		High	13.190	2.581
	6	Low	14.091	2.773
		High	12.851	2.656

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