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THE SCAMIN "WHAT FACE WOULD YOU WEAR" AND THE PIERS-HARRIS
EVALUATION AS MEASURES OF SELF-CONCEPT IN IMMIGRANT ARABIC
CHILDREN: A COMPARATIVE STUDY OF CONSTRUCT VALIDITY AND
RELIABILITY

Wayne State University

PH.D. 1983

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CONSTRUCT VALIDITY AND RELIABILITY

by

EITEDAL M. BASOUNI ABDALLA

DISSERTATION

Submitted to the Graduate School
of Wayne State University,
Detroit, Michigan
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

1983

MAJOR: EDUCATIONAL EVALUATION AND RESEARCH

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Eitedal M. Basouni Abdalla

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DEDICATION

To those who devoted their lives to shed light on other people's darkness and ignorance. To those who devoted their lives to the various fields of human knowledge. To those who taught me in the past and to those who continue to do so in the present. To those who are willing to share their knowledge and to those who are willing to incorporate into their minds what is taught. First and foremost, this is dedicated to my first, the greatest teachers--my mother and my father, Nemat and Mohamed Basouni, of Alexandria, Egypt.

ACKNOWLEDGMENTS

The researcher takes this opportunity to extend her gratitude to the American educators for their contributions to her stage of knowledge and for helping to integrate the American school of thought within her sphere of knowledge.

A very special thanks to Dr. Wendell Hough for his never-ending patience; a very deep appreciation for helping to build the researcher's confidence in the generosity of the American professors and the accuracy of the American higher educational system.

To Dr. Donald Marcotte, a very special thanks for sharing his statistical knowledge and providing his technical advice to help secure and determine the research methods and their applications to this study.

Gratitude is extended to the committee members--to Dr. Juanita Collier for her guidance and knowledge contributed in designing and applying theory to practice for this research project; to Dr. Henderson Hendrix for sharing his knowledge and support throughout the years that the researcher was his student at Wayne State University; to Dr. Barbara Aswad for her concern, support and her dedication and contributions to the study of Arabic culture, and the related problems with the community, her devotion to helping the Arabic students adjust to the American educa-

tional organization and social systems and style.

Gratitude is also extended to the Dearborn School District, with special recognition to Dr. Thomas McLennan, Mr. Frederick Schreiber, Mr. Harvey Failer, Mr. Gary Walter, and Mr. Willie Latsche. A word of thanks to the Bilingual Programs Director and Staff, with special thanks to Mr. Wagih Saad and Mr. Maher Gamal and their associates for their knowledge in helping to select the sample of the population under study, and arranging for the time of testing to collect the needed data for this study.

Thanks to Mr. Jim Pettry for helping in administering the test in an accurate way so as to secure the reliability of the data.

A special thanks to the Arabic students who participated in the tests and thereby helped to provide new data to be used in future research. The researcher is also grateful to the tremendous assistance given to her from the Wayne State University Computing Center, with special recognition to Mr. James Lemans.

Thanks to Ms. Lynne Schwab who typed until the late hours to help the researcher present the material on time. To Miss Alice Nigoghosian for taking the time to provide assistance in organizing the research materials for the final typing.

A special deep gratitude from the researcher to all her family members who continued their support of her efforts;

To all friends and co-workers who encouraged her during the difficult times;

And especially to her husband, Shaaban, and her daughters, Cherine and Neveen, for their never-ending love and understanding.

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CHAPTER I
INTRODUCTION

This study focuses upon the Self-Concept and Motivation Inventory (SCAMIN) as it compares to the Piers-Harris self-concept scale in a selected group of immigrant Arabic children. The investigator sought to determine the appropriateness of the SCAMIN measure as an index to self-regard and coping strategies in the sample under study. The degree to which these immigrant Arabic children believe that they are able to influence their own destinies was also investigated. It is assumed that, as educators, the more we learn about how a person views himself, the more we are able to effect desirable changes in these self-perceptions.

A review of prevalent tests designed to measure self-concepts revealed that certain of these tests constitute inappropriate measures of self-concept in immigrant and culturally different children. Moreover, evaluations of these measures for elementary school children (Jansen & Hoepfer, 1970) indicate problems in both content and predictive validity. Typical measures of the self-concept present problems with regard to reliability as well. The level of language mastery required for an understanding of these test items also may make utilization of them appropriate only for gifted children. As an evaluation of the SCAMIN in terms of its

validity and reliability for the assessment of this factor in immigrant Arabic children, this study provides data to determine the ability of these children to adjust to the school as an American institution.

Quality Control in Test Construction

All good measuring instruments have certain primary qualities in common. The two factors generally agreed to be of critical significance are validity and reliability. In addition to these two criteria for an effective test, there are certain secondary characteristics which are desirable in educational and psychological measurement. These factors are: objectivity, ease of administration, ease of scoring, and ease of interpretation. Since these latter characteristics are far less significant in the quality control of test construction, they will not be addressed in this study.

The Concept of Validity

Validity generally is regarded as the most important of the two primary factors in test construction.

Validity is the degree to which a test measures what it purports to measure. The definition of validity in a testing situation may be elucidated by such questions as: What does this test actually measure? To what extent does it measure a particular ability, quality, or trait? In what situation or under what condition does it have this degree of validity? In short, to what degree does the test do the job it was intended to do? (Noll, 1965, p. 78)

A broad view of validity has been given in technical recommendations prepared by a joint committee of the American Psychological Association and the American Educational

Research Association, which identified three types of validity:

Criterion-related validity (predictive) compares test scores, or the predictions made from them, with an external variable (criterion) considered to provide a direct measure of the characteristic or behavior in question.

Content validity is evaluated by showing how well the content of the test samples the class of situations or subject matter about which conclusions are to be drawn.

Construct validity is evaluated by investigating what psychological qualities a test measures, i.e., by determining the degree to which certain explanatory concepts or constructs account for performance on the test. (1974, pp. 12-13)

Validation of test interpretations is similar to the evaluation of any scientific theory. Construction of a test starts from a theory about behavior or mental organization, and is derived from prior research that suggests the ground plan for the test. Studies of the new test show how to improve it, which may lead to a change in the conception of the variable to be measured.

One method of determining validity involves the determination of the relationship between scores on a test and scores on some other established test or criterion. The discrimination method of establishing concurrent validity involves determining whether test scores can be used to discriminate between persons who possess a certain characteristic and those who do not, or those who pass it--with higher scores. Under appropriate circumstances, data obtained in a concurrent study may be used to estimate the predictive validity of the test. Often concurrent validity reflects the degree to which a shorter, more economical test provides

similar results to a larger and perhaps more expensive test.

The comparison of test ranking with an immediate criterion performance is often termed "concurrent validity," while the comparison of a test with some future criterion performance is called "predictive validity." The procedure for these comparisons is essentially the same, but the testing objective is different.

The objective of concurrent validity is to rank subjects according to their present capability or mode of behavior. The objective of predictive validation is to rank subjects in the same way that they will be ranked by the criterion at some future date. The nature of content validity is obvious.

The Concept of Reliability

Reliability is the consistency with which test items measure a given phenomenon. Two types of reliability are distinguished: stability over time, and internal consistency. A test can be reliable without being valid, but cannot be valid without being reliable. Judgment concerning appropriate measures of reliability and validity depends on the nature of a test and the uses to which it will be put.

Reliability is expressed numerically, usually as a coefficient. A high coefficient indicates high reliability. Thus if a test were perfectly reliable, the coefficient would be 1.00. High reliability indicates minimum error variance. If a test has high reliability, then the effect of errors of measurement has been reduced. Errors of measurement can be

caused by administration, by the current status of the persons taking the test, or by a combination of either of these factors.

The coefficient of internal consistency is a type of reliability which is based on the internal consistency of the test. A common type of internal consistency is termed "split-half reliability." Since split-half reliability procedures require only one administration of a test, certain sources of errors of measurement are eliminated.

This study will examine the degree to which the SCAMIN test meets the criteria of validity and reliability that have just been cited.

Purpose of the Study

In studying the self-concept of immigrant Arabic children, attention focuses on the performance of 7th, 9th and 11th grade children attending Salina, Lowrey and Fordson Public Schools, City of Dearborn, Michigan. The specific purposes of this study were:

1. to investigate the validity and reliability of the SCAMIN or "What Face Would You Wear?" Test (Farrah, Milchus, & Reitz, 1968) for the target population.
2. to codify the data and reach reasonable conclusions relative to its utilitarian value. Is SCAMIN reliable to measure self-concept of this particular group under study?
3. to suggest areas of future research.

Additional purposes of this study were:

1. to determine the Piers-Harris, as self-concept measure, of a selected group of immigrant Arabic children.
2. to determine whether or not these immigrant Arabic children have a strong self-concept.
3. to determine the extent to which these children feel that they are able to determine their own destinies.

Significance of the Study

The results of this study should be of particular interest to educators at all levels in structuring programs for immigrant Arabic pupils. It may also furnish important data for the improvement of the self-regard of these children. Moreover, in determining the validity and reliability of the SCAMIN self-concept measure, the contributions will be methodological in scope. If it is found that the self-concepts of immigrant Arabic pupils in such an educational setting fall within the standard classification for the general population, this finding will be of great benefit to educators and parents, especially with regard to teacher attitudes toward such children.

If, on the contrary, it is found that immigrant Arabic pupils have self-concepts which deviate from the expected patterns in an unfavorable direction, this information should stimulate further research for factors which might influence positively the self-concepts of such children. In this light, the present research study should be considered important for improving educational opportunities for Arabic

children who must adjust to American society.

The Self-Concept as Theory

The self-concept occupies a central position in many personality theories (Allport, 1937; Rogers, 1959) and is viewed as having a major influence on behavior. As such, it has been variously defined. Investigations by Wylie (1961) led her to develop an operational definition for the self-concept which emphasized the phenomenological aspects of self-regard, i.e., "a pupil's conscious perception of the relationship between himself and his environment" (p. 6). Head (1956) suggested that the self-concept is determined by behavior growing out of social experiences and that it may be viewed as part of a feedback loop, affecting and being affected by the individual's experiences in his social environment. Berne (1964) and Harris (1973) noted that "human behavior is organized and directed by the individual's attitudes toward himself." Although many investigators underscore the significance of the self-concept, Wylie's review (1974) indicated that a number of problems exist in this area with regard to questions of validity and reliability.

Gould and Kold (1969) investigated both the self and the self-concept as they relate to the individual's "concept of social experience and activity" (p. 631). They delineated factors which collectively organize scientific issues in this area. These factors are:

The individual's view of his identity.

Factors related to a person's interests and aversions

(i.e., his attitudes toward objects, cognitively, effectively, and evaluatively).

The conception of a person's goals and his successes in achieving them.

A picture, sometimes quite sketchy, of the ideological frame of reference through which a person views himself and other objects.

Some kind of self-evaluation. (p. 631)

Nelson and Besog (1970) viewed the self-concept as an individual's definition of himself which is developed and maintained as a result of interactions with the people and objects in his environment. They suggested that:

Significant others present us with a set of definitions of how we relate to our society.

Definitions are incorporated into our lifestyle and become part of our self-concepts.

Our self-concepts determine how we react to the actions of our society. (p. 155)

Coopersmith's (1967) investigation of self-esteem presented numerous variables for consideration. He drew conclusions from the studies of previous researchers in his interpretation of data. His evaluation of Mead's Mind, Self, and Society (1934) recognized the self-concept as being

largely derived from the reflected appraisal of others. The gauge of self-evaluation is a mirror image of the criteria employed by important persons in our social world. As children we internalize these criteria, observe how we are regarded, and value ourselves accordingly. (p. 31)

Pfutze (1961) took the position that every individual is born into the world void of a perception of self and has only potential for socialization. As the individual begins to interact with the world around him, he begins to develop

an awareness of the self and "develops as a person, as his inborn abilities and tendencies and all that is inherent in his makeup, meet with the experiences of life (Jersild, 1952, p. 16). Thus the self is developed primarily through a process of social experiences and activities.

For survival purposes, every society has developed ways of meeting the individualness of its members. Each society defines what behaviors are necessary for the survival of the society. The similarity of behavior within a given society thus determines the culture of that society. Each individual's cultural environment is transmitted through the action of others, and the whole of his environment is the setting for the growth with the world around him and the self begins to emerge as he develops (Kirkmyer, 1965).

Within any group of people there are wide individual differences in the self-concepts of individual members. Self theory and phenomenological theories in general hold that the self and the self-concept emerge and take shape as a result of each person's unique experiences, both external and internal. These theorists propose that it is impossible to understand a person fully, or predict his behavior accurately, without employing his own internal frame of reference or seeking to share his private perception of the world as well as the ways in which he views himself. A number of investigators (Ausubel & Ausubel, 1963; Battle & Patter, 1963) contend that members of disadvantaged subcultures possess low self-concepts and show self-depreciation as a result of

economic, social and cultural deprivation. It is with regard to these contentions that the current research was conceived.

The Self-Concept as Research Data

Witkin and his associates (1967) concluded that individuals who tend to be consistent on a battery of cognitive-perceptual tasks tend to be consistent in personality (self) and social behavior. His main construct was that of field dependency and independency. Pawelkiewicz and McIntire contended that the field independent-dependent variable is a relatively stable one in individual dynamics. Walter and Drummond (1976) compared changes in self-concept patterns of field-independent and field-dependent preadolescents over a span of two academic years. Sixty-three subjects were examined utilizing Oltman's portable-rod-and-frame test as a measure of field independence-field dependence. The elementary form of the SCAMIN was used to measure dimensions of school self-concept. No pattern of change was noted with regard to either cognitive style or the self-concept.

Walter and Drummond (1976) also examined the factor structure of two self-concept measures for elementary school age children: the Coopersmith Self-Esteem Inventory (CSEI) and the SCAMIN. Second- and fourth-grade children constituted the research population. Sex differences were found on three SCAMIN scales for fourth-grade children and on one scale for second-grade children. On the CSEI, sex differences were found with regard to one subscale, School Self, for children at the second-grade level. Grade differences

were found on two CSEI subscales. Three identifiable factors emerged at each grade level which were readily matched and interpreted as reflecting essentially the same constructs. These instruments were found to measure three distinct and different dimensions of the self, in spite of the similarity of instrument and subscale titles.

Wylie (1974) noted that in the study of self, instrumentation presents a particular problem and that one of the "noteworthy" shortcomings is the "lack of clarity in establishment of the basic construct definition" (p. 325).

Utilizing the CSEI (1967) with children from the fourth through the eighth grades, Kakenes (1974) examined grade-level differences with regard to factors of self-esteem. She established empirical support for the Coopersmith construct, although she noted that there seems to be little factorial differences in self-attitudes from grade to grade. Williams (1972), in a study of fourth-grade children in which he tried to delineate why their achievement slumps at this level, indicated several patterns which relate to feelings of self-worth. The work of numerous investigators (Coopersmith, 1967; Fitts, 1971; Harris, 1969; Purkey, 1970; Rogers, 1969; Satir, 1972; Torrance & Storm, 1965; Wylie, 1974) strongly suggested that the self-concept has its effects on individual potential as well as on the realization of each child's unique potential in the school setting.

Theoretical Framework

Social learning theory is a theory by which an at-

tempt can be made to understand human social behavior. The social learning theory assumes that "the unit of investigation for the study of personality is the interaction of the individual and his meaningful environment" (Rotter, 1954, p. 85). To deal accurately with behavior, personal and environmental determinants must be considered. An individual responds subjectively to his environment on the basis of his specific learning history or experience. At the same time, and within a given culture, individuals share a great deal in the way of common experience.

Furthermore, there is unity to personality. Individual experiences--interaction with a meaningful environment--though varied, are interrelated. New experiences become tinged by the effects of accumulated knowledge from previous experiences. Therefore, change is still possible through proper selection of new learning experiences. That is to say, as individuals grow older, their behavior and personality take on increasing consistency. Behavior may be said to be goal-directed in the sense that people strive to attain or to avoid certain aspects of their environment. This is the familiar idea that behavior is motivated. The positive and negative motivators can be determined by observing the "direction" of behavior.

Finally, "the occurrence of a behavior in a person is determined not only by the nature or importance of goals or reinforcement but also by the person's anticipation or expectancy that these goals will occur" (Rotter, 1954, p. 102).

The magnitude of a given expectancy will depend upon the person's previous experiences with a given behavior which, in turn, will lead him or her to expect that it will work in the future. Expectancies for the outcomes of the behaviors, therefore, are learned, and they depend upon the degree of success or failure they have enjoyed in the past. Changes in expectancies can be brought about by introducing new experiences that alter previous patterns of success and failure. In addition to the expectancy changes, inability to control or predict outcomes can also mediate a variety of intrapersonal reactions, especially when the situation is highly aversive in nature.

Damato and Gumenik (1960) reported on an experiment in which subjects showed a preference for predictable over unpredictable punishment. Champion (1950), Corach and Baffa (1970), and Haggard (1943) all reported that when subjects believed they could terminate an electric shock, they showed less stress than when they thought they were incapable of terminating it. The work of Geer, Devison and Gatchel (1970) indicated that perception of effective control, even when not correct, can reduce automatic responding. Staug, Tursk and Schwartz (1971) demonstrated that no control subjects judged a less intense shock as uncomfortable and tolerated fewer shocks as compared to self-control subjects. These authors suggested that personal control and predictability can reduce the aversiveness of noxious stimulation. Geer and Maisel (1972) emphasized that obtained effects are deter-

mined by more than just predictability of shock. They felt that the ability of subjects to determine an aversive stimulus tends to reduce the impact of that stimulus.

In general, the research seems to support Lazarus' (1966) contentions that an individual's perception in anxiety-arousing situations is mediated by a belief in one's ability to control the potential threat. Also, that the feeling of stress in a situation is in proportion to the expectations about personal control over the situational events. The development of several scales to measure self-concept orientation has led to the discovery of significant relationships between the self-concept behaviors as mastery, control, resistance to social influence, and efforts to induce social change. These results provide evidence that personality differences in self-concept can greatly influence a person's self-control.

Studies of the relationship of Internal-External Control and age indicated that upper-level students were more "internal" than were lower-level college students (Feather, 1967; Otten, 1968), and adults were more "internal" than were younger people (Lichtenstein & Keutzer, 1967).

Initially, the relationship between personality adjustment and I-E seemed curvilinear, with extreme "internals" and extreme "externals" appearing less adjusted (James, 1957). Yet, Lefcourt (1966) reports a study by Butterfield (1964) and Watson (1967) also found a tendency for external subjects to be relatively high in anxiety and neuroticism. These

three studies were more supportive of a linear relationship between I-E and adjustment, with externals being less adjusted and internals being more adjusted.

McDonald, Tempone and Simmons (1968) investigated the interaction between situational and personality aspects of I-E by using an experimental task situation of low and high control. The subjects responded to the situational variable of control by significantly increasing or decreasing their expectancies. The personality dimension (scores on the I-E scale) did not affect the subject's performance. The subjects in the low condition did not behave according to the "gambler's fallacy" of raising their expectancy after success. Previous studies had found externals functioning in this manner and the discrepancy made the researchers the subjects. The Piers-Harris children's self-concept scale correlated with the SCAMIN to determine the degree to which these factors varied together as valid reliable measures.

Population Under Study

Expansion in the quota system involving national origin in American immigration laws has resulted in constant variations in the influx of immigrants to this country, as well as an ever-increasing number of immigrant students in American schools. This has filled American schools at all levels with classes of foreign-born of all ages and cultures, all of whom must somehow learn English as a second language and adjust to the American's lifestyle.

The Arabic Immigrant in the American School

The immigrant Arabic child is a child of his own immigrant subcommunity within the American city in which his parents have settled. In his immigrant subcommunity the Arabic child is securely related to a social life which his parents transplanted to America. To the immigrant Arabic child, the public school is the first step away from his past in his quest to assume the characteristics of American society.

Dearborn: The Arabic Community

The City of Dearborn lies within the boundaries of metropolitan Detroit. One of the distinguishing features of Dearborn is the automotive plants and associated facilities that are found within the city limits. Since the 1920's, large-scale industrialization has afforded job opportunities and has been a magnetic force attracting poor and unemployed laborers to this community. The historical process of industrialization and its dependence upon a large labor force has resulted in many immigrant and/or ethnic communities developing simultaneously within the environs of factories.

In southwestern Dearborn, one community, known as the "Southend," is directly related to the development and expansion of the Ford Rouge complex. Initially, the Southend was composed predominantly of European immigrants. While today some of these Europeans and their descendants remain, the community is basically composed of Arabic-speaking immi-

grants from Lebanon, Palestine and Yemen. Aswad (1974) described the area:

Upon entry into the Southend, an observer is immediately struck by its geographical isolation from the rest of Dearborn and Detroit. It is surrounded on three sides by large factories, the Ford Rouge complex, Morton Salt, and Levy Industries, and on a fourth side it is enclosed by a park.

. . . the Arab community is not only a physical but also a cultural niche. Many traditional Middle Eastern customs are maintained. Along the main street which bisects the community, the Arabic atmosphere with Middle Eastern restaurants and grocery stores which import much of their food from the 'old country.' Females are rarely seen on Dix; it is a congregating place for males. Advertisements are written in Arabic and Arabic is the main language spoken on the street and in the homes. (p. 52)

In a further delineation of the Arabic community, Aswad (1974) contends that:

the nature of the social organization is characterized by close primary ties, that is with kinsmen, villagers, neighbors and friends. For many, these social networks are also economic networks in which migrants depend upon one another for help in obtaining jobs, sharing of food and engaging in reciprocal relations which provide help and security in unfavorable times. . . . These close relationships are seen not only as a carry-over from the areas from which they migrated, but also as a mode of adaptation to the new situation in a complex urban environment. This environment is one in which they usually lack the necessary job skills, education, and language to adapt easily to this urban environment. (p. 60)

The Challenge of the Immigrant Arabic Child in the American School

In the open-ended American society, education has afforded the essential entry point into the mainstream of American life. Education has provided social mobility, and it has extended opportunity. The schools have served as a basic vehicle of cohesion in the transmission of the society's values. The American schools have ministered to immigrant

Arabic children who brought with them a myriad of cultures and a multiplicity of tongues. Increasingly, the schools have recognized that the immigrant Arabic children's success lies not only in meeting his cognitive needs, but equally in confronting the reality of the social context in which the child is found, basic to which are the feelings the child generates about himself.

The Response of the American School System
to the Immigrant Arabic Child

In an effort to respond to the immigrant Arabic child, it is important to remember that an overall program has been developed to aid this particular immigrant Arabic group, although this group may be markedly different in its characteristics and needs. Those efforts which have been made have evolved along the broad lines of individual development: the bilingual program instruction for immigrant Arabic students; the provision of special classes; and the special educational programs. Culture awareness programs were founded on the basis of informing social workers, other professionals, and para-professionals who may have contacts which could be used in serving this particular group of people.

Together with the Arab American Organization, ACCESS, and the Arabic American Chaldean Council, individual and group volunteers are planning for a better future for the Arabic American immigrant/citizen. Their prime concern is the welfare of the culture: to keep it free of narcotics; to prevent poverty and soliciting; and to prevent its people

from being a target of welfare programs and its corresponding dependency.

Wayne State University and the Wayne County Department of Social Services, with the assistance of individuals and groups, established educational Social Services Programs using the value analysis approach to solve and resolve value and cultural conflicts.

The Role of the Department of Education, Evaluation and Research

By utilizing the cooperation of different educational programs, such as guidance and counseling, psychology, sociology, and social work, along with the Dearborn School District, the Department of Education, Evaluation and Research directed and conducted several studies with the available data. The content analysis approach was used in evaluating the different educational programs offered to Arabic children. Not only were testing, evaluating and planning sincerely offered by educators, but the needed programs, using well-known American planning and technology in the field of human services, were also offered so as to help create the future generation of Arabic American citizens.

The Role of Graduate Schools of Major American Universities

The graduate schools extended their efforts to prepare professional Arabic graduate students in the different programs to meet the needs for better education and social human welfare.

Definition of Terms

The following terms have been defined as basic to the goals of this research project:

Test is a systematic procedure in which the individual tested is presented with a set of construct stimuli to which he responds. These responses enable the tester to assign to the testee a numeral or set of numerals from which inferences can be made about the testee's possession of whatever the test is supposed to measure.

Scale is a set of symbols or numerals so constructed that the symbols or numerals can be assigned by rules to the individuals to whom the scale is applied, the assignment being indicated by the individual's possession of whatever the scale is supposed to measure.

Construct validity is the extent to which a test measures some relatively abstract psychological trait or construct that is applicable in evaluating the validity of tests which have been constructed on the basis of an analysis (often factor analysis) of the nature of the trait and its manifestations. Tests of personality, including verbal ability, mechanical aptitude, and critical thinking, are validated in terms of constructs and the relation of their scores to pertinent external data.

Personality test is a test intended to measure one or more of the non-intellective aspects of an individual's mental or psychological make-up; an instrument designed to obtain information on the affective characteristics of an

individual--emotional, motivational, attitudinal--as distinguished from his abilities.

Criterion is a standard by which a test may be judged or evaluated; a set, score or rating that a test is designed to measure, to predict, or to correlate with.

Academic self-concept is how a child views his role as a learner in school. It is the student's sum of experience, perceptions, attitudes, and feelings about school and schoolwork.

Academic motivation is the expressed need of a child to achieve a goal in school, and the moderate avoidance of the child toward failure in school--avoidance below the point of anxiety. Motivation has a strong element of cooperative adjustment toward school.

Role expectations are the positive acceptance of the aspirations and demands that the student thinks others--significant others--expect of him.

Self-adequacy is the positive regard with which a student views his present and future probabilities of success.

Achievement needs are the positive regard with which a student perceives the intrinsic and extrinsic rewards of learning and performing in school.

Validity is the extent to which a test does the job for which it is used. This definition is more satisfactory than the traditional "extent to which a test measures what is supposed to be measured," since the validity of the test is always specific to the purposes for which the test is used.

Correlation is the relationship or "going together" between two sets of scores of measures.

Reliability is the extent to which a test is consistent in measuring whatever it does measure; dependability, stability, trustworthiness, relative freedom from the error of measurement. Reliability is usually expressed by some form of the standard error of measurement derived from it.

Organization of Study

Chapter I has identified the problem and has specified the purposes of the study. Chapter II presents a review of the literature.

The methodology will be established in Chapter III. Chapter IV will present the data analysis and the findings. Finally, Chapter V will include a summary and conclusions.

CHAPTER II
REVIEW OF RELATED LITERATURE

Presentation of the Definition of
Reliability/Validity

This study was conducted to measure the validity and reliability of self-concept SCAMIN as a measuring device to be used in evaluating the self-concept of immigrant Arabic children under study.

It was the researcher's major concern to present different authors' viewpoints concerning: (a) the definition of the terms used; (b) the nature of the reliability and validity; (c) the various factors influencing the reliability of any measuring device; and (d) to review the different methods and their utilization in estimating the reliability and validity of any good measuring device.

Reliability

The term reliability was introduced by Spearman in his basic papers on test theory (1904, 1906, 1907, 1910, 1913). The problem of reliability was tested by Spearman on the correlation of parallel tests. Since then, there have been many discussions of the various factors influencing reliability including those done by Kelley (1921), Henzinger (1927), Symonds (1928), Anastasia (1934), Adams (1936), Kuder and Richardson (1937), Kelly (1942), Buttman (1945), Cron-

back (1947), and Thorndike (1947). Kelly (1942) pointed out that the major function of the reliability coefficient is to evaluate the judgment of the test constructor and to indicate whether or not two forms that are thought to measure the same thing do, in fact, measure approximately the same things. Kuder and Richardson (1937) developed several methods of assessing the homogeneity of a set of items without the use of a parallel test. Further studies of these methods were presented by Kuder and Richardson (1939), Dressel (1940), and Kaitz (1945).

Guttman (1945, 1946) presented a theory of reliability that postulated that the estimation of the lower bounds for reliability of any test is always unity, and that frequently a lower bound can be determined that is far enough from zero and near enough to unity to be of use. He presented a number of different lower bound estimates for both quantitative and qualitative data.

The assumptions underlying the reliability calculation as given by Guttman (1945) are that:

1. Reliability is defined as the "variation over an indefinitely large number of independent repeated trials of errors of measurement" (p. 39).
2. There exists an infinite population of objects for each item being measured.
3. The observed value of an individual or an item is experimentally independent of the observed values of any other individual on that or any other item.

4. The variance of the observed scores on each item and the co-variances of the observed scores between items exist in the population.

Clearly, reliability refers to the accuracy (consistency and stability) of measurements by a test. Any direct measurement of such consistency obviously calls for a comparison between at least two measurements. Where accuracy is a general expression, the terms consistency and stability are needed to describe, respectively, the form-associated and time-associated reliability (Standards, 1966, p. 25). Thus, "reliability refers to the consistency of measurements" (Gronlund, 1965, p. 79).

Kerlinger (1964, 1973) stated, however, that reliability comes from the necessity for dependability in measurement--the synonyms for reliability are: dependability, stability, consistency, predictability, and accuracy. Kerlinger also noted that it is possible to approach the definition of reliability in three ways.

One approach is epitomized by the question: If we measure the same set of objects again and again with the same or comparable measuring instruments, will we get the same or similar results? This question implies a definition of reliability, suitability, dependability, and predictability terms. (p. 443)

Kerlinger's second approach dealt with the question, "are the measures obtained from the measuring instrument the 'true' measures of the property measured, this is an accuracy definition." His third approach was to inquire as to "how much error of measurement is there in a measuring instrument." Reliability, thus, could be defined as the "rela-

tive absence of errors of measurement in a measuring instrument" (p. 443). Kerlinger, therefore, emphasized two important aspects of reliability: the reliability of means, and the reliability of individual measures.

By contrast, V. H. Noll (1957, 1965) stated that the degree of consistency of a measurement can be judged by:

first, the situation in which it is used, including the physical and psychological state of the individuals tested, and second, the test itself--there is no doubt that these conditions tend to reduce the reliability of measurement, but it is also a fact that most of our good standardized tests show high reliability in spite of the operation of such factors. (p. 97)

Importance of Reliability

Reliability is a necessary but not a sufficient condition for validity. A test may be reliable without being valid. High reliability, therefore, does not guarantee satisfactory validity. Reliability merely provides the consistency which makes validity possible.

Obviously, reliable test results cannot possibly provide truthful information and cannot efficiently measure what they attempt to measure. A test, therefore, cannot be valid unless it is reliable.

Nature of Reliability

All measurement is unreliable to some degree due to chance error or variable error. As stated by Ahmann and Glock (1963, p. 323), "chance error, or compensating errors as they are sometimes called, have one vital characteristic, they have a tendency to cancel each other when the instru-

ment is used many times."

Methods of Determining Reliability

The coefficient of internal consistency is an estimate of test reliability, that is, based upon a single administration of a single form of a test to a group of subjects. Common procedures, or prominent methods for assessing reliability are the split-half method and the Kuder-Richardson formulas.

In the split-half method, a complete test is administered to an appropriate group of subjects in the usual manner or in accordance with the specified direction. The test is divided into halves for scoring purposes and two scores are obtained for each subject. The coefficient of correlation between the two sets of scores is then calculated which gives the reliability of one-half of the test. The reliability of the whole test is then estimated by using the Spearman-Brown Prophecy Formula. The assumption underlying the use of the split-half method is that two halves of the test are equivalent in difficulty and content.

The advantage of the split-half method is that it saves time, labor and cost because only one administration of a test is required. In addition, only one form of the test may be available for use and it is a rather simple method to apply. Further, it may be applied to teacher-made tests as well as to standardized tests; data from only one administration of a test may be available, and test-centered chance errors are taken into consideration.

The disadvantages and limitation of the split-half method are that it is not easy to split or divide a test into two equivalent halves and if the two halves of a test are not equivalent, the reliability of the whole test, as estimated by the Spearman-Brown Prophecy Formula, is underestimated or decreased. In addition, it is not appropriate for determining the reliability of tests in which speed is a factor, nor does it take into consideration the chance errors due to day-to-day variation of the testees.

The Kuder-Richardson methods for estimating reliability include Formula 20 and Formula 21. The Formula 20 derivation is intricate and is

based on the proportion of persons passing each item and the standard deviation of the total test scores. The computation is rather cumbersome, unless information is already available concerning the proportion passing each item, but the resulting coefficient is equal to the average of all possible split-half coefficients for the group tests. (Gronlund, 1965, p. 85)

The assumptions underlying the use of the Kuder-Richardson method are that the items in a test are homogeneous. Therefore, all the test items measure the same ability.

Advantages of the Kuder-Richardson Formula 21 are that it is relatively easy to apply and, although less accurate than Formula 20, it is simple to compute. It does not require splitting the test into equivalent halves; it requires only one test and one testing, and test-centered chance errors are taken into consideration.

The disadvantages and limitations of the Kuder-Richardson method are that it is not applicable if the items

in a test are not homogeneous, nor is it suitable for speed tests. In addition, it does not take into consideration testee-centered chance errors.

The Coefficient of Equivalence

This coefficient means that the coefficient of correlations between scores from two equivalent forms of a test is administered at essentially the same time to a group of subjects. The steps in the coefficient of equivalence method are: (a) two equivalent forms of a test are administered to an appropriate group of subjects, with little or no time allowed between the two administrations; (b) the tests are scored so that two scores are available and are for each administration of the test; and (c) the two sets of the scores are correlated, yielding the coefficient of stability.

The advantages of the coefficient of stability are that only one form of a test is needed, and testee-centered chance errors are operative. In addition, procedure-centered chance errors are operative.

The disadvantages and limitations of the coefficient of stability method are that practice effects may play an important part, especially if the intervening period of time is short. Also, the time interval between test and re-test is not fixed. It depends upon the use to be made of the results. Deciding upon an appropriate time interval, therefore, may be a problem. In addition, testing conditions and procedures may vary so much from test to re-test that the results will be greatly distorted. Further, test-centered

chance errors are not taken into consideration. It is rarely used with teacher-made tests because they are rarely administered twice to the same subjects. This coefficient is the correlation between scores from two equivalent forms of a test that is administered to the same group of subjects with an intervening period of time. All the sources of chance error are operative in the coefficient of stability and equivalence method.

The disadvantages and limitations of the coefficient of stability and equivalence method are that it requires two equivalent forms of a test, it takes more time, labor and money to administer than does the coefficient of internal consistency method, it necessitates setting up an appropriate time interval between the test administration, and testing conditions and procedures may not be similar for the two testing sessions. Rarely, if ever, is it used for teacher-made tests.

The standard error of measurement is "the standard deviation of the distribution of errors of measurement around an individual's true score" (Davis, 1964, pp. 18-20).

Lindquist (1942) supplies a further insight into the definition:

Suppose we had available a large number of equivalent forms of the same test, and that we administered all these forms to the same individual under the same conditions. The standard deviation of the distribution of these obtained scores would then describe the reliability of a single score obtained on one form of the test and hence would also describe the reliability of the test. If the number of obtained scores (or equivalent forms) were very large, the mean score in this distribution would be known as the individual's true score in

the test, and the standard deviation of the distribution would be the standard errors of a single obtained score. (pp. 220-221)

The interpretation of the standard error of measurement is based upon the normal curve, and shows how obtained scores vary from an individual's true score. The advantages of the standard error of measurement as a means of estimating reliability are that the estimates are in the same units as the test scores. In addition, the standard error is likely to remain fairly constant from group to group. It tends to be independent of the range of talent.

Although the error of measurement is a more basic concept in the test theory than the reliability coefficient, it has become customary to assess tests in terms of the reliability coefficient rather than in terms of the error of the measurement. Since there are advantages and disadvantages for each of these measures, it is argued that both must be given in order to make possible a complete assessment of any test.

Otis and Knallin (1921) pointed out that the errors of measurement is superior to the reliability coefficient in that it does not vary with changes in the heterogeneity of the group. Kelley (1921) and Franzenarrd-Derryberry (1929) indicated that although the error of measurement did not vary with group heterogeneity, nevertheless the unit in which the errors of measurement was expressed did vary from one test to another.

Validity

By definition, validity is "the degree to which an evaluation instrument actually serves the purpose for which its use intended. It may be considered to be synonymous with truthfulness" (Ahmann, Clock, & Wordeberg, 1960, p. 57). In addition, "the validity of an evaluation device is the degree to which it measures what it is intended to measure" (Remmens, Gage, & Rummel, 1965, p. 119).

Validity has also been termed the

extent to which the results of an evaluation procedure serve the particular uses for which they are intended. . . . Basically . . . validity is always concerned with the specific use to be made of the results with the truthfulness of our purposed interpretation. (Gronlund, 1965, p. 59)

Validity pertains to the results of a test or evaluation instrument, and not to the instrument itself. We sometimes speak of the validity of a test, for the sake of convenience, but it is more appropriate to speak of the validity of the results, or more specifically, of the validity of the interpretations to be made from the results. (Gronlund, 1965, p. 60)

Validity means that a test must be suitable for our purposes. . . . It must yield the kinds of results we need. To determine whether or not it does, we must try it out. Also called botany aptitude test may be worthless for predicting success in botany courses but valuable as an admission test for law school. There's no necessary validity in a test's name. Therefore, instead of saying merely that 'A test is valid if it measures what it pinpoints to measure,' say a test is valid if it yields scores that help us accomplish our purposes. (Stanley, 1964, p. 164)

The term 'validity' is used to apply to a test's value as a basis for making judgments about examinees. (Adams, 1964, p. 103)

Validity has two major aspects . . . reliability and relevance. For a test to be valid, that is, to provide a sound basis for judgment, it must measure something with reasonable reliability, and that 'something' must either be a sample of behavior we wish to measure and it

must have demonstrated relevance to that behavior.
(Adams, 1964, p. 103)

Validity information indicates the degree to which the test is capable of achieving certain aims. Tests are used for several types of judgment, and for each type of investigation to required to establish validity. (Standards for Educational and Psychological Tests and Manuals, 1966, p. 12)

Validity, clearly is the most important characteristic of an evaluation instrument. No matter what other characteristics an instrument may possess, if it does not possess validity it is of no value whatsoever. (Ahmann, Clock, & Wordeberg, 1960, p. 58)

Validity is the most important characteristic of a good examination, for unless a test is valid it serves no useful function. (Gerberick, Green, & Jorgensen, 1962, p. 53)

Nature of Validity

It has been described in terms of

validity pertains to the results of a test, of an evaluation instrument itself. We sometimes speak of the validity of a test, for the sake of convenience, but it is more appropriate to speak of the validity of the test results, or more specifically of the validity of the interpretation to be made from the results. (Gronlund, 1965, pp. 60-61)

Validity is . . . a specific rather than a general criterion of a good examination, it is specific in the senses that a test may be highly valid for use in one situation and highly invalid for use in another manner. It is specific, also, in the sense that a test may be valid for use with one group of pupils but not for use with a different pupil group. Tests cannot correctly be described as valid in general terms, for they are valid only in connection with their intended use and at the intended ability level of the pupils. (Gerberich, Green, & Jorgensen, 1962, pp. 53-54)

A single test may be used for making several types of judgment; its validity may be high for one purpose, moderate for another, and low for still another. Hence, we cannot speak of a test as having high or low validity without specifying the purpose for which it is to be used. (Adams, 1964, p. 103)

The term, purpose, if best interpreted as including both

the type of judgment to be made and the nature of the group involved . . . hence, validity is always validity for specific purpose (to aid in making a specific type of judgment concerning members of a specific group. (Adams, 1964, p. 103)

Validity is a matter of degree. It does not exist on an all or none basis. Consequently, we should avoid thinking of evaluation results as valid or invalid. Validity is best considered in terms of categories that specify degree, such as high validity, moderate validity and low validity. (Gronlund, 1965, pp. 60-61)

Validity is always specific to some particular use. It should never be considered a general quality. For example, the results of an arithmetic test may have a high degree of validity for indicating computational skill, a low degree of validity for indicating arithmetical reasoning, a moderate degree of validity for predicting success in future mathematics courses, and no validity for predicting success in art or music. Thus, when appraising or describing validity it is necessary to consider the use to be made of the results. Evaluation results are never just valid. They have a different degree of validity for each particular use to which they are put. (Gronlund, 1965, p. 61)

Types of Validity

The types of validity classified according to the aims of testing (Standards, 1974, pp. 12-24) include: (a) content validity, a test user wishes to determine how an individual performs at present in a universe of situations that the test situation is claimed to represent; (b) criterion-related validity, a test user wishes to forecast an individual's future standing on some variable of particular significance that is different from the test; and (c) construct validity, a test which user wishes to infer the degree to which the individual possesses some hypothetical trait or quality (construct) presumed to be reflected in the test performance.

Content validity is demonstrated "by showing how well the content of the test samples the class situation or subject matter about which conclusions are to be drawn" (Standards, 1974, p. 12). It also may be defined as the "extent to which a test measures a representative sample of the subject matter content and the behavior changes under consideration" (Gronlund, 1965, p. 62), or "its relevance to the objectives of instruction rather than by its coverage of the materials of instruction" (Ebel, 1956, p. 281). The term content validity has been used to denote

the extent to which a subject's responses to the items of a test may be considered to be a representative sample of his responses to a real or hypothetical universe or situation which together constitute the area of concern to the person interpreting the test. (Lennon, 1956, p. 595)

Four assumptions pertain to the use of content validity: (a) "the area of concern to the tests can be conceived as a meaningful, definable universe of responses" (Lennon, 1956, p. 298); (b) the "sample universe view is the heart of the notion of content validity" (Lennon, 1956, p. 299); (c) "a sample can be drawn from the universe in some purposive meaningful fashion" (Lennon, 1956, p. 301); and (d) "the sample and the sampling process can be defined with sufficient precaution to enable the user to judge how adequately the sample performance typifies performance on the universe" (Lennon, 1956, p. 302).

Content validity, therefore, like all other kinds of validity, is "specific to the purpose for which and the group with which a test is used" (Lennon, 1956, p. 303).

Concurrent Validity

Concurrent validity is the "extent to which test performance is related to some other current performance. Criterion relative validity includes two aspects of validity: concurrent validity, and predictive validity" (Gronlund, 1965, p. 71).

Psychologists prefer the term concurrent validity to indicate the process of validating the new test by correlating it, or otherwise comparing it for agreement, with some present source of information. This source of information might have been obtained shortly before or very shortly after the new test was given. (Freeman, 1962, p. 96)

According to Ahmann and Clock (1963), concurrent validity is occasionally called status validity. Both terms are well chosen. Concurrent validity is present to the degree that the pupil behavior elicited by an evaluation instrument corresponds to a certain behavior criterion, of course, the pupil characteristic to be evaluated, and it actually exists at the moment the evaluation is executed. In other words, when an evaluation instrument is attempting to determine by indirect means a pupil's present status. (p. 296.

Construct Validity

The term construct denotes "a characteristic assumed to exist in order to account for some aspect of human behavior" (Ahmann, Clock, & Wordeberg, 1960, p. 60).

A construct is a psychological quality which we assume exists in order to explain some aspect of behavior. Reasoning ability is a construct. When we interpret test scores as measure of reasoning ability, we are implying that there is a quality that can be properly called reasoning ability and that it can account to some degree for performance on the test. Verifying such implications is the task of construct validation. . . . The advantages of being able to interpret test performance in terms of psychological construct was described that the construct validity may be defined as the extent to which test performance can be interpreted in terms of certain psychological construct. (Gronlund, 1965, p. 72)

Construct validity is an attempt to account for the differences in test scores . . . we are asking, precisely what does this test measure? How can we meaningfully interpret the score in psychological terms? The aim of construct validation is to identify the nature and strength of all factors influencing performance on the test. (Gronlund, 1965, p. 73)

Predictive Validity

Predictive validity may be defined as "the extent to which test performance is accurate in predicting some future performance" (Gronlund, 1965, p. 64).

Inferential Validity

When suitable criterion scores are not available with which to correlate test scores, their inferential validity may be estimated by obtaining corroborative evidence. Suppose that a test thought to measure 'industriousness' is given to a large group of college freshmen in September. The test constructor postulates that among students of equal scholastic aptitude and a knowledge of world history in September those in the highest quarter of the group in their world history marks at the end of the semester will have a significantly higher average score on the 'industriousness' test than those in the lowest quarter with respect to the same marks. If this turns out to be so, the test constructor may properly infer that the data support the validity of his 'industriousness' test. Inferential validity, then, is based on the formulation of hypothesis by subjective judgment and their testing by empirical means. (Davis, 1964, p. 35)

Factorial Validity

Factorial validity is a way of studying the 'factors' that a test measures in order to determine construct validity, for unless one has some theoretical framework to guide the selection of the tests that he may employ in the factors what he finds will be less complete and harder to interpret than is desirable. (Stanley, 1964, p. 163)

Since the original number of tests a types of materials will usually group themselves into clusters (factors), the number of factors will be smaller than the original number of tests. Factor analysis, therefore, is intended to reduce the number of variables, or test categories,

needed to represent an individual's abilities or traits for specified purposes. (Freeman, 1962, p. 93)

The principal contribution of factorial validation is this: instead of validated the total, undifferentiated instrument against external criteria, an effort is made to identify the component psychological elements and to establish their relative independence, and finally to correlate these elements separately against external criteria. (Freeman, 1962, p. 93)

Such analysis into psychological unities, or elements, is of such value when individuals are to be selected for specialized work or study and their performance predicted therein. (Freeman, 1962, p. 93)

Factor-analysis studies help us to understand the nature of the human attributes and provide a very useful classification scheme for available tests. (Nunnally, 1959, p. 67)

If a test is described as a measure of verbal comprehension, some proof should be offered that the classification is correct. The proof consists of correlating the test with the factor which it is intended to measure. (Nunnally, 1959, p. 67)

The term 'factorial validity' should be accepted with some caution. Even if a test has high factorial validity, it may be invalid as a predictor of particular criteria. Factorial validity indicates only that a test is properly classified but not necessarily that it is good or useful for any purpose. (Nunnally, 1959, p. 68)

Logical Validity

"We use logical validity with essentially the same connotation as the committee's construct validity" (Noll, 1965, p. 79). Terms that fit under content validity, criterion related validity, and construct validity are logical, rational, psychological, judgmental, inferential, and conceptual validity. It is recommended that these terms be used to refer to mental processes that are involved in all phases or types of validity.

Methods of Determining Validity

Validity can be determined by evaluation of the achievement test. Thus, for

a standardized achievement test to have a high degree of content validity for a subject-matter area, it must be constructed in terms of the same educational objectives as subscribed to by the teacher of the subject matter and must reflect the relative weight of each educational objective as the teacher judges them. (Ahmann & Clock, 1963, p. 300)

Content Validity

Typical methods of determining content validity of achievement tests include analysis of class activities, assignments, lesson plans, textbooks, workbooks, supplementary materials, courses of study, and study guides as well as interviews with teachers and supervisors.

Evaluation can also be made by assessments of correlations between test results and school marks, and correlations between test results and ratings of expert judges. In addition, correlations can be made between test results and other known measures, such as chronological age in a single grade, or chronological age at time of high school graduation. Also, accomplishment of widely spaced groups may be compared by evaluating the rise in percentage of success. Thus, a valid reading test is expected to show significant increases in scores indicative of increased achievement as the tests are used in successive school grades. Similarly, on intelligence test items, an increase in percentage passing is expected with an increase in chronological age, but especially with an increase in mental age.

Construct Validity

The process of determining construct validity involves: (a) identifying the constructs presumed to account for test performance; (b) deriving hypotheses regarding test performance from the theory underlying the construct; and (c) verifying the hypotheses by logical and empirical means.

The use of judges is another means of assessing construct validity and has been used in connection with a variety of tests. (Ahmann & Clock, 1963, p. 315)

Many of the methods used to determine the other types of validity are also suitable when construct validity is being investigated. In fact, an analysis of construct validity is supported by total available knowledge of the validity of the instrument in question. (Ahmann & Clock, 1963, p. 314)

The methodology of construct validity is so comprehensive as to encompass even the procedures characteristically associated with other types of validity. (Anastasi, 1966, p. 309)

Any data throwing light on the nature of the trait under consideration and the conditions affecting its development and manifestations contribute to the process of construct validation. Examples of relevant procedures include checking an intelligence test for the anticipated increase in score with age during childhood, investigating the effects of experimental variables such as stress upon test scores, and factor analyzing the test along with other variables. (Anastasi, 1966, pp. 307-308)

Campbell (1959) points out that

in order to demonstrate construct validity we need to show not only that a test correlates highly with other variables with which it should correlate, but also that it does not correlate with variables from which it should differ. The former is described as convergent validation, the latter as discriminant validation. (p. 308)

Factors that Affect Validity

Validity is influenced by factors in the test and by the clarity, simplicity, and definiteness of directions for

the testees. For example, directions as to what to do and how to do it and providing a sample or practice items, detailing information about time limits, and use of special pencils, answer sheets, and the advisability of guessing are all important in helping testees perform to the best of their abilities. In addition, difficulty of the vocabulary and sentence structure, difficulty of the test items, the quality of the test items (unambiguous items, freedom from clues), and suitability or appropriateness of test items in relation to purpose all influence testee performance.

Other factors that influence validity include the test's objectivity, adequacy, reliability, and any defective test materials (booklet, answer sheet).

Factors in the Testees

Validity is also influenced by characteristics of the testees, including range of talent, ability level, age, sex, educational background, cultural background, and emotional adjustment. Other influences include testees' motivation, response sets, and physical condition. As for the immediate test situation, practice effects, previous test experience, coaching, and cheating are all factors influencing testee performance.

Factors in the Testing Conditions and Procedures

Administrative factors influencing the test situation and therefore the results of the test include the presence of the tester, strangeness or familiarity of the tester, sex

of the tester, the manner of the tests, any errors in giving directions or timing, the inability of the tester to speak loudly and clearly, and the number of testers administering the test. Also important are any distractions and disturbances, such as people entering and leaving the testing room, laughing and talking by testees, talking by proctors, noise from radiators and fans, noise from children playing outside, noise from classes passing in the halls, or noise from traffic. Day of the week and the time of day are also crucial factors, as are testing room conditions, such as temperature, humidity, lighting, ventilation, desks, chairs, tables, pencils, scratch papers, seating arrangements, and number of testing rooms.

Factors in Criterion

Relevance, freedom from bias, reliability, availability, and convenience are all factors in the criterion. Thus, "we judge a criterion to be relevant to the extent that score on the same factors that determine success on the job" (Thorndike & Hagan, 1960, p. 166). "The greater the similarity between the behaviors measured by the test and the behaviors represented in the criterion, the higher the validity coefficient" (Gronlund, 1965, p. 76). "The criterion used in one validation study may be more important or more relevant to our purposes than the criterion used in another validation study" (Lyman, 1963, p. 28).

Freedom from bias means that "the measure should provide each person with the same opportunity to make a good

score" (Thorndike & Hagen, 1969, p. 166).

Reliability, "as it applies to the criterion scores, the problem is merely this: a measure of success on the job must be stable or reproducible if it is to be predicted by any type of test device" (Thorndike & Hagen, 1969, p. 167).

Availability and convenience, "the main practical problems pertain to how long it will take to get a criterion score for each individual and how much it will cost" (Thorndike & Hagen, 1969, p. 167; Holmstadter, 1964, pp. 336-337).

Some tests lend themselves more naturally to validation studies than do others. For example, school grades are a natural criterion to use in validating a scholastic aptitude test. On the other hand, what would we use as a good criterion for an anxiety side? Where good criteria are hard to find, we usually cannot expect high validity coefficients; sometimes in fact the test may even be a better measure of the characteristic than the criterion is. (Lyman, 1963, p. 28)

Conclusion

In Chapter II the researcher presented a frame of reference for the subject of validity and reliability, and the different estimating methods and their applications. It is appropriate to say that in order for the SCAMIN to be acceptable as a reliable measuring instrument to be used in evaluating the self-concept of immigrant Arabic children, the SCAMIN test should provide: (a) evidence of its validity and reliability, and (b) evidence from being free of cultural bias in order for it to be applied to different Arabic pupils.

If the SCAMIN provided useful information to determine its applicability, then it may be used on immigrant Arabic children to measure their self-concept. It could also

be of great value to consider its utilization for estimating the self-concept of the Arabic children in general.

The above noted guidelines would also apply to the Piers-Harris instrument if it is to be acceptable as a reliable measuring tool to be used in evaluating the self-concept of immigrant Arabic children.

CHAPTER III

METHODOLOGY

Criterion Measures

The Self-Concept and Motivation Inventory (SCAMIN)

The instrument used in this study to determine the self-concepts of a sample of immigrant Arabic children is based upon a definition of self that encompasses how a child views his or her role as learned in school. It reflects the pupil's sum of experiences, perceptions, attitudes, and feelings about school and academic scholarship.

Two sub-factors contribute to the way a child feels about his performance on school tasks. First is the school self-concept derived from: (a) role expectations--the positive acceptance of the demands a pupil thinks others make of him; and (b) self-adequacy--how a pupil views his/her present and future probabilities of success in school. Both factors are summed to equate to a school self-concept score.

A second sub-factor measured by this instrument is school motivation, defined by the SCAMIN as an "expressed need of a child to achieve a goal in school," and derived from achievement investment which is the pupil's awareness of the sanction of failure in school and the desire to shun the humiliation of it (SCAMIN, 1969). Both of these factors

are summed to equate to a school motivation score. Thus, two scores are derived from the instrument: school self-concept and motivation.

The SCAMIN was administered with a non-verbal answer sheet showing a series of five faces. These faces ranged from a very sad, frowning face to a very happy, smiling face, with gradations in between. Items were read to the pupils and they were asked to mark the appropriate face. Sample items from the SCAMIN test are as follows:

What face would you wear if you could make your teacher happy with your arithmetic?

What face would you wear if you could read like a grown-up?

What face would you wear when your teacher tells one to do his very best work?

The SCAMIN was scored in terms of profile analysis (high, low and medium self-concepts). Three out of four major factors in the high range constituted a high profile for this test, while three out of four scores in the low range were a low profile. An additional analysis could be made by concentrating on the lowest score in the profile. Erratic (up-and-down) profiles to be used as a special interpretation are described later. The interpretation of SCAMIN scores is discussed in the following sections.

High Self-Concept and Motivation Profiles

A uniformly high self-concept and motivation profile does not ensure that the student will achieve in school. High scores may even be unrealistic for some youngsters.

However, high self-concept scores indicate that lack of achievement in school is not due to a defeatist attitude. High academic motivation and self-concept logically infer that the student will continue to strive over the long-term although his efforts may not always be well directed. High attitudinal motivation, therefore, does not guarantee industriousness, but it is a necessary prerequisite for consistent over-achievement (SCAMIN, 1969).

Medium Self-Concept and Motivation Profiles

When all the factors are in the medium range, it does not imply that these average scores are necessarily acceptable. There are some critics who think the self-concept among almost all school youth leaves much room for improvement.

Low Self-Concept and Motivation Profiles

This self-concept and motivation profile describes a child who receives and expects little satisfaction from school. Possible causes include poor academic and social performance, different cultural values, depression, alienation, and unrealistic demands from parents, teachers and self. The rewards of school also may seem to be unobtainable. In this latter instance, the self seems resigned to suffer more discomfort in school.

Figure 1 depicts a discipline of SCAMIN norms.

Scales

GAN	=	Goal/Achievement Needs
FA	=	Failure Avoidance or Achievement Investment
RE	=	Role Expectations
SA	=	Self-Adequacy
GAN + FA	=	Motivation
RE + SA	=	Self-Concept

Stanine	Raw Scores			
	GAN	FA	RE	SA
9 (High)	77 plus	77 plus	65 plus	65 plus
8	75 - 76	75 - 76	63 - 64	60 - 64
7	72 - 74	72 - 74	61 - 62	57 - 59
6	70 - 71	68 - 71	58 - 60	54 - 56
5 (Medium)	66 - 69	64 - 67	54 - 57	50 - 53
4	58 - 65	61 - 63	51 - 53	48 - 49
3	50 - 57	53 - 60	47 - 60	45 - 47
1 (Low)	under 39	under 43	under 42	under 40

Figure 1. Norms for the Self-Concept and Motivation Inventory--Secondary.
(Source: SCAMIN Manual Materials, June 1968 revision.)

Anxiety Profile (High Achievement
and Low Self-Adequacy)

The Anxiety Profile is marked by high motivation and low self-concept--particularly high achievement investment and low self-adequacy. The anxious youngster wants to achieve, and he is not afraid not to achieve. Nevertheless, he views his prospects grimly. Inferring anxiety is particularly valid when the student's actual achievement is average or above (SCAMIN, 1969).

Denial Profile (Low Motivation with
Inflated Self-Concept)

The Denial Profile is a highly defensive self-report which is marked by low motivation and a self-concept higher than achievement levels seem to justify. The student rejects the reward of goal and achievement needs. He also reports indifference or exhibits a callous bravado toward avoiding the sanction of failure. His self-concept is higher than his achievement level would legitimately suggest because his sense of self-adequacy no longer depends upon what happens in the classroom.

Protection Profile (High Achievement
with Medium Self-Adequacy)

The Protection Profile has high achievement investment expectations. Achievement must be high or above average. Achievement needs and self-adequacy are medium or low for such a successful student. The achievement needs are being met; therefore, they will not be as intense. Two possibilities are suggested for the depressed self-adequacy:

(a) the student's standards are discouragingly high; or (b) the student has found self-degradation a means of gaining sympathy, praise and lower demands. This is typical of the "A" student.

Security Profile (High Profile with Medium or Low Failure Avoidance)

The most desirable long-range self-concept objective is the Security Profile with a high self-concept score and manifest achievement needs, but only moderate or low achievement investment. The Security Profile-type students have above average academic achievement and high social achievement. They attempt to be creative and work vigorously toward fulfilling their interests. Due to the low failure avoidance of these self-actualizing children, they may be inconsistent on dull "busy-work" assignments. When this profile shape appears with low achieving pupils, these non-striving pupils are categorized as Placid Profile.

Achievement investment (formerly labeled Failure Avoidance) is the awareness and concern toward shunning the embarrassment and sanctions that are associated with failure in school. When achievement investment is extremely high without support from the self-concept, realistic avoidance becomes anxious fear. Anxious fear or failure anxiety stifles achievement.

One aspect of the present study, the evaluation of the SCAMIN, will focus upon the degree to which such profile analyses are valid and reliable for Arabic children.

The Piers-Harris Children's Self-Concept
Scale (The Way I Feel About Myself)

The Piers-Harris scale is sub-titled, "The Way I Feel About Myself," and can be administered in group form. This test requires a third-grade reading level for group administration and can be administered to a wide age range while in a group setting. The test may be administered below the third-grade level, but only if done on an individual basis. The test is not timed but should take no more than 20 minutes to administer to most groups of pupils.

The scale was designed primarily for research on the development of children's self-attitude and correlates of these attitudes. Piers-Harris believed that "by age eight self attitudes have a reasonable amount of stability."

The 80 item instrument uses both positive and negative statements of situations that concern children. The subjects are instructed to circle "yes" if the statement is true for them or "no" if it is not true for them.

Since the Piers-Harris scale has been standardized to measure children's self-concepts, it is used in this study to validate the effectiveness of the SCAMIN Self-Concept Inventory as a valid and reliable measuring device for immigrant Arabic children.

The Piers-Harris measure was assumed to be a reliable self-concept measure for the population under study. Therefore, no attempt was made to modify the scale. The Piers-Harris test consists of six sub-tests, each of which focuses on a special characteristic ranging as follows: Behavior,

Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, Happiness and Satisfaction.

The Piers-Harris test was administered to grades 7, 9 and 11 at Salina, Lowery and Fordson Schools in Dearborn, Michigan. The Piers-Harris manual indicated that the instrument requires a third-grade level of reading ability, so it was considered appropriate for the immigrant Arabic children.

The statement introducing the child to the test (child reads the statement, then answers accordingly) read:

Here are a set of statements, some of them are true of you and so you will circle the yes; some are not true of you and so you will circle no. Answer every question even if some are hard to decide, but do not circle both yes and no; remember to circle the yes if the statement is generally like you, or circle the no if generally not like you. There are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

The design of this study was developed to provide maximum information about the subjects' self-esteem as related to the variables under consideration. Also, it should provide an indication of the relationship among these variables as they impact on the education of immigrant Arabic children in American public school settings.

Selection of Sample

The sample for this study consisted of 228 immigrant Arabic pupils roughly divided between the sexes, in the 7th, 9th and 11th grades of the Salina, Lowery and Fordson Schools in Dearborn, Michigan. No attempt was made to control for Arabic country of origin. It was impossible, moreover, to randomly select immigrant Arabic children within the metro-

politan Detroit school system. Nonetheless, it is assumed that the sample under study will yield valuable information on the manner in which Arabic children adjust to American society, and provide indices related to school achievement.

Data Analysis and Methods to be Utilized

Correlation Analysis

The reliability of a test refers to the consistency of scores yielded by the test. Statistically, reliability is that portion of variance within a test that is true variance, excluding error variance. Reliability is expressed directly by a correlation coefficient or indirectly by the standard error of measurement of a particular test score. Reliability coefficients are usually obtained by: (a) repeated administrations of the same test to the same subjects; (b) using parallel forms of the test; or (c) correlating half of the test items with the other half.

For the SCAMIN instrument, reliability coefficients obtained by the repeated testing procedure are reported in the SCAMIN text manual (Factor reliability from Roth's dissertation, Second Form: 93, Spearman-Brown, SCAMIN Manual, 1969, p. 6). No reliability studies of the SCAMIN have been reported using immigrant Arabic children.

The split-half reliability coefficient was used to establish the reliability for the SCAMIN and the Piers-Harris tests that were administered to the target sample. Since longer tests tend to be more reliable, and since split-half

reliability represents the reliability of a test only half as long as the actual test, a correction known as the Spearman-Brown Prophecy Formula was utilized. The Kuder-Richardson Formula 20 was also applied for additional verification of the results.

Partial Correlation for Piers-Harris and SCAMIN Scales

Partial correlation for Piers-Harris and SCAMIN scales was utilized to aid the researcher in understanding and clarifying relationships between variables and to enable the researcher to locate spurious relationships.

A spurious correlation is defined in a relationship between two variables, A and B for example, in which A's correlation with B is solely the result of the fact that A varies along with some other variable, C for example, which is indeed the true predictor of B. In this case, when the effects of C are controlled or held constant, B no longer varies with A. (Nie et al., 1975, p. 36)

In partial correlation, the control is statistical rather than literal and is based on the simplifying assumption of linear relationships among the variable. In essence, partial correlation enables the researcher to remove the effect of the control variable from the relationship between the independent and dependent variables without physically manipulating the raw data by applying the partial correlation. The effect of the control variable is assumed to be linear throughout its range, and it is this linear assumption that makes partial correlation possible.

Factor Analysis

The establishment of construct validity presents

special problems for the measurement of personal traits. The behavior or self-concept may vary widely from individual to individual and from one culture to another. The issue of construct validity is, therefore, of particular interest for this group of immigrant Arabic children. Factor analysis of the SCAMIN is a way of approaching an understanding of the construct validity of the instrument.

Factorial validity is a way of studying the factors that a test measures in order to determine construct validity, for unless one has some theoretical framework to guide the selection of the test that he employs in the factor analysis, the factors that he finds will be less complete and harder to interpret than is desirable. (Stanley, 1960, p. 163)

Harmon (1976, Ch. 10) stated that "the principal concern of factor analysis is the resolution of a set of variables linearly in terms of small numbers of categories of 'factors'." This resolution can be accomplished by an analysis of the correlations among the variables. Harmon also says that "a satisfactory solution will yield factors which convey all the essential information of the original set of variables."

Method of Component Analysis

Factor analysis adopted the component methods allowing the variance of the variables to be analyzed in terms of the principal component, while the communality is analyzed in terms of the common factors. Hence, the distinction comes from the amount of variance analyzed--the numbers placed in the diagonal of the correlation matrix. Analysis of the correlation matrix, with ones in the diagonal, leads

to principal components, while analysis of the correlation matrix with communalities leads to principal factors (Nie et al., 1975).

Procedure

The total and sub-test scale scores for the subjects were factor analyzed together and separately for each grade level, using the factor program SPSS (Nie et al., 1975). The principal factoring with iteration methods, type PA 2, with oblique rotation was utilized for both Piers-Harris and SCAMIN. "This program places the squared multiple correlation between a variable and the rest of the variables as the communality estimate on the diagonal of the correlation matrix" (Nie et al., 1975). The PA 1 factoring method (principal factoring without iteration) was used for SCAMIN and Piers-Harris for grades 7, 9 and 11. Statistical consideration has been given to represent the original set of variables in terms of a number of factors that were determined in sequence so that factors would account for maximum variance.

Factor analysis was used to confirm the hypotheses regarding the structuring of the variables in terms of the expected numbers of significant factors and factor loading. The new construct was used as the new variable in the data analysis.

To distinguish between the groups, discriminant analysis was used to identify variables on which the groups were expected to differ.

CHAPTER IV
DATA ANALYSIS AND FINDINGS

Introductory Statement

The Piers-Harris factors and factor loadings are presented in this chapter for the purpose of using an analytical approach in examining the data. First, information about the total sample under study is presented, as well as specific information on grade levels 7, 9 and 11. Second, a factor analysis of Piers-Harris and SCAMIN was done for the sample and also for each individual grade level. Third, reliability information for Piers-Harris and SCAMIN was obtained using the total scale and each sub-scale separately, by total sample and grade level. Fourth, a discriminant analysis was done by total grade level and by each grade level separately.

Sample

The sample consisted of 228 subjects, males and females, in grades 7, 9 and 11 from Salina, Lowrey and Fordson Schools in the Dearborn School District. Males represented 60.5% of the sample, while females represented 39.5%. United States born constituted 18% of the sample, while non-United States born represented the remaining 82% of the sample. Profiles of the three grade levels are presented in Table 1.

Table 1
 Frequency and Percentage Distribution of Sample
 by Grade, Place of Birth, and Sex

Sex	Grade 7				Grade 9				Grade 11				Grades 7, 9 & 11 Combined				Total	
	U.S. Born		Non-U.S. Born		U.S. Born		Non-U.S. Born		U.S. Born		Non-U.S. Born		U.S. Born		Non-U.S. Born			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%		
Male	8	5.8	43	31.2	5	3.6	36	26.0	3	2.2	43	31.2	16	11.6	122	88.4	138	60.5
Female	11	12.2	26	28.9	9	10.0	20	22.2	5	5.6	19	21.1	25	27.7	65	72.3	90	39.5
Total	19	8.3	69	30.2	14	6.1	56	24.6	8	3.6	62	27.2	41	18.0	187	82.0	228	100.0

Grade 7

The 7th grade sample of 88 subjects included 51 males, representing 22.4% of the total sample under study, while 37 females represented 16.3% of the total sample. Also included in this grade level were 19 subjects, or 8.3% of the total sample, who were United States born, and 69 subjects, or 30.2% of the total sample, who were non-United States born (see Table 2).

Table 2

Frequency and Percentage Distribution of Sample by Grade, Place of Birth, and Sexes for Grade 7

Sex	United States Born		Non-United States Born		Total Row	
	F	%	F	%	F	%
Male	8	9.1	43	48.9	51	58.0
Female	<u>11</u>	<u>12.5</u>	<u>26</u>	<u>29.5</u>	<u>37</u>	<u>42.0</u>
Total Column	19	21.6	69	78.4	88	100.0

Grade 9

The sample of grade 9 was 70 subjects, which included 41 males, 18.0% of the total sample under study, and 29 females, 12.7% of the subjects in the total sample. Also included in this grade level were 14 subjects, or 6.1% of the total sample, who were United States born, and 56 subjects, or 24.6% of the total sample, who were non-United States born (see Table 3).

Table 3
Frequency and Percentage Distribution of Sample by Grade,
Place of Birth, and Sexes for Grade 9

Sex	United States Born		Non-United States Born		Total Row	
	F	%	F	%	F	%
Male	5	7.1	36	51.4	41	58.6
Female	<u>9</u>	<u>12.9</u>	<u>20</u>	<u>28.6</u>	<u>29</u>	<u>41.4</u>
Total Column	14	20.0	56	80.0	70	100.0

Grade 11

The total sample of grade 11 was 70 subjects, which included 46 males, 20.2% of the total sample under study, and 24 females, 10.5% of the sample. Also included in this grade level were 8 subjects, or 3.5% of the sample, who were United States born, and 62 subjects, 27.2% of the total sample, who were non-United States born (see Table 4).

Table 4
Frequency and Percentage Distribution of Sample by Grade,
Place of Birth, and Sexes for Grade 11

Sex	United States Born		Non-United States Born		Total Row	
	F	%	F	%	F	%
Male	3	4.3	43	61.4	46	65.7
Female	<u>5</u>	<u>7.1</u>	<u>19</u>	<u>27.1</u>	<u>24</u>	<u>34.3</u>
Total Column	8	11.4	62	88.5	70	100.0

Factor Analysis

Factor Analysis of Piers-Harris for Total Sample

Table 5 contains Factor I, a complex factor which includes seven items with secondary loadings. It is not easily identified as one category.

Table 6 represents Factor II which corresponds well to the Piers-Harris Factor I.

Tables 7 and 8 represent Factors III and IV which do not correspond in content with Piers-Harris factors, but they can be related to Piers-Harris Factors V and II (Popularity, and Intellectual and School Status, respectively).

Table 9 represents Factor V which is a weak factor and cannot be interpreted in terms of the Piers-Harris factors.

Table 10 represents Factor VI combined items that are, or could be, related to items in Piers-Harris Factors IV (Anxiety) and VI (Happiness and Satisfaction).

Table 5
 Loadings on Factor I for Piers-Harris
 Instrument--Total Sample

Item No.	Physical Appearance (plus Popularity, Positive Personal Abilities)	Loading
43	I wish I were different	.54
41	I have nice hair	-.54
8	My looks bother me	.50
19	I am good at making things with my hands	-.50
54	I am good looking	-.49
73	I have a good figure	-.47
36	I am lucky	-.45
5	I am smart	-.44
29	I have pretty eyes	-.43
39	I like being the way I am	-.42
69	I am popular with girls	-.41
27	I am an important member of my class	-.41
33	My friends like my ideas	-.38
70	I am a good reader	-.38
15	I am strong	-.36
37	I worry a lot	.34
72	I like my brother (sister)	-.33
9	When I grow up I will be an important person	-.32
23	I can draw well	-.31
21	I am good in my schoolwork	-.30
52	I am cheerful	(-.39)
49	My classmates in school think I have good ideas	(-.34)
63	I am a leader in games and sports	(-.34)
28	I am nervous	(.32)
44	I sleep well at night	(-.31)
30	I can give a good report in front of the class	(-.30)
61	When I try to make something, every- thing goes wrong	(.30)

Interpretation of Table 5:
Factor I

This factor is long and mixed in terms of correspondence to the Piers-Harris factors. A majority of the high-loading items (.40+) are Physical Appearance items. Also appearing in the factor, however, are Popularity items and items that describe positive personal abilities (see Figure 2).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Physical Appearance	41	I have nice hair
	8	My looks bother me
	54	I am good looking
	73	I have a good figure
Popularity	69	I am popular with girls
	27	I am an important member of my class
	33	My friends like my ideas
	19	I am good at making things with my hands
	5	I am smart
	15	I am strong
	70	I am a good reader

Figure 2. Categories Related to Factor I
of Piers-Harris--Total Sample

Table 6
Loadings on Factor II of Piers-Harris
Instrument--Total Sample

Item No.	Behavior	Loading
12	I am well behaved in school	-.53
34	I have many friends	.51
75	I am always dropping or breaking things	.44
56	I get into a lot of fights	.42
45	I hate school	.37
25	I behave badly at home	.35
14	I cause trouble to my family	.35
61	When I try to make something, everything goes wrong	.34
62	I am picked on at home	.33
77	I am different from other people	.30
59	My family is disappointed in me	(.34)

Interpretation of Table 6:
Factor II

This factor corresponds to the first Piers-Harris factor. Behavior items 75, 45, 61, and 62 do not load on any of the Piers-Harris factors, but could be interpreted as behavior items.

Table 7
Loadings on Factor III of Piers-Harris
Instrument--Total Sample

Item No.	Popularity	Loading
50	I am unhappy	.60
58	People pick on me	.53
40	I feel left out of things	.48
52	I am cheerful	-.47
46	I am among the last to be chosen for games	.45
3	It is hard for me to make friends	.40
59	My family is disappointed in me	.37
79	I cry easily	.37
15	I am strong	.36
11	I am unpopular	.36
7	I get nervous when the teacher calls on me	.33
57	I am popular with boys	-.30
54	I am good looking	(-.35)
61	When I try to make something, everything goes wrong	(.33)
74	I am often afraid	(.30)
39	I like being the way I am	(.30)

Interpretation of Table 7:
Factor III

This factor is mixed in terms of the Piers-Harris factors, but seems to be most related to the factor, Popularity. The highest loading item--50, "I am unhappy," could be interpreted as related to popularity items such as 58, "People pick on me," and 40, "I feel left out," while 52, "I am cheerful," could be related to positive feelings of popularity such as 57, "I am popular with boys."

Table 8
 Loadings on Factor IV of Piers-Harris
 Instrument--Total Sample

Item No.	Intellectual and School Status (plus some Popularity)	Loading
5	I am smart	.47
49	My classmates in school thing I have good ideas	.41
60	I have a pleasant face	.37
63	I am a leader in games and sports	.37
42	I often volunteer in school	.37
51	I have many friends	.37
53	I am dumb about most things	-.32
55	I have lots of pep	.31
30	I can give a good report in front of the class	.31
16	I have good ideas	.30
69	I am popular with girls	(.36)
33	My friends like my ideas	(.34)

Interpretation of Table 8:
Factor IV

This factor is mixed in terms of correspondence to the Piers-Harris factor, but it is most related to the Piers-Harris Factor II, Intellectual and School Status. Items such as 63, "I am a leader in games and sports," and 51, "I have many friends," could be related to school status as well as to popularity.

Table 9
Loadings on Factor V of Piers-Harris
Instrument--Total Sample

Item No.	Internal Traits, Emotions	Loading
78	I think bad thoughts	-.33
18	I usually want my own way	-.31
42	I am lucky	(.36)
45	I hate school	(-.34)
44	I sleep well at night	(.32)
52	I am cheerful	(.32)
61	When I try to make something, everything seem to go wrong	(-.30)

Interpretation of Table 9:
Factor V

This is a weak factor with only two primary loadings and no loadings of .40 or more. Items, with the exception of item 61, seem to describe internal traits or emotions rather than behavior or appearance. There is no correspondence to a single Piers-Harris factor.

Table 10
Loadings on Factor VI of Piers-Harris
Instrument--Total Sample

Item No.	Anxiety; Happiness and Satisfaction	Loading
76	I can be trusted	-.44
74	I am often afraid	-.40
28	I am nervous	.39
44	I sleep well at night	-.34
64	I am clumsy	.34
4	I am often sad	.32
2	I am a happy person	-.32
47	I am sick a lot	.31
59	My family is disappointed in me	(.30)

Interpretation of Table 10:
Factor VI

Three of the four top loading items correspond to the Piers-Harris factor IV, Anxiety. Other items in this factor could be considered anxiety items (such as 47, "I am sick a lot") or items related to Happiness and Satisfaction (Piers-Harris VI), namely, item 4, "I am often sad," and 2, "I am a happy person."

Summary of Piers-Harris for
Total Sample

The six factors identified by an analysis of the total sample response for the Piers-Harris test were: (I) Behavior; (II) Intellectual and School Status; (III) Physical Appearance and Attributes; (IV) Anxiety; (V) Popularity; and (VI) Happiness and Satisfaction.

Table 11 presents the order of the six factors designed by Piers-Harris and presented in his manual (pp. 24-26). However, the new factors produced by the total sample appear in a different order (see Table 12 for comparison).

None of the six factors found matched the Piers-Harris factors. Obviously there is a difference between the set of factors identified in this study as compared with the set of factors presented by Piers-Harris. A comparative listing of the six factors (Piers-Harris and new findings) is presented in Figure 3.

Table 11
Factor Analysis of Piers-Harris Instrument

Factors											
I Behavior		II Intellectual & School Status		III Physical Appearance & Attributes		IV Anxiety		V Popularity		VI Happiness & Satisfaction	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
22	.66	21	-.66	54	-.74	79	-.57	58	-.62	2	.65
35	-.64	5	-.63	60	-.61	37	-.57	46	-.61	50	-.62
25	.62	53	.56	41	-.60	74	-.55	3	-.55	39	.60
34	.60	70	-.55	73	-.56	7	-.54	51	.56	43	-.57
14	.55	66	.53	29	-.52	A	.51	40	-.49	52	.42
78	.54	26	.51	15	-.41	28	-.49	11	-.47	59	-.39
76	-.53	30	-.48	63	-.40	10	-.47	1	-.40	8	-.35
80	-.50	42	-.46	8	.40	40	-.38	49	.40	38	-.33
12	-.50	11	.43	27	-.36	6	-.35	33	.37	36	.30
48	.48	49	-.43	49	-.35	8	-.33	77	-.35		
31	.45	16	-.40	55	-.31	20	-.33	57	.34		
56	.42	7	.39	57	-.33	44	.30	69	.32		
64	.38	27	-.39			55	.30				
67	-.37	33	-.38								
13	.36	17	-.32								
59	.35	9	-.31								
32	.31	12	-.30								
4	.30	57	-.30								

Source: Piers-Harris Manual, pp. 24-26.

Table 12
 New Factor Analysis of Piers-Harris Instrument
 as Produced by Total Sample

Factors									
I Physical Appearance		II Behavior		III Popularity		IV Intellectual & School Status		V Anxiety, Happiness & Satisfaction	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
43	.54	12	-.53	50	.60	5	.47	76	-.44
51	-.54	34	.51	58	.53	49	.47	74	-.40
8	.50	75	.44	40	.48				
19	-.50	56	.42	52	-.47				
54	-.49			46	.45				
73	-.47			3	.40				
35	.47								
36	-.45								
5	-.44								
29	-.43								
39	-.42								
69	-.41								
27	-.41								

<u>Factor</u>	<u>Piers-Harris</u>	<u>New Finding</u>
I	Behavior	Physical Appearance
II	Intellectual & School Status	Behavior
III	Physical Appearance & Attributes	Popularity
IV	Anxiety	Intellectual & School Status
V	Popularity	Internal Traits, Emotion
VI	Happiness & Satisfaction	Anxiety, Happiness & Satisfaction

Figure 3. Comparison of Piers-Harris Factor Analysis to Total Sample

Factor Analysis of Piers-Harris for Grade 7

Table 13 contains Factor I: Intellectual and Peer Status (Academic and Appearance Items) plus Associated Anxiety.

Table 14 contains Factor II: Socialization (Related Attributes and Skills)--Mixture of Appearance, School Status, Popularity.

Table 15 contains Factor III: Happiness and Satisfaction, plus Popularity.

Table 16 contains Factor IV: Behavior.

Table 17 contains Factor V: Behavior.

Table 18 contains Factor VI: Mixed, led by Anxiety.

Table 13
 Loadings on Factor I of Piers-Harris
 Instrument--Grade 7

Item No.	Intellectual and Peer Status (Academic and Appearance Items) plus Associated Anxiety	Loading
70	I am a good reader	.62
5	I am smart	.62
49	Classmates think I have good ideas	.61
29	I have pretty eyes	.61
33	My friends like my ideas	.57
41	I have nice hair	.56
43	I wish I were different	-.54
73	I have a good figure	.53
37	I worry a lot	-.49
36	I am lucky	.48
63	I am a leader in games and sports	.47
44	I sleep well at night	.47
21	I am good in my school work	.46
39	I like being the way I am	.46
26	I am slow in finishing my school work	.46
69	I am popular with girls	.45
19	I am good making things with my hands	.43
8	My looks bother me	-.42
27	I am an important member of my class	.40
10	I get worried when we have tests in school	-.39
57	I am popular with boys	.37
23	I draw well	.35
47	I am sick a lot	-.32
28	I am nervous	-.31
30	I can give a good report in front of the class	(.36)
13	It is usually my fault when things go wrong	(-.32)
62	I am picked on at home	(-.30)
72	I like my brother/sister	(.30)

Interpretation of Table 13:
Factor I

This factor is mixed in terms of its correspondence to the Piers-Harris factors. It combines Intellectual and School Status items (70, 5, 49) with Appearance items (29, 41, 73) and Anxiety items (43, 37).

Anxiety items, such as item 43, "I wish I were different," and item 10, "I get worried when we have tests in school," reflect concern about appearance and school (see Figure 4).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Intellectual & School Status	70	I am a good reader
	5	I am smart
	49	Classmates think I have good ideas
Appearance	29	I have pretty eyes
	41	I have nice hair
	73	I have a good figure
Anxiety	43	I wish I were different
	37	I worry a lot
	10	I get worried when we have tests in school

Figure 4. Categories Related to Factor I of Piers-Harris--Grade 7

Table 14
 Loadings on Factor II of Piers-Harris
 Instrument--Grade 7

Item No.	Socialization (Related Attributes and Skills)-- Mixture of Appearance, School Status, Popularity	Loading
60	I have a pleasant face	.58
15	I am strong	.55
54	I am good looking	.53
16	I have good ideas	.51
42	I often volunteer in school	.48
3	It is hard for me to make friends	-.47
46	I am last to be chosen for games	-.47
53	I am dumb about most things	-.44
30	I can give a good report in front of the class	-.44
22	I do bad things	-.44
40	I feel left out of things	-.44
65	I watch instead of play games	-.43
9	I will grow up to be an important person	.43
69	I am popular with girls	.41
78	I think bad thoughts	-.36
79	I cry easily	-.31
52	I am cheerful	.30
66	I forget what I learn	(-.32)
7	I get nervous when the teacher calls on me	(-.32)
61	When I try to make things, things go wrong	(-.30)

Interpretation of Table 14:
Factor II

This factor is mixed in terms of the Piers-Harris factors. Items with .40 or higher loadings are split among Piers-Harris' Appearance, School Status, and Popularity categories (see Figure 5).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Socialization, School Status, and Popularity	60	I have a pleasant face
	42	I often volunteer in school
	46	I am last to be chosen
	9	I will grow up to be important

Figure 5. Category Related to Factor II
of Piers-Harris--Grade 7

Table 15
Loadings on Factor III of Piers-Harris
Instrument--Grade 7

<u>Item No.</u>	<u>Happiness, Satisfaction, plus Personality</u>	<u>Loading</u>
2	I am a happy person	-.79
59	My family is disappointed in me	.59
80	I am a good person	-.55
39	I like being the way I am	-.48
17	I am an important member of my family	-.43
40	I feel left out of things	.43
71	I'd rather work alone than with a group	.38
77	I am different from other people	.37
45	I hate school	(.39)
58	People pick on me	(.36)
50	I am unhappy	(.35)
43	I wish I were different	(.35)
78	I think bad thoughts	(.32)
22	I do bad things	(.31)

Interpretation of Table 15:
Factor III

The items in this factor do not correspond exactly with any Piers-Harris factor, but seem to be primarily concerned with Happiness and Satisfaction (see Figure 6).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Happiness & Satisfaction	2	I am a happy person
	80	I am a good person
	17	I am an important member of my family
	45	I hate school

Figure 6. Category Related to Factor III of Piers-Harris--Grade 7

Table 16
Loadings on Factor IV of Piers-Harris
Instrument--Grade 7

Item No.	Behavior	Loading
25	I behave badly at home	.71
14	I cause trouble to my family	.57
48	I am often mean to other people	.44
72	I like my brother/sister	-.44
31	In school I am a dreamer	.42
1	My classmates make fun of me	.41
62	I am picked on at home	.39
4	I am often sad	.38
50	I am unhappy	.37
18	I usually want my own way	.35
3	It is hard for me to make friends	(.40)
58	People pick on me	(.40)
36	I am lucky	(-.38)
34	I often get into trouble	(.36)

Interpretation of Table 16:
Factor IV

This factor corresponds most to Piers-Harris Factor I, Behavior. Feelings identified, such as item 4, "I am often sad," and item 50, "I am unhappy," may be feelings connected with negative behavior.

Table 17
 Loadings on Factor V of Piers-Harris
 Instrument--Grade 7

Item No.	Self-Control	Loading
12	I am well behaved in school	-.66
11	I am un-popular	-.55
68	I lose my temper easily	.51
75	I am always breaking things	.50
34	I often get into trouble	.43
56	I get into a lot of fights	.41
45	I hate school	.41
66	I forget what I learn	.38
61	When I try to make things, things go wrong	.35
62	I am picked on at home	(.34)

Interpretation of Table 17:
Factor V

Like Factor IV, this factor corresponds best to Piers-Harris Factor I, Behavior, with certain feelings such as item 11, "I am un-popular," and item 45, "I hate school," likely to be associated with negative behavior.

Table 18
 Loadings on Factor VI for Piers-Harris
 Instrument--Grade 7

Item No.	Mixed, led by Anxiety	Loading
74	I am often afraid	.61
58	People pick on me	.49
55	I have lots of pep	.43
38	My parents expect too much of me	.41
13	It's usually my fault when things go wrong	.39
24	I am good in music	.38
35	I am obedient at home	-.37
7	I get nervous when the teacher calls on me	.34
29	I have pretty eyes	(.35)

Interpretation of Table 18:
Factor VI

This factor is mixed and difficult to interpret. The Anxiety item is the highest loading, such as item 38, "My parents expect too much of me," and item 58, "People pick on me," which could be seen as an anxiety related item.

Summary of Pier-Harris Factor
Analysis for Grade 7

Table 19 presents the new factor analysis including item loadings of the Piers-Harris instrument for the grade 7 sample.

Table 19
New Factor Analysis of Piers-Harris Instrument
as Produced by Grade 7 Sample

Factors											
I Intellectual & Peer Status		II Socialization		III Happiness, Satisfaction plus Popularity		IV Anxiety		V Self-Control		VI Mixed, led by Anxiety	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
70	.62	60	.58	2	-.79	25	.71	12	-.66	74	.61
5	.62	15	.55	59	.59	14	.57	11	-.55	58	.49
49	.60	54	.53	80	-.55	48	.44	68	.51	55	.43
29	.61	16	.51	39	-.48	72	-.44	75	.50	38	.41
33	.57	42	.48	17	-.43	31	.42	34	.43		
41	-.56	3	-.47	40	.43	1	.41	56	.41		
43	.54	46	-.47			58	.40				
73	.53	53	-.44								
37	-.49	30	.44								
36	.48	22	-.44								
63	.47	40	-.44								
44	.47	65	.43								
21	.46	9	.43								
39	.46	69	.41								
26	.46										
69	.45										
19	.43										
8	-.42										
27	.40										

Although Factor IV is identical in measuring anxiety, it is coincidental regarding pairing. In fact, the items used by Piers-Harris to measure anxiety are not the same as those items produced by the grade 7 sample to measure anxiety. None of the other five factors produced by the grade 7 sample are in agreement with the Piers-Harris factors (see Figure 7).

<u>Factor</u>	<u>Piers-Harris</u>	<u>New Finding</u>
I	Behavior	Intellectual & Peer Status
II	Intellectual & School Status	Socialization
III	Physical Appearance and Attributes	Happiness, Satisfaction plus Popularity
IV	Anxiety	Anxiety
V	Popularity	Self-Control
VI	Happiness & Satisfaction	Mixed, led by Anxiety

Figure 7. Comparison of Piers-Harris Factor Analysis to Grade 7 Sample

Factor Analysis of Piers-Harris
for Grade 9

Table 20 contains Factor I: Physical Appearance and Related Attributes (particularly Happiness and Satisfaction items).

Table 21 contains Factor II: Happiness and Satisfaction, Popularity, plus Associated Anxiety.

Table 22 contains Factor III: Social (and Academic) Adjustment in School, plus Associated Emotions

Table 23 contains Factor IV: Intellectual and School Status.

Table 24 contains Factor V: Behavior, School Status, plus Associated Anxiety.

Table 25 contains Factor VI: Behavior.

Table 20
Loadings on Factor I of Piers-Harris
Instrument--Grade 9

Item No.	Physical Appearance, Related Attributes (particularly Happiness and Satisfaction Items)	Loading
54	I am good looking	.70
29	I have pretty eyes	.60
8	My looks bother me	-.60
41	I have nice hair	.58
73	I have a good figure	.58
17	I am an important member of my family	.54
43	I wish I were different	-.53
19	I am good making things with my hands	.52
52	I am cheerful	.50
60	I have a pleasant face	.49
72	I like my brother/sister	.47
36	I am lucky	.47
6	I am shy	-.46
69	I am popular with girls	.43
39	I like being the way I am	.42
28	I am nervous	-.40
32	I pick on my brothers and sisters	-.36
15	I am strong	(.40)
16	I have good ideas	(.30)
5	I am smart	(.30)

Interpretation of Table 20:
Factor I

This factor loads strongly with Physical Appearance (Piers-Harris Factor III) items. Other items interpreted as attributes related to appearance, such as perceived importance (item 17), cheerfulness (item 52), or, if the ap-

pearance is negative, feeling shy (item 6) or nervous (item 28). These items are presented in Figure 8.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Physical Appearance	17	I am an important member of my family
	52	I am cheerful
	6	I am shy
	28	I am nervous

Figure 8. Category Related to Factor I of Piers-Harris--Grade 9

Table 21
Loadings on Factor II of Piers-Harris
Instrument--Grade 9

Item No.	Happiness, Satisfaction, Popularity with Associated Anxiety	Loading
50	I am unhappy	.66
74	I am often afraid	.63
9	I will grow up to be an important person	-.62
51	I have many friends	-.54
31	In school I am a dreamer	.51
46	I am last to be chosen for games	.46
60	I have a pleasant face	-.42
3	It is hard for me to make friends	.42
48	I am often mean to other people	.41
11	I am unpopular	.37
7	I get nervous when the teacher calls on me	.36
2	I am a happy person	-.35
55	I have lots of pep	-.35
39	I like being the way I am	(-.38)
6	I am shy	(.32)
8	My looks bother me	(.30)

Interpretation of Table 21:
Factor II

This factor is mixed in terms of correspondence to Piers-Harris factors. Items tend to be related to Happiness and Satisfaction (items 50, 9, 60), Popularity (items 51, 46, 3), and Associated Anxiety (items 74, 31, 7). These items by category are presented in Figure 9.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Happiness & Satisfaction	50	I am unhappy
	9	I will grow up to be an important person
	60	I have a pleasant face
Popularity	51	I have many friends
	46	I am last to be chosen for games
	3	It is hard for me to make friends
Anxiety	74	I am often afraid
	31	In school I am a dreamer
	7	I get nervous when the teacher calls on me

Figure 9. Categories Related to Factor II
of Piers-Harris--Grade 9

Table 22
Loadings on Factor III of Piers-Harris
Instrument--Grade 9

Item No.	Social (and Academic) Adjustment in School, and Associated Emotions	Loading
61	When I try to make things, things go wrong	.55
15	I am strong	-.55
1	My classmates make fun of me	.55
4	I am often sad	.53
21	I am good in my school work	-.53
58	People pick on me	.52
40	I feel left out of things	.52
59	My family is disappointed in me	.52
27	I am an important member of my class	-.49
50	I am unhappy	.47
39	I like being the way I am	-.43
79	I cry easily	.42
37	I worry a lot	.40
5	I am smart	-.34
71	I'd rather work alone than with a group	.32
26	I am slow in finishing my school work	(.34)
43	I wish I were different	(.31)
11	I am unpopular	(.30)

Interpretation of Table 22:
Factor III

This factor is mixed in terms of the Piers-Harris factors, but seems to focus on getting along in school--academically (items 61, 21), and, primarily, socially (items 1, 58, 27). Other items may reflect feelings associated with school adjustment.

Table 23
Loadings on Factor IV of Piers-Harris
Instrument--Grade 9

Item No.	Intellectual and School Status	Loading
45	I have a pleasant face	.60
49	My classmates think I have good ideas	-.60
18	I usually want my own way	.58
70	I am a good reader	-.57
56	I get into a lot of fights	.53
33	My friends like my ideas	-.53
63	I am a leader in games and sports	-.45
44	I sleep well at night	-.45
66	I forget what I learn	.44
30	I can give a good report in front of the class	-.42
77	I am different from other people	.36
42	I often volunteer in school	-.33
68	I lose my temper easily	.32
12	I am well behaved in school	-.30
4	I am often sad	(.34)

Interpretation of Table 23:
Factor IV

This factor is mixed in terms of the Piers-Harris factors, although items seem to correspond most to Piers-Harris Factor II, Intellectual and School Status--specifically items 49, 70, 33, and 63. These items are presented in Figure 10.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Intellectual & School Status	49	My classmates think I have good ideas
	70	I am a good reader
	33	My friends like my ideas
	63	I am a leader in games and sports

Figure 10. Category Related to Factor IV of Piers-Harris--Grade 9

Table 24
Loadings on Factor V of Piers-Harris Instrument--Grade 9

<u>Item No.</u>	<u>Behavior and School Status, plus Associated Anxiety</u>	<u>Loading</u>
16	I have good ideas	-.67
14	I cause trouble to my family	.50
26	I am slow in finishing my school work	.47
62	I am picked on at home	.42
47	I am sick a lot	.38
57	I am popular with boys	.36
10	I get worried when we have tests in school	-.33
34	I often get into trouble	.33
35	I am obedient at home	.30
2	I am a happy person	(.34)
69	I am popular with girls	(.34)
13	It is usually my fault when things go wrong	(.33)
59	My family is disappointed in me	(.33)
60	I have a pleasant face	(-.31)
61	When I try to make things, things go wrong	(.31)

Interpretation of Table 24:
Factor V

This factor is mixed in terms of the Piers-Harris factors, but is most related to Piers-Harris Factors I, Behavior, and II, School Status, including associated Anxiety (see Figure 11).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Behavior	14	I cause trouble to my family
	26	I am slow in finishing my school work
	62	I am picked on at home
School Status	16	I have good ideas
	26	I am slow in finishing my school work
	57	I am popular with boys
Anxiety	47	I am sick a lot
	10	I get worried when we have tests in school

Figure 11. Categories Related to Factor V
of Piers-Harris--Grade 9

Table 25
Loadings on Factor VI of Piers-Harris
Instrument--Grade 9

Item No.	Behavior	Loading
75	I am always breaking things	.68
76	I can be trusted	-.62
13	It is usually my fault when things go wrong	.61
80	I am a good person	-.44
56	I get into a lot of fights	.44
59	My family is disappointed in me	(.33)
50	I am unhappy	(.32)

Interpretation of Table 25:
Factor VI

This short factor corresponds with items in Piers-Harris Factor I, Behavior.

Summary of Piers-Harris Factor
Analysis for Grade 9

Table 11 presented the order of the six factors designed by Piers-Harris and presented in his manual (pp. 24-26). However, the factors produced by the grade 9 sample appear in different order as is shown in Table 26.

None of the new six-factor findings matched the Piers-Harris factors. Obviously, there is a difference between the set of factors identified in this factor analysis of the new study and the set of factors presented by Piers-Harris (see Figure 12).

Table 26
 New Factor Analysis of Piers-Harris Instrument
 as Produced by Grade 9 Sample

Factors											
I Physical Appearance		II Happiness, Satisfaction, Popularity		III Social Adjustment in School		IV Intellectual & School Status		V Behavior & School Status		VI Behavior	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
54	.70	50	.66	61	.55	45	.60	16	-.67	75	.68
29	-.60	74	.63	15	-.55	49	-.60	14	.50	76	.62
8	.60	9	-.62	1	.55	18	.58	26	.47	13	.61
41	.58	51	-.54	4	-.53	70	-.57	62	.42	80	-.44
73	.58	31	.51	21	.53	56	.53				
17	.54	46	.46	58	.52	33	-.53				
43	-.53	60	-.42	40	.52	63	-.45				
19	.52	3	.42	59	.52	44	-.45				
52	.50	48	.41	27	-.49	66	.44				
60	.49			50	.47	30	-.42				
72	.47			39	-.43						
36	.47			79	.42						
6	-.46			37	.40						
69	.43										
39	.42										
28	-.40										
15	.40										

<u>Factor</u>	<u>Piers-Harris</u>	<u>New Finding</u>
I	Behavior	Physical Appearance
II	Intellectual & School Status	Happiness, Satisfaction & Popularity
III	Physical Appearance Attributes	Social Adjustment in School
IV	Anxiety	Intellectual & School Status
V	Popularity	Behavior & School Status
VI	Happiness & Satisfaction	Behavior

Figure 12. Comparison of Piers-Harris Factor Analysis to Grade 9 Sample

Factor Analysis of Piers-Harris for Grade 11

Table 27 contains Factor I: Behavior and School Performance and Status.

Table 28 contains Factor II: Satisfaction, Appearance, School Status.

Table 29 contains Factor 3: School Status and Physical Attributes.

Table 30 contains Factor IV: Family Relationships, Feelings of Importance.

Table 31 contains Factor V: Behavior.

Table 32 contains Factor VI: Social Skills and School Status.

Table 27
Loadings on Factor I of Piers-Harris
Instrument--Grade 11

Item No.	Behavior: School Performance and Status	Loading
80	I am a good person	-.67
56	I get into a lot of fights	.56
7	I get nervous when the teacher calls on me	.52
34	I often get into trouble	.52
25	I behave badly at home	.49
53	I am dumb about most things	.49
26	I am slow in finishing my school work	.49
59	My family is disappointed in me	.48
8	My looks bother me	.47
11	I am unpopular	.47
21	I am good in school work	-.45
5	I am smart	-.45
31	In school I am a dreamer	.45
14	I cause trouble to my family	.43
76	I can be trusted	-.43
64	I am clumsy	.42
68	I lose my temper easily	.42
22	I do bad things	.42
55	I have lots of pep	-.36
45	I hate school	.34
48	I am often mean to other people	.31
28	I am nervous	(.40)
19	I am good at making things with my hands	(-.31)

Interpretation of Table 27:
Factor I

This factor corresponds best with Pier-Harris Factor I, Behavior, but also includes various items relating to performance or status at school, such as: item 7, "I get nervous

when the teacher calls on me;" item 53, "I am dumb about most things;" and item 26, "I am slow finishing school work."

(Perhaps behavior and school adjustments are strongly related for the 11th graders.)

Table 28
Loadings on Factor II of Piers-Harris
Instrument--Grade 11

Item No.	Satisfaction, Appearance, School Status	Loading
16	I have a good figure	.73
50	I am unhappy	-.69
9	I will grow up to be an important person	.65
2	I am a happy person	.61
52	I am cheerful	.61
15	I am strong	.53
51	I have many friends	.52
53	I am dumb about most things	-.43
5	I am smart	.42
29	I have pretty eyes	.37
46	I am last to be chosen for games	-.36
47	I am sick a lot	-.35
44	I sleep well at night	.31
21	I am good in my school work	(.40)
70	I am a good reader	(.38)
33	My friends like my ideas	(.36)
25	I behave badly at home	(-.33)
28	I am nervous	(-.32)
64	I am clumsy	(-.31)
41	I have nice hair	(.31)

Interpretation of Table 28:
Factor II

This factor is mixed in terms of the Piers-Harris factor, but leads with items related to Appearance (items 16, 15, 29), Satisfaction (items 9, 2, 52), and items concerning School Status (items 51, 53, 46). (Perhaps 11th graders find personal satisfaction strongly tied to Appearance.)

Table 29
 Loadings on Factor III of Piers-Harris
 Instrument--Grade 11

Item No.	School Status, Physical Attributes	Loading
42	I often volunteer in school	.61
60	I have a pleasant face	.59
27	I am an important member of my class	.55
36	I am lucky	.51
23	I can draw well	.51
70	I am a good reader	.49
3	It is hard for me to make friends	-.45
10	I get worried when we have tests at school	-.44
22	I do bad things	-.41
49	My classmates think I have good ideas	.41
63	I am a leader in games and sports	.37
41	I have nice hair	.36
19	I am good making things with my hands	.34
77	I am different from other people	-.30
52	I am cheerful	(.35)
61	When I try to make things, things go wrong	(-.34)
55	I have lots of pep	(.34)
54	I am good looking	(.30)
24	I am good in music	(.30)

Interpretation of Table 29:
Factor III

This factor is mixed in terms of the Piers-Harris factors, but primarily combined School Status items (items 42, 27, 70) with Physical Appearance and Attributes items (items 60, 23, 63, 41). These items are noted in Figure 13.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
School Status	42	I often volunteer in school
	27	I am an important member of my class
	70	I am a good reader
Physical Attributes	60	I have a pleasant face
	23	I can draw well
	63	I am a leader in games and sports
	41	I have nice hair

Figure 13. Categories Related to Factor III of Piers-Harris--Grade 11 Sample

Table 30
Loadings on Factor IV of Piers-Harris
Instrument--Grade 11

Item No.	Family Relationships, Feelings of Importance	Loading
72	I like my brother/sister	-.70
17	I am an important member of my family	-.59
9	When I grow up I will be an important person	-.57
1	My classmates make fun of me	.56
65	I watch instead of play games	.49
8	My looks bother me	.46
59	My family is disappointed in me	.46
25	I behave badly at home	.44
43	I wish I were different	.39
54	I am good looking	-.39
61	When I try to make things, things go wrong	.38
20	I give up easily	.37
53	I am dumb about most things	(.38)
76	I can be trusted	(-.36)
47	I am sick a lot	(.34)
52	I am cheerful	(-.32)

Interpretation of Table 30:
Factor IV

This factor is mixed in terms of the Piers-Harris factors, but seems to focus primarily on Family Relationships (items 72, 17, 59), and Feelings of Importance (items 17, 9, 1, 65, 43). Included under "Importance" are items relating to popularity and physical attributes (see Figure 14).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Family Relationships	72	I like my brother/sister
	17	I am an important member of my family
	59	My family is disappointed in me
Feelings of Importance	17	I am an important member of my family
	9	When I grow up I will be an important person
	1	My classmates make fun of me
	65	I watch instead of play games
	43	I wish I were different

Figure 14. Categories Related to Factor IV of Piers-Harris--Grade 11 Sample

Table 31
Loadings on Factor V of Piers-Harris
Instrument--Grade 11

Item No.	Behavior (at Home) and Anxiety (plus Popularity)	Loading
62	I am picked on at home	.52
28	I am nervous	.50
78	I think bad thoughts	.50
33	My friends like my ideas	.50
35	I am obedient at home	.43
13	It is usually my fault when things go wrong	-.42
4	I am often sad	.38
58	I worry a lot	.37
69	I am popular with girls	.36
79	I cry easily	.34
44	I sleep well at night	-.31
24	I am good in music	.31
40	I feel left out of things	.31
66	I forget what I learn	(.37)
49	My classmates think I have good ideas	(.35)
53	I am dumb about most things	(.32)

Interpretation of Table 31:
Factor V

This factor includes several Piers-Harris Factor I items (Behavior) among the top-loading items, and also includes more Anxiety (Piers-Harris IV) items than the previous factors. Mixed in are some Popularity (Piers-Harris V) items. Behavior and Anxiety are linked in this factor (as is Anxiety and Popularity, to a lesser extent). Behavior is associated with home in this factor, rather than with school as in Factor I.

Table 32
Loadings on Factor VI of Piers-Harris
Instrument--Grade 11

Item No.	Social Skills with Associated Anxiety and School Status	Loading
6	I am shy	-.53
71	I'd rather work alone than with a group	.48
30	I can give a good report in front of the class	.45
66	I forget what I learn	.43
32	I pick on my brothers and sisters	-.35
37	I worry a lot	.32
56	I get into a lot of fights	(.40)
49	My classmates think I have good ideas	(.38)
68	I lose my temper easily	(.37)
3	It is hard for me to make friends	(-.35)
61	When I try to make things, things go wrong	(.34)
7	I get nervous when the teacher calls on me	(-.34)

Interpretation of Table 32:
Factor VI

This factor is mixed in terms of the Piers-Harris factors. Items reflect Social Skills (item 6, "I am shy;" item 71, "I'd rather work alone;" item 30, "I can give a good report in front of the class;" item 32, "I pick on my brothers and sisters"), as well as Associated Anxiety (item 6, "I am shy;" item 37, "I worry a lot;" item 7, "I get nervous"). Mixed in are several School Status items (items 66, 30, 49) which can be viewed as related to Socialization (see Figure 15).

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Social Skills	6	I am shy
	71	I would rather work alone than with a group
	30	I can give a good report in front of the class
	32	I pick on my brother and sister
Associated Anxiety	6	I am shy
	37	I worry a lot
	7	I get nervous

Figure 15. Categories Related to Factor VI of Piers-Harris--Grade 11 Sample

Summary of Piers-Harris Factor Analysis for Grade 11

Table 11 presented the order of the six factors designed by Piers-Harris and presented in his manual (pp. 24-26). However, the factors produced by the grade 11 sample appear in a different order. Table 33 presents the new factor analysis including item loadings.

It is obvious that there is a difference between the set of factors identified in this factor analysis of the new study and the set of factors presented by Piers-Harris (see Figure 16 for a comparative listing). It was concluded that the Piers-Harris factors did not measure the traits as identified by Piers-Harris. Based on this finding, the Piers-Harris test is not valid to be used to measure immigrant Arabic children's self-concept at the grade 11 level.

Table 33
New Factor Analysis of Piers-Harris Instrument
as Produced by Grade 11 Sample

Factors											
I Behavior, School Perfor- mance & Status		II Satisfaction, Appearance & School Status		III School Status, Physical Attributes		IV Family Relationship		V Behavior & Anxiety		VI Social Skills	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
80	-.67	16	.73	42	.61	72	-.70	62	-.52	6	-.53
56	.56	50	-.69	60	.59	17	.59	28	.50	71	.48
7	.52	9	.65	27	.55	9	-.57	78	.50	30	.45
34	.52	2	.61	36	.51	2	.56	33	.50	66	.43
25	.49	52	.61	23	.51	65	.49	35	.43	56	.40
53	.49	15	.53	70	.49	8	.46	13	-.42		
26	.49	51	.52	3	-.45	59	.46				
59	.48	53	-.43	10	-.44	25	.44				
8	.47	5	.42	22	.41						
11	.47	21	.40	49	.41						
21	-.45										
5	-.45										
31	.45										
14	.43										
76	.43										
64	-.42										
68	.42										
22	.42										
28	.40										

<u>Factor</u>	<u>Piers-Harris</u>	<u>New Finding</u>
I	Behavior	Behavior, School Performance & Status
II	Intellectual & School Status	Satisfaction, Appearance & School Status
III	Physical Appearance & Attributes	School Status, Physical Attributes
IV	Anxiety	Family Relationship
V	Popularity	Behavior & Anxiety
VI	Happiness & Satisfaction	Social Skills

Figure 16. Comparison of Piers-Harris Factor Analysis to Grade 11 Sample

Conclusion of Piers-Harris Factor Analysis

The research findings may conclude that a standardized test may have high validity to measure the general population, as is indicated, for example, in the Piers-Harris manual. However, if the test items fail to measure what they were designed to measure, then the results are of questionable value for the testee.

If the Piers-Harris test is constructed and standardized to measure the self-concept of the general population but fails to measure the self-concept of a culturally different sample such as the one under study (immigrant Arabic children), then the Piers-Harris test cannot be a valid measurement to predict self-concept for all children.

Therefore, future studies of the validity of the Piers-Harris test when used on culturally different subjects is recommended and supported by these research findings.

Factor Analysis of SCAMIN for
Total Sample

The SCAMIN test was administered using the same method of testing and under the same conditions as the Piers-Harris test. The same subjects (immigrant Arabic children in grades 7, 9 and 11 of Salina, Lowery and Fordson Schools of the Dearborn Public Schools) were used for the SCAMIN test as were used for the Piers-Harris test. For the distribution of the sample by grade, place of birth and sex, see Table 1. Additional data regarding grades 7, 9 and 11 are provided in Tables 2, 3 and 4, respectively.

For the SCAMIN instrument, the following data were produced by a factor analysis of the total sample.

Table 34 contains Factor I: Failure Avoidance (plus Goal Achievement Needs as Lower Loading Items).

Table 35 contains Factor II: Self Adequacy.

Table 36 contains Factor III: Positive Recognition, Responsibility; Plans for Future.

Table 37 contains Factor IV: Opinions of Others (plus Proving One's Abilities).

Table 34
Loadings on Factor I of SCAMIN
Instrument--Total Sample

Item No.	Failure Avoidance (plus Goal Achievement Needs as Lower Loading Items)	Loading
6	Teacher warns dropouts and looks at you	.55
21	Asked to leave for being a poor loser	.50
8	If you forgot to turn in a project	.49
40	Rumored poor attendance--to avoid report	.48
19	If completing best project for class	.48
54	Accused of not working as you should	.45
7	Couldn't memorize history dates	.45
55	Teacher warns dropouts and looks at you	.42
56	Criticism of book report--not original	.43
37	After writing one page--bored	.40
24	Ask counselor about college--talks jobs	.40
20	If you earned scholarship to college	.39
23	Relative disappointed over your grades	.37
53	Parents notice overdue science drawings	.35
52	Hundred percent on tests for 3 weeks	.35
50	Write grammar perfect stories	.35
34	Develop understanding to be friend	.34
3	Teacher noticed your improved grades	(.36)
60	Promised self new goals new mark period	(.33)
2	Parents pleased with schoolwork	(.31)

Interpretation of Table 34:
Factor I

This factor corresponds with the SCAMIN category, Failure Avoidance. Generally, lesser loading items fall into the SCAMIN Goal Achievement category.

Table 35
 Loadings on Factor II of SCAMIN
 Instrument--Total Sample

Item No.	Self-Adequacy	Loading
31	Asked to write report on chapter read	.50
46	Responsible, brother's homework correct	.48
48	Think how much you are learning	.47
13	Tried to stay awake to finish homework	.46
14	If doing a fairly hard puzzle in math	.46
45	Teacher asks read composition aloud	.41
47	New way to report information	.40
16	Think up clever speech	.40
49	Improve math with summer school	.34
25	Had interesting idea for science contest	.30
27	Told possible employer school and courses taken	(.31)

Interpretation of Table 35:
Factor II

This factor corresponds (with the exception of the three lowest loading items) to the SCAMIN factor, Self Adequacy.

Table 36
Loadings on Factor III of SCAMIN
Instrument--Total Sample

Item No.	Positive Recognition, Responsibility; Plans for Future	Loading
3	Teacher noticed you improved grades	-.49
63	On job asked to break in new workers	-.48
15	Argue classmate from quitting school	-.47
12	Consider friend's line of work	-.42
41	Prepare career plans with parents	-.40
2	Parents pleased with schoolwork	-.37
27	Told possible employee school and courses taken	-.35
60	Promised yourself new goals new mark period	-.35
28	Principal choose between you--others	-.33
33	Elected to manager boys, girls team	-.33
35	Neighbor's children look up to you	-.32
61	Class chooses 4 partners for class outing	-.31
9	Could earn a place on school team	-.31
19	If completing your best project for class	(-.32)
14	If doing a fairly hard puzzle in math	(-.31)

Interpretation of Table 36:
Factor III

This factor is mixed in terms of its correspondence to the SCAMIN factor. In general, it contains items related to positive recognition (items 3, 2, 33, etc.), recognition (items 63, 15, 33), and certain items focus on plans for the future (items 12, 41, 27, 60).

Table 37
Loadings on Factor IV of SCAMIN
Instrument--Total Sample

Item No.	Opinions of Others (plus Proving One's Abilities)	Loading
51	Visitors marvel at friendly school spirit	.42
42	Neighbor asks how creative you are	.42
4	Picked you to lead discussion group (teacher)	.37
18	Class voted you the typical HS student	.36
30	Prepare for job requires college (parents want)	.35
36	Remark on your speed learning rules (coach)	.33
43	Teacher describes jobs thinks you capable of	.33
58	First demonstrate new equip. voc class	.31
50	Write grammar perfect stories	(.34)
40	Rumored poor attendance to avoid report	(.33)
60	Promised self new goals new mark period	(.33)
41	Prepare career plans with parents	(.30)

Interpretation of Table 37:
Factor IV

This factor is mixed in terms of correspondence to the SCAMIN factors. Overall, the items seem to reflect the opinions of others (items 51, 42, 4, 18, 43, etc.) as well as situations in which the student must prove his abilities (items 30, 58, 50).

Summary of SCAMIN Factor Analysis
for Total Sample

Table 38 presents the new factor and item loadings of SCAMIN for the total sample. Since factor analysis of the SCAMIN was not included in the test manual, only the factors obtained in this study were presented. The four

Table 38
 New Factor Analysis of SCAMIN Instrument
 as Produced by Total Sample

Factors							
I Failure Avoidance		II Self-Adequacy		III Positive Recognition		IV Opinion of Others	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
6	.55	231	.50	203	-.49	251	.42
21	.50	246	.48	263	-.48	242	.42
8	.49	248	.47	215	-.47		
4	.48	213	.46	212	-.42		
19	.48	214	.46	241	-.40		
54	.45	245	.41				
7	.45	247	.40				
55	.42	216	.40				
56	.43						
37	.40						
24	.40						

factors emerging for the SCAMIN appeared as shown in Figure 17.

<u>Factor</u>	<u>SCAMIN</u>	<u>New Finding</u>
I	Goal Achievement Needs	Failure Avoidance
II	Failure Avoidance/Achievement Investment	Self-Adequacy
III	Role Expectation	Positive Recognition
IV	Self-Adequacy	Opinion of Others

Figure 17. Comparison of SCAMIN Factor Analysis to Total Sample

It was found that the SCAMIN test for total sample, according to the analysis of the four factors, did not correspond to the SCAMIN factors presented in the manual. Therefore, it was concluded that the SCAMIN construct validity as obtained through factor analysis did not measure the traits as identified by SCAMIN.

The following sections present the factor analysis of SCAMIN for grades 7, 9 and 11, seriation.

Factor Analysis of SCAMIN for Grade 7

Table 39 contains Factor I: Failure Avoidance.

Table 40 contains Factor II: Self Adequacy.

Table 41 contains Factor III: Parental and Peer Pressures, Expectations.

Table 42 contains Factor IV: Positive Recognition, Responsibility.

Table 39
Loadings on Factor I of SCAMIN
Instrument--Grade 7

Item No.	Failure Avoidance	Loading
6	Teacher warns dropouts and looks at you	.65
37	After writing one page--bored	.62
7	Couldn't memorize history dates	.59
5	Won contest--friends didn't congratulate	.57
40	Rumors poor attendance--avoids report	.49
58	First demonstrate new equip. voc. class	-.44
21	Asked to leave for being a poor loser	.44
24	Ask counselor about college--talk jobs	.43
8	If you forgot to turn in a project	.41
51	Visitors marvel at friendly school spirit	-.39
55	Teacher warns dropouts and looks at you	.35
56	Criticism of book report--not original	.35
59	Moved--think of fitting in	-.31
64	Go over record to find best abilities	-.30
46	Responsible brother's homework correct	-.33
3	Teacher noticed you improved grades	(.33)
53	Parents notice overdue science drawings	(.32)

Interpretation of Table 39:
Factor I

This factor corresponds highly with the SCAMIN Failure Avoidance (FA) category. It is primarily made up of items describing negative situations in which achievement is poor (items 37, 7) or threatened (items 6, 21) or not properly recognized (items 5, 24).

Table 40
Loadings on Factor II of SCAMIN
Instrument--Grade 7

Item No.	Self-Adequacy	Loading
13	Tried to stay awak to finish homework	.59
14	If doing a fairly hard puzzle in math	.50
48	Think how much you are learning	.48
31	Asked to write report on chapter read	.48
46	Responsible brother's homework correct	.47
38	Not allowed to take wanted class	-.45
16	Think up clever speech	.43
34	Develop understanding to be friend	.43
43	Improve math with summer school	.40
41	Prepare career plans with parents	.40
27	Told possible employer about school, courses	.38
9	Could earn a place on school team	.37
62	Try out for place on school team--play	.36
44	Excused from doing usual class project	-.35
23	Relative disappointed over your grades	.31
19	If completing your best project for class	.30
20	If you earned scholarship to college	(.37)
45	Teacher asks read composition aloud	(.32)
18	Class voted you the typical HS student	(.32)

Interpretation of Table 40:
Factor II

This factor corresponds highly with the SCAMIN Self-Adequacy (SA) factor with its higher loading items. Generally, items describe situations in which the student must put forth effort (items 13, 14, 31) or take responsibility (item 46).

Items belonging to the Role Expectations (RE) cate-

Peer Pressure: 57--Friend tells others your plans
 35--Neighbor's children look up
 18--Class votes . . . most typical HS
 student

Table 42
 Loadings on Factor IV of SCAMIN
 Instrument--Grade 7

Item No.	Positive Recognition, Responsibilities	Loading
63	On job asked to break in new workers	.63
12	Consider friend's line of work	.61
61	Choose four partners for class outing	.54
3	Teacher noticed you improved grades	.51
10	After ten years see yourself in movie	.39
1	Political discussion with parents	.38
15	Argue classmate from quitting school	.38
11	Discover things about yourself	.35
33	Elected to manage boys/girls team	.32
60	Promised yourself new goals new mark period	.31
4	Picked you to lead discussion group	.30
24	Ask counselor about college--talks jobs	(.33)

Interpretation of Table 42:
Factor IV

This factor is mixed in terms of the SCAMIN categories (but note absence of Failure Avoidance items). Generally, items reflect situations in which the student is given positive recognition or responsibility. These items are noted in Figure 18.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Positive Recognition	12	Adult asked you to consider his line of work
	3	Teacher noticed improved grades, etc.
Positive Responsibility	63	Asked to bring in workers
	61	Choose four partners, etc.

Figure 18. Categories Related to Factor IV of SCAMIN--Grade 7 Sample

Summary of SCAMIN Factor Analysis for Grade 7

Table 43 presents the new factor and item loadings of SCAMIN for the grade 7 sample.

It was found that Factor II, Self-Adequacy, responds highly to SCAMIN Factor IV. Therefore, the Self-Adequacy sub-scale is valid to measure the self-adequacy of immigrant Arabic children for grade 7. Also, Factor I, Failure Avoidance, corresponds highly to SCAMIN Factor II. However, the SCAMIN Achievement Investment did not appear in the new factors. See Figure 19 for a comparative listing of factors.

Table 43
 New Factor Analysis of SCAMIN Instrument
 as Produced by Grade 7 Sample

Factors							
I Failure Avoidance		II Self-Adequacy		III Parental & Peer Pressures		IV Positive Recognition	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
206	.65	213	.59	230	.57	263	.63
237	.62	214	.50	253	.45	212	.61
207	.59	248	.48	257	.46	261	.54
205	.57	231	.48	235	.45	203	.51
240	.49	246	.47	250	.44		
258	-.44	238	-.45	245	.42		
221	.44	216	.43	220	.40		
224	.43	234	.43				
208	.41	249	.40				
		241	.40				

<u>Factor</u>	<u>SCAMIN</u>	<u>New Finding</u>
I	Goal Achievement Needs	Failure Avoidance
II	Failure Avoidance/ Achievement Investment	Self-Adequacy
III	Role Expectation	Parental & Peer Pressure
IV	Self-Adequacy	Positive Recognition

Figure 19. Comparison of SCAMIN Factor Analysis to Grade 7 Sample

Factor Analysis of SCAMIN
for Grade 9

Table 44 contains Factor I: Personal Success Achieved or Threatened (combination of Goal Achievement and Failure Avoidance).

Table 45 contains Factor II: Self-Adequacy (plus Role Expectations).

Table 46 contains Factor III: Opinions of Others; Proving One's Abilities.

Table 47 contains Factor IV: Positive Recognition, Responsibility.

Table 44
Loadings on Factor I of SCAMIN
Instrument--Grade 9

Item No.	Personal Success Achieved or Threatened (combination of Goal Achievement and Failure Avoidance)	Loading
19	If completing best project for class	.68
62	Try out for place on school team--play	.65
6	Teacher warns dropouts and looks at you	.63
34	Develop understanding to be friend	.62
56	Criticism of book report--not original	.62
54	Accused of not working as you should	.61
21	Asked to leave for being a poor loser	.58
20	If you earned scholarship to college	.55
60	Promised yourself new goals new mark period	.54
38	Not allowed take wanted class	.53
3	Teacher noticed you improved grades	.52
8	If you forgot to turn in a project	.51
52	Hundred percent on tests for three weeks	.50
17	Help friends with assignment	.49
7	Couldn't memorize history dates	.48
11	Discover things about yourself	.46
9	Could earn a place on school team	.46
24	Ask counselor about college--talks jobs	.45
5	Won contest--friends didn't congratulate	.42
55	Teacher warns dropouts and looks at you	.40
25	Had interesting idea for science contest	.39
37	After writing one page--bored	.38
22	Acted shy or loud and not noticed it	.34

Interpretation of Table 44:
Factor I

This factor is most related to the SCAMIN Failure Avoidance (FA) factor which is made up of negative situa-

tions. Mixed in, however, are Goal/Achievement Needs (GAN) items which are positive situations. Overall, it seems the student's achievement or development is at stake, whether positive or negatively awarded. Figure 20 reflects these items.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Positive Reward for Achievement	19	Completing best project
	20	Earn scholarship
Negative Reward Threatening Achievement	6	Teacher warns dropouts and looks at you
	54	Accused of not working as you should

Figure 20. Categories Related to Factor I of SCAMIN--Grade 9 Sample

Table 45
Loadings on Factor II of SCAMIN
Instrument--Grade 9

Item No.	Self-Adequacy (plus Role Expectations)	Loading
45	Teacher asks read composition aloud	.63
48	Think how much you are learning	.58
49	Improve math with summer school	.56
46	Responsible--brother's homework correct	.51
16	Think up clever speech	.51
14	If doing a fairly hard puzzle in math	.48
24	Ask counselor about college--talks jobs	-.47
47	New way to report information	.46
13	Tried to stay awake and finish homework	.42
27	Told possible employer about school and courses taken	.39
59	Moved--think of fitting in	.38
39	Want extra activities listed--had none	.38
44	Excused from doing usual class project	.38
25	Had interesting idea for science contest	.38
57	Listen friend tell you plan after graduation	.37
58	First demonstrate new equip. voc. class	.34
4	Picked you to lead discussion group	(.37)

Interpretation of Table 45:
Factor II

High loadings on this factor correspond to SCAMIN Self-Adequacy (SA) items and lesser loadings correspond to SCAMIN Role Expectations (RE) category. Overall, these seem to be situations that might challenge or threaten the student's confidence or feelings of self-adequacy--situations in which one might fear failure or experience feelings of

failure. Figure 21 presents items which fall into the areas of fear of and experience of failure.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Fear of Failure	45	Having to read composition aloud
	46	Being responsible for brother's having work being correct
	14	Doing a hard puzzle
Experience of Failure	49	Being told math might improve in summer school
	24	Want and talk about college, counselor talks about jobs
	48	Self-evaluation of how much has been learned

Figure 21. Categories Related to Factor II
of SCAMIN--Grade 9 Sample

Table 46
Loadings on Factor III of SCAMIN
Instrument--Grade 9

Item No.	Opinions of Others; Proving One's Abilities	Loading
40	Rumored poor attendance--to avoid report	.69
42	Neighbor asks how creative you are	.64
4	Picked you to lead discussion group	.51
50	Write grammar perfect stories	.47
31	Asked to write report on chapter read	.43
51	Visitors marvel at friendly school spirit	.43
23	Relative disappointed over grades	.43
18	Class voted you the typical HS student	.37
63	On job--asked to break in new workers	-.37
58	First to demonstrate new equip. voc. class	.34
36	Remark on your speed learning rules (coach)	.33
26	Reporter for interesting topic	.31
30	Prepare for job requires college	.30
55	Teacher warns dropouts and looks at you	(.37)
64	Go over record to find best abilities	(.35)

Interpretation of Table 46:
Factor III

This factor is mixed in its correspondence to the four SCAMIN categories, but is most related to the Goal/Achievement Needs (GAN) category. In general, items seem to involve: (1) the opinions of others regarding the student's abilities or achievements; and (2) having to prove abilities to others (in particular, by writing reports in school). Figure 22 presents items pertinent to these two areas.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Opinion of Neighbors and Relatives	42	Neighbor asks how creative you are
	51	Visitors marvel at friendly school spirit
	23	Relative disappointed over grades
	18	Class voted you the typical HS student
	40	Rumored poor attendance to avoid report
Proving Abilities	50	Write grammar perfect stories
	4	Picked you to lead discussion group
	31	Asked to write report on chapter read

Figure 22. Categories Related to Factor III of SCAMIN--Grade 9 Sample

Table 47
Loadings on Factor IV of SCAMIN
Instrument--Grade 9

Item No.	Positive Recognition, Responsibility	Loading
28	Principal choose between you--others	.63
9	Could earn a place on school team	.57
35	Neighbor's children look up to you	.53
15	Argue classmate from quitting school	.52
41	Prepare career plans with parents	.52
12	Consider friend's line of work	.49
33	Elected to manage boys/girls team	.46
29	Use of car depended upon grades	.45
2	Parents pleased with schoolwork	.44
64	Go over record to find best abilities	.37
31	Asked to write report on chapter read	(-.37)
63	On job asked to break in new workers	(.36)

Interpretation of Table 47:
Factor IV

This factor corresponds most highly with the Role Expectations (RE) items, although lesser loading items correspond to Self-Adequacy (SA) items. In general, items in this factor describe positive recognition and feelings of adequacy. Such items include: positive recognition from principal (item 28); neighbor children (item 35); parents (item 2); and positive self-adequacy indicated by perceived ability to earn place on team (item 9); persuading a friend (item 15), being elected to manage team (item 33), and others. (All imply that others respect the student's ability--and that student perceives himself positively.)

Summary of SCAMIN Factor Analysis
for Grade 9

Table 48 presents the new factor and item loadings of SCAMIN as produced by the grade 9 sample.

It was found that Factor II, Self-Adequacy, corresponds highly to SCAMIN Factor IV. Therefore, the Self-Adequacy sub-scale is valid to measure the self-adequacy of immigrant Arabic children at the grade 9 level.

Figure 23 provides a comparative listing of factors for the grade 9 sample.

Table 48
New Factor Analysis of SCAMIN Instrument
as Produced by Grade 9 Sample

Factors							
I Personal Success Achieved		II Self-Adequacy		III Opinion of Others		IV Positive Recognition	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
19	.68	45	.63	40	.69	28	.63
62	.65	48	.58	42	.64	9	.57
6	.63	49	.56	4	.51	35	.53
34	.62	46	.51	50	.47	15	.52
56	.62	16	.51	31	.43	41	.52
54	.61	14	.48	51	.43	12	.49
21	.58	24	-.47	23	.43	33	.46
20	.55	47	.45			29	.45
60	.54	13	.42			2	.44
38	.43						
3	.42						
8	.41						
42	.50						
17	.49						
7	.48						
11	.46						
9	.46						
24	.45						
5	.42						
55	.40						

<u>Factor</u>	<u>SCAMIN</u>	<u>New Finding</u>
I	Goal/Achievement Needs	Personal Success Achieved
II	Failure Avoidance/Achievement Investment	Self-Adequacy
III	Role Expectations	Opinion of Others
IV	Self-Adequacy	Positive Recognition

Figure 23. Comparison of SCAMIN Factor Analysis to Grade 9 Sample

Factor Analysis of SCAMIN
for Grade 11

Table 49 contains Factor I: Confidence, Achievement; Plans for Future Success (combination of Goal/Achievement Needs [GA], Role Expectations [RE], Self-Adequacy[SA]).

Table 50 contains Factor II: Failure Avoidance

Table 51 contains Factor III: Self-Adequacy (emphasis on Thinking and Working Independently).

Table 52 contains Factor IV: Pressure to Perform Academically, Socially.

Table 49
 Loadings on Factor I of SCAMIN
 Instrument--Grade 11

Item No.	Confidence, Achievement; Plans for Future Success (combination GA, RE, SA)	Loading
60	Promised self new goals new mark period	.55
43	Teacher describes jobs thinks you capable	.55
17	Help friends with assignment	.55
61	Choose four partners for class outing	.52
30	Prepare for job requires college	.52
1	Political discussion with parents	.51
3	Elected to manage boys/girls teams	.49
19	If completing your best project for class	.48
18	Class voted you typical HS student	.47
34	Develop understanding to be friend	.47
14	Doing a hard puzzle	.45
11	Discover things about self	.45
29	Use of car depended on grades	.45
28	Principal choose between you--others	.45
27	Told possible employer school and courses taken	.44
63	On job asked to break in new workers	.41
62	Try out for place on school team--play	.40
42	Neighbor asks how creative you are	.40
2	Parents pleased with schoolwork	.40
32	Co-op, citizen for passing grade	.39
5	Won contest, no congratulations	-.39
10	After ten years, see self in movie	.39
35	Neighbor's children look up to you	.38
48	Think how much you are learning	.37
20	If you earned scholarship to college	.32
41	Prepare career plans with parents	(.36)

Interpretation of Table 49:
Factor I

This factor is mixed in terms of the SCAMIN categories, but Failure Avoidance (FA) items are not included in this factor. Overall, items describe situations in which the student would feel confident or successful. These items are presented under two categories in Figure 24.

<u>Category</u>	<u>Item No.</u>	<u>Item</u>
Feel Confident or Successful	17	Can help friend with assignment
	19	Completing best project
	3	Teacher notices improved grades, etc.
Preparing for Future Success	60	Promised new goals
	43	Teacher describes jobs
	30	Prepare for job that requires college, etc.

Figure 24. Categories Related to Factor I of SCAMIN--Grade 11 Sample

Table 50
Loadings on Factor II of SCAMIN
Instrument--Grade 11

Item No.	Failure Avoidance	Loading
24	Ask counselor about college--talks jobs	.79
23	Relative disappointed over grades	.62
54	Accused of not working as you should	.60
8	If you forgot to turn in a project	.59
55	Teacher warns dropouts and looks at you	.54
56	Criticism of book report--not original	.54
4	Picked you to lead discussion group	.44
7	Couldn't memorize history dates	.43
41	Prepare career plans with parents	.41
42	Neighbor asks how creative you are	.41
21	Asked to leave for being poor loser	.35
6	Teacher warns dropouts and looks at you	.34
44	Excused from doing usual class project	-.31

Interpretation of Table 50:
Factor II

This factor corresponds highly with the Failure Avoidance (FA) category of the SCAMIN test. Generally, items represent situations in which failure is threatened or experienced (highest loading items above), or situations in which student might feel pressured or threatened (specifically, items 4, lead group; 41, plan career with parents, etc.)

Table 51
Loadings on Factor III of SCAMIN
Instrument--Grade 11

Item No.	Self-Adequacy (emphasis on Thinking and Working Independently)	Loading
31	Asked to write report on chapter read	.76
47	New way to report information (think of)	.66
12	Consider friend's line of work	.54
58	First to demonstrate new equip. voc. class	.52
16	Think up clever speech	.47
14	If doing a fairly hard puzzle	.45
15	Argue classmate from quitting school	.30
11	Discover things about yourself	(.35)
48	Think how much you are learning	(.30)
45	Teacher asks read composition aloud	(.30)

Interpretation of Table 51:
Factor III

This factor corresponds highly with the SCAMIN factor Self-Adequacy (SA), with some items from the Role Expectations (RE) category. In general, items reflect a positive self-concept and recognition from others. Includes are items related to confidence in one's ability to think and work independently (items 16, 47, 11, etc.).

Table 52
Loadings on Factor IV of SCAMIN
Instrument--Grade 11

Item No.	Pressure to Perform Academically, Socially	Loading
46	Responsible--brother's homework correct	.59
37	After writing one page--bored	.57
40	Rumored poor attendance to avoid report	.55
26	Reporter for interesting topic (but not well informed)	-.52
62	Try out for place on school team--play	-.48
39	Want extra activities listed--had none	.46
38	Not allowed to take wanted class	.43
34	Develop understanding to be friend	.41
59	Moved--think of fitting in	.39
45	Teacher asks read composition aloud	-.39
32	Cooperation, citizenship for passing	(-.37)
63	On job, asked to break in new workers	(-.33)

Interpretation of Table 52:
Factor IV

This factor is mixed in terms of its correspondence to the four SCAMIN categories. In general, items seem to describe situations in which the student would feel pressured and perform better academically (items 46, 37, 40, 26, etc.), or to perform well socially (items 62, 34, 32).

Summary of SCAMIN Factor Analysis
for Grade 11

Table 53 presents the new factor and item loadings of SCAMIN for the grade 11 sample

It was found that Factor II, Failure Avoidance, corresponds highly to SCAMIN Factor II. The other factors are

Table 53
 New Factor Analysis of SCAMIN Instrument
 as Produced by Grade 11 Sample

Factors							
I Confidence Achievement		II Failure Avoidance		III Self-Adequacy		IV Pressure & Perform	
Item No.	Loading	Item No.	Loading	Item No.	Loading	Item No.	Loading
60	.55	24	.79	31	.76	46	.59
43	.55	23	.62	47	.66	37	.57
17	.55	54	.60	12	.54	40	.55
61	.52	8	.59	58	.52	26	-.52
30	.52	55	.54	16	.47	62	-.48
1	.51	56	.54	14	.45	39	.46
3	.50	4	.44			38	.43
33	.49	7	.43			38	.41
19	.48	41	.41				
18	.47	42	.41				
34	.47						
14	.45						
11	.45						
29	.45						
28	.45						
27	.44						
25	.44						
63	.41						
62	.40						
42	.40						
2	.40						

composed of new item loadings. A comparative listing of SCAMIN factors with new research findings is presented in Figure 25.

<u>Factor</u>	<u>SCAMIN</u>	<u>New Finding</u>
I	Goal/Achievement Needs	Confidence, Achievement
II	Failure Avoidance/Achievement Investment	Failure Avoidance
III	Role Expectation	Self-Adequacy
IV	Self-Adequacy	Pressure and Perform

Figure 25. Comparison of SCAMIN Factor Analysis to Grade 11 Sample

Conclusion of SCAMIN Factor Analysis

It should be noted that the differences among the three grade levels (7, 9 and 11) in terms of the SCAMIN factors produced are in line with the univariate F values reported in the discriminant analyses of the three grade levels. These analyses revealed that SCAMIN is a good discriminator among the grade levels, as is the sub-category, Role Expectations, while the sub-categories of Failure Avoidance and Motivation are significant discriminators beyond the .01 level (see Discriminant Analysis section for specific findings).

More study of the SCAMIN validity should be considered in the future to validate the scale, not only for immigrant Arabic children, but for others who are culturally different subjects.

Reliability Findings

Analysis of Piers-Harris and SCAMIN
Reliability--Total Test
by Total Sample

Analysis of partial correlation coefficients together with degrees of freedom and significance between Piers-Harris with SCAMIN total score are presented in Table 54. This data analysis yields low correlations when the variables are held constant, i.e., Piers-Harris/SCAMIN do not correlate significantly with each other. This means that one of the tests does not measure what the other test measures, or both tests do not measure what they were designed to measure.

Table 54
Partial Correlation Coefficients Together with Degrees
of Freedom and Significance Between Piers-Harris
and SCAMIN--Total Score

Variable Held Constant	Coefficient	DF	Significance
Sex	.2232	223	.001
School	.2108	223	.001
Grade	.2313	223	.001
Age	.2355	223	.001
U.S. Birth	.2106	223	.001
U.S. Years	.2118	223	.001
School, Grade	.2491	222	.001
School, Age	.2463	222	.001
School, U.S. Birth	.2095	222	.001
School, U.S. Years	.2108	222	.001
Grade, Age	.2280	222	.001
Grade, U.S. Birth	.2306	222	.001

Table 54--continued

Variable Held Constant	Coefficient	DF	Significance
Grade, U.S. Years	.2313	222	.001
Age, U.S. Birth	.2359	222	.001
Age, U.S. Years	.2356	222	.001
U.S. Birth, U.S. Years	.2101	222	.001
School, Grade, Age	.2442	221	.001
School, Grade, U.S. Birth	.2491	221	.001
School, Grade, U.S. Years	.2492	221	.001
School, U.S. Birth, U.S. Years	.2090	221	.001
School, Age, U.S. Birth	.2477	221	.001
School, Age, U.S. Years	.2480	221	.001
Age, U.S. Birth, Grade	.2289	221	.001
Age, U.S. Years, Grade	.2279	221	.001
U.S. Birth, U.S. Years, Grade	.2304	221	.001
Age, U.S. Birth, U.S. Years	.2357	221	.001
School, Age, U.S. Birth, Grade	.2455	220	.001
School, Age, U.S. Years, Grade	.2444	220	.001
School, U.S. Birth, U.S. Years, Grade	.2485	220	.001
School, Age, U.S. Birth, U.S. Years	.2470	220	.001
Age, U.S. Birth, U.S. Years, Grade	.2284	220	.001
School, Age, U.S. Birth, U.S. Years, Grade	.2448	219	.001

Reliability Analysis Predicted by
Piers-Harris--Total Test
by Total Sample

By conducting an analysis of variance between the Piers-Harris Part I and Part II, it was found that an F-ratio of 169.12 with a probability of .001 existed which means that there is a significant difference between the two parts

(see Table 55). Furthermore, by tabulating the odd numbered and even numbered items and the factor and factor loadings for the Piers-Harris test, it is obvious that the two halves are not arranged to be equivalent in any way (see Table 56). One would expect, therefore, a low correlation between scores based upon the odd-even scores. Also, one would expect the Kuder-Richardson or Alpha r to be the appropriate method in measuring the reliability for the Piers-Harris scale. Based on this finding, the Kuder-Richardson measure of reliability for Piers-Harris will be reported and will present Spearman-Brown measures and Guttman methods to support the finding.

On the Kuder-Richardson Formula 20 or Alpha test, the reliability coefficient was .47; using the Spearman-Brown formula, the resulting coefficient was .47; and the Guttman method reliability coefficient was .47 (see Table 57).

The reliability coefficient of the total test was considerably low to consider Piers-Harris a reliable measure of self-concept of immigrant Arabic children; it is therefore not recommended for group or individual decision-making for immigrant Arabic children. It should be noted that the factor analysis findings of the Piers-Harris total test, when used on the total sample, are in agreement with the total test reliability findings.

Table 55
 Analysis of Variance for Piers-Harris Instrument--
 Total Test by Total Sample

Source of Variation	SS	DF	Mean Square	F	Probability
Between People	60.75044	227	0.26762		
Within People	4491.82500	18012	0.24938		
Between Measures	1917.74211	79	24.275222	169.11944	.001
	2574.08289	17933	0.14354		
Non-additivity	1.66265	1	1.66265	11.59010	.00068
Balance	2572.42025	17932	0.14345		
Total	4552.57544	18239	0.24961		
Grand Mean =	0.47982				

Table 56
Piers-Harris Odd-Even Items Along with
Factor and Factor Loading

Odd-Items	Factors	Even-Items	Factors
1	V (-.40)	2	VI (.65)
3	V (-.55)	4	I (.30)
5	II (-.63)	6	IV (-.35)
7	II (.39); IV (-.54)	8	III (.40); IV (-.33); IV (-.35)
9	II (-.31)	10	IV (-.47)
11	II (.43); V (-.47)	12	I (-.50); II (-.30)
13	I (.36)	14	I (.55)
15	III (-.41)	16	II (-.40)
17	II (.32)	18	
19		20	IV (-.33)
21	II (-.66)	22	I (.66)
23		24	
25	I (.62)	26	II (.51)
27	II (-.39); III (-.36)	28	IV (-.49)
29	III (-.52)	30	II (-.48)
31	I (.45)	32	I (.31)
33	II (-.38); V (.37)	34	I (.60)
35	I (-.64)	36	VI (-.33)
37	IV (-.57)	38	VI (-.33)
39	VI (.60)	40	IV (-.38); V (-.49)
41	III (-.60)	42	II (-.46)
43	VI (-.57)	44	IV (.30)
45		46	V (-.61)
47		48	I (.48)
49	V (.40); II (-.43) III (-.35)	50	VI (-.62)
51	V (.56)	52	VI (.42)

Table 56--continued

Odd-Items	Factors	Even-Items	Factors
53	II (.56)	54	III (-.74)
55	III (-.31); IV (.30)	56	I (.42)
57	II (-.30); III (-.33); V (.34)	58	V (-.62)
59	I (.35); VI (-.39)	60	III (-.61)
61		62	
63	III (-.40)	64	I (.38)
65		66	II (.53)
67	I (-.37)	68	
69	V (.32)	70	II (-.55)
71		72	
73	III (-.56)	74	IV (-.55)
75		76	I (-.53)
77	V (-.35)	78	I (.54)
79	IV (-.57)	80	I (-.50)
A	Male Sex: IV (.51)		

Source: Piers-Harris Manual, pp. 24-26.

Table 57

Total Reliability Coefficient for Piers-Harris--
Total Test by Total Sample

	Guttman	Spearman-Brown	Kuder-Richardson
No. of Cases	228	228	228
No. of Items	80	80	80
Reliability Coefficient:	.47	.47	.47

Reliability Analysis for Piers-Harris by
Sub-Scales by Total Sample

The Piers-Harris manual did not report sub-scale reliability coefficients. The Piers-Harris test consists of six sub-scales, each of which is designed by the author to measure particular attributes. These sub-scales will be discussed individually in the following sections.

Scale I: Behavior

This scale consists of 18 items designed and standardized by the author to measure behavior. The results of this study indicated a reliability coefficient of .32 on Spearman-Brown, .31 utilizing the Guttman method, and .40 on Kuder-Richardson (see Table 58). It was concluded that this scale is not significantly reliable to be used for individual or group decision-making for immigrant Arabic children.

Scale II: Intellectual and School Status

The scale consists of 18 items designed by Piers-Harris to measure the intellectual abilities and school status. The findings indicate a reliability coefficient of .32 utilizing Kuder-Richardson, .25 utilizing Spearman-Brown, and .25 utilizing Guttman (see Table 58). It was concluded that this scale is not significantly reliable to be used for individual or group decision-making for immigrant Arabic children.

Table 58
 Reliability Analysis for Piers-Harris Instrument--
 Sub-Scales by Total Sample

Scale	Guttman	Spearman-Brown	Kuder-Richardson
I. Behavior	.31	.32	.40
II. Intellectual and School Status	.25	.25	.32
III. Physical Appearance & Attributes	.52	.52	.63
IV. Anxiety	.18	.18	.41
V. Popularity	-.37	-.38	.24
VI. Happiness and Satisfaction	.014	.015	-.34

Scale III: Physical Appearance and Attributes

This scale consists of 12 items designed by Piers-Harris to measure the attributes and physical appearance. The findings indicated a reliability coefficient of .52 on Spearman-Brown, .63 utilizing Kuder-Richardson, and .52 using Guttman (see Table 58). It was concluded that this scale is not significantly reliable for individual decision-making for immigrant Arabic children. However, it may be used for group decision-making.

Scale IV: Anxiety

The scale is composed of 13 items designed by Piers-Harris to measure anxiety. The findings indicated a reliability coefficient of .41 utilizing Kuder-Richardson, .18 utilizing Spearman-Brown, and .18 applying Guttman (see Table 58). It was concluded that this scale is not significantly reliable for group or individual decision-making for immigrant Arabic children.

Scale V: Popularity

This scale is composed of 12 items designed by Piers-Harris to measure popularity. The findings indicated a reliability coefficient of .24 utilizing Kuder-Richardson, -.38 utilizing Spearman-Brown, and -.37 utilizing Guttman (see Table 58). It was concluded that this scale is not significantly reliable for group or individual decision-making for immigrant Arabic children.

Scale VI: Happiness and Satisfaction

This scale is composed of 9 items designed by Piers-Harris to measure happiness and satisfaction. The findings indicated a reliability coefficient of $-.34$ utilizing Kuder-Richardson, $.015$ utilizing Spearman-Brown, and $.014$ utilizing Guttman (see Table 58). It was concluded that this scale is not reliable for group or individual decision-making for immigrant Arabic children.

Reliability Analysis of Piers-Harris by
Total Test by Grade Level

Presented below are the total reliability test results by the three grade levels and by the three methods of estimating the reliability coefficient.

Grade 7

For grade 7, the reported reliability coefficient is $.50$ on Kuder-Richardson, $.54$ utilizing Spearman-Brown, and $.53$ on Guttman (see Table 59). The consistency of the results when applying the three methods suggests that the Piers-Harris test is not significantly reliable to be used for individual decision-making, but it can be used for group decision making for immigrant Arabic children as demonstrated by the grade 7 sample.

Although the findings indicated a relatively higher reliability coefficient to suggest that the test might be used for group decision-making, it should be noted that the factor analysis of the Piers-Harris test for the 7th grade

Table 59
 Reliability Coefficient for Piers-Harris Instrument--
 Total Test by Grade Levels

	Grade 7			Grade 9			Grade 11		
No. of Cases	88			70			70		
No. of Items	80			80			80		
Methods*	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>
Reliability Coefficient:	.53	.54	.50	.39	.37	.33	.46	.46	.53

*GUTT = Guttman

S-B = Spearman-Brown

K-R = Kuder-Richardson

sample was not in agreement with the reliability findings. Therefore, it was concluded that the Piers-Harris test is not recommended to be used for group or individual decision-making to measure the self-concept of this group of immigrant Arabic children.

Grade 9

For grade 9, the reported reliability coefficient is .33 utilizing Kuder-Richardson, .37 applying Spearman-Brown, and .39 utilizing Guttman (see Table 59). It appears that the three methods of estimating are in near agreement with each other. It was concluded that this scale is not significantly reliable to be used for group or individual decision-making for immigrant Arabic children.

It should be noted that the factor analysis of the Piers-Harris test for the 9th grade sample is in agreement with the reliability findings. Therefore, it was concluded that the Piers-Harris test is not recommended to be used in measuring self-concept of this group of Arabic immigrant children.

Grade 11

For grade 11, Piers-Harris reported a reliability coefficient of .53 utilizing Kuder-Richardson, .46 utilizing Spearman-Brown, and .46 utilizing Guttman, confirming the Spearman-Brown method (see Table 59). It was concluded that the scale is not significantly reliable to be used for individual decision-making, but it may be used for group deci-

sion-making for immigrant Arabic children.

It should be noted that the factor analysis findings of the Piers-Harris test for the 11th grade sample are not in agreement with the reliability findings. Therefore, it was concluded that the Piers-Harris test is not recommended to be used in measuring self-concept of this group of Arabic immigrant children.

Summary of Piers-Harris Reliability Analysis

The Piers-Harris reliability analysis by grade level and by total sample suggested that the test is not reliable to measure the self-concept of this group of immigrant Arabic children. It was concluded that the Piers-Harris test should be subjected to several factor analytical studies before considering using this test as a criterion measure of self-concept on culturally different subjects.

Total Reliability Coefficient for SCAMIN

Two major aspects in this study were measured by SCAMIN: (a) to validate the SCAMIN measure which was used to evaluate the self-concepts of the immigrant Arabic children in their adjustment to the American school; and (b) to measure the self-concepts of a sample of immigrant Arabic children in Dearborn, Michigan, to see if they possess high self-concepts and, therefore, are able to control their future plans for a better life as Arabic-American citizens.

The SCAMIN manual reported a reliability of .93 when

utilizing Spearman-Brown on the SCAMIN secondary form. In this study, .90 and above was considered acceptable for individual decision-making and .50 and above for group decision-making. The following data were produced by the grade levels and by the three methods of reliability estimation.

Reliability Analysis for SCAMIN--
Total Test by Total Sample

The reported reliability coefficient is .73 utilizing Spearman-Brown, .73 utilizing Kuder-Richardson, and .73 utilizing Guttman as methods of estimation (see Table 60). The three methods are in agreement with each other. It, therefore, is concluded that SCAMIN is reliable for use in group decision-making for the total sample under study. However, it is not suggested to be used for individual decision-making for immigrant Arabic children.

Table 60
Total Reliability Coefficient for SCAMIN--
Total Test by Total Sample

	Guttman	Spearman-Brown	Kuder-Richardson
No. of Cases	228	228	228
No. of Items	64	64	64
Reliability Coefficient:	.73	.73	.73

Reliability Analysis of SCAMIN by
Total Test by Grade Level

Grade 7

The reported reliability coefficient is .63 utilizing Spearman-Brown, .74 utilizing Kuder-Richardson, and .63 utilizing Guttman (see Table 61). It was concluded that the reliability of the SCAMIN test is relatively low to be considered of value in measuring the self-concept of immigrant Arabic children for individual decision-making. However, SCAMIN may be used for group decision-making to measure immigrant Arabic children's self-concept for this grade level.

Grade 9

The reported reliability coefficient utilizing Spearman-Brown is .81; utilizing Kuder-Richardson it is .83; and utilizing Guttman it is .80 (see Table 61). For grade 9, the reliability of the SCAMIN test is relatively high. Therefore, SCAMIN may be used for group decision-making for this group of immigrant Arabic children.

Grade 11

The reported reliability coefficient for grade 11 utilizing Spearman-Brown is .75; utilizing Kuder-Richardson it is .83; and utilizing Guttman it is .75 (see Table 61). For grade 11, the reliability of the SCAMIN test is relatively low to be considered of value in measuring the self-concept of the immigrant Arabic children for individual decision-making. However, SCAMIN may be used for group decision-making for this group of immigrant Arabic children.

Table 61
 Reliability Coefficient for SCAMIN Instrument--
 Total Test by Grade Levels

	Grade 7			Grade 9			Grade 11		
No. of Cases	88			70			70		
No. of Items	64			64			64		
Methods*	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>	<u>GUTT</u>	<u>S-B</u>	<u>K-R</u>
Reliability Coefficient:	.63	.63	.74	.80	.81	.83	.75	.75	.83

*GUTT = Guttman

S-B = Spearman-Brown

K-R = Kuder-Richardson

Reliability Analysis for SCAMIN by
Sub-Scales by Total Sample

The SCAMIN test has four scales: (I) Goal/Achievement Needs, (II) Failure Avoidance, (III) Role Expectations, and (IV) Self-Adequacy. The first two scales combine to yield an achievement motivation score; the second two combine to yield a total self-concept score. The Self-Concept score will be presented as Scale V.

Scale I: Goal/Achievement
Needs

This scale consists of 16 items designed by SCAMIN and was utilized in this study to measure immigrant Arabic children's goal/achievement needs and also to determine the reliability of the scale. The reported reliability coefficient is .63 utilizing Kuder-Richardson, .55 utilizing Spearman-Brown, and .55 utilizing Guttman (see Table 62). Spearman-Brown and Guttman are in agreement with each other. The Kuder-Richardson indicated relatively high reliability for the scale. However, the reliability coefficient for Goal/Achievement Needs is considerably low to be of value in estimating the achievement needs of the immigrant Arabic children when used for individual decision-making, but it may be used for group decision-making for immigrant Arabic children.

Scale II: Failure Avoidance

This scale consists of 16 items designed by SCAMIN and was utilized to evaluate the subjects' Failure Avoidance and also to estimate the reliability of the scale. The re-

Table 62
 Reliability Analysis for SCAMIN Instrument--
 Sub-Scales by Total Sample

	Guttman	Spearman-Brown	Kuder-Richardson
I. Goal/Achievement Needs (GAN)	.55	.55	.63
II. Failure Avoidance (FA)	.69	.60	.76
III. Role Expectations (RE)	.51	.51	.55
IV. Self-Adequacy (SA)	.64	.65	.64
V. RE + SA = Self-Concept	.90	.91	.81

ported reliability coefficient is .76 utilizing Kuder-Richardson, .60 when utilizing Spearman-Brown, and .69 when utilizing Guttman (see Table 62). Spearman-Brown and Guttman are in agreement with each other. The Kuder-Richardson method indicated relatively high reliability for the scale. The finding indicated that the reliability coefficient is considerably low to be of value in estimating the Failure Avoidance of the immigrant Arabic children when used for individual decision-making, but it may be used for group decision-making for immigrant Arabic children.

Scale III: Role Expectations

This scale consists of 16 items designed by SCAMIN and was utilized to measure Role Expectations. The reported reliability coefficient is .55 utilizing Kuder-Richardson, .51 when utilizing Spearman-Brown, and .51 when utilizing Guttman (see Table 62). Spearman-Brown, Guttman and Kuder-Richardson are in near agreement with each other for this scale. However, the findings indicated that the reliability coefficient of this SCAMIN sub-scale is not significantly high to be considered of value in estimating the immigrant Arabic children when used for individual decision-making, but may be used for group decision-making for immigrant Arabic children.

Scale IV: Self-Adequacy

This scale consists of 16 items designed by SCAMIN to measure Self-Adequacy and utilized in this study to mea-

sure the subjects' Self-Adequacy. The reported reliability coefficient is .64 utilizing Kuder-Richardson, .65 utilizing Spearman-Brown, and .64 utilizing Guttman (see Table 62). The Spearman-Brown, Guttman and Kuder-Richardson methods are in agreement with each other for this scale. However, the reliability coefficient of this SCAMIN sub-scale is not significantly high to be considered of value in estimating Self-Adequacy of immigrant Arabic children when used for individual decision-making, but it may be used for group decision-making for immigrant children.

Scale V: Self-Concept

The reported reliability coefficient is .91 utilizing Spearman-Brown, .81 utilizing Kuder-Richardson, and .90 utilizing Guttman (see Table 62). It was found that the reliability coefficient is not significantly high enough to be considered of value in estimating the Self-Concept of immigrant Arabic children when used for individual decision-making, but it may be used for group decision-making.

Summary of SCAMIN Reliability Analysis

The research results conclude that the reliability analysis of the SCAMIN test is relatively higher than the Piers-Harris test for the total sample and by grade level. SCAMIN sub-scale reliability also proved higher than that of the Piers-Harris. However, it was found that SCAMIN reported reliability was not significant enough for individual decision-making, though it may be used for group decision-making

for this particular sample of Arabic immigrant children.

Discriminant Analysis Results

The major objective in using discriminant analysis was to distinguish between groups. The researcher selected discriminant variables that measure characteristics on which groups are expected to differ. The results, based on the sample of immigrant Arabic children under study, are presented by grade, by sex, and by place of birth (United States born/non-United States born).

Discriminant Analysis by Grade

Table 63
Discriminant Analysis of Group
Defined by Grade

Discriminating Variable	Significance of F
Piers-Harris	.25
SCAMIN	.07
Behavior	.20
Intelligence & School Status	.79
GAN (Goal/Achievement Needs)	.18
FA (Failure Avoidance)	.002
RE (Role Expectations)	.10
SA (Self-Adequacy)	.25
Motivation	.008
Self-Concept	.47
Physical Appearance	.07
Anxiety	.26
Popularity	.66
Happiness	.30

Interpretation of Table 63

Taken individually, the items that best discriminate among the three grade levels are FA (Failure Avoidance) and Motivation, both significant beyond the .01 level. Also good discriminators are SCAMIN, Physical Appearance, and Role Expectations.

Tables 64 through 68 present the discriminant functions of groups defined by grade.

Table 64

Analysis 1: Discriminant Function of Piers-Harris/SCAMIN
in Group Defined by Grade

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.04420	96.83	96.83	0.2057305	0	0.9562912	10.034	4	0.0399
2	0.00145	3.17	100.00	0.0380117	1	0.9985551	0.32461	1	0.5688

Table 65

Analysis 2: Discriminant Function of Piers-Harris
in Group Defined by Grade

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.01238	100.00	100.00	0.1105687	0	0.9877746	1.7677	2	0.2506

Interpretation of Table 64

When taken together, the variables "Piers-Harris" and "SCAMIN" provide a statistically significant (.0399) discrimination among the three grade levels under study (probably due to the discriminating power of the SCAMIN test).

Interpretation of Table 65

The variable "Piers-Harris" alone does not discriminate significantly (.2506) among the three grade levels under study.

Table 66
 Analysis 3: Discriminant Function of SCAMIN
 in Group Defined by Grade

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.02384	100.00	100.00	0.1525856	0	0.9767176	5.3005	2	0.0706

Table 67
 Analysis 4: Discriminant Function of Piers-Harris Sub-Scales (Behavior,
 Intelligence and School Status, Physical Appearance, Anxiety,
 Popularity, Happiness) in Group Defined by Grade

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.03900	67.62	67.62	0.1937406	0	0.9448211	12.639	12	0.3966
2	0.01867	32.38	100.00	0.1353940	1	0.9816685	4.1166	5	0.5328

Interpretation of Table 66

The variable "SCAMIN" alone does not discriminate significantly among the three grade levels under study at the .05 level, but it does provide a discrimination with a significance of .0706.

Interpretation of Table 67

Taken together, the Piers-Harris sub-scales (Behavior, Intelligence and School Status, Physical Appearance, Anxiety, Popularity, Happiness) do not discriminate significantly (.3966) among the three grade levels under study.

Table 68

Analysis 5: Discriminant Function of SCAMIN Sub-Scales (GAN, FA, RE, SA, Motivation, Self-Concept) in Group Defined by Grade

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.11889	74.72	74.72	0.3259737	0	0.8591742	33.772	12	0.0007
2	0.04023	25.28	100.00	0.196639	1	0.9613233	8.7764	5	0.1183

Interpretation of Table 68

Taken together, the SCAMIN sub-scales (GAN--Goal/Achievement Needs, FA--Failure Avoidance, RE--Role Expectations, SA--Self-Adequacy, Motivation, Self-Concept) produce a statistically significant (.0007) discrimination among the three grade levels of immigrant Arabic children under study.

Discriminant Analysis by Sex

Table 69
Discriminant Analysis of Group Defined by Sex

Discriminating Variable	Significance of F
Piers-Harris	.2530
SCAMIN	.0430
Behavior	.9967
Intelligence & School Status	.5101
GAN (Goal/Achievement Needs)	.0494
FA (Failure Avoidance)	.0003
RE (Role Expectations)	.9561
SA (Self-Adequacy)	.4996
Motivation	.0001
Self-Concept	.8151
Physical Appearance	.0275
Anxiety	.0017
Popularity	.3888
Happiness	.6547

Interpretation of Table 69

Taken individually, the following variables provide a significant ($p < .05$) discrimination between the sexes of

of the immigrant Arabic children sample in this study: SCAMIN (.0430); GAN--Goal/Achievement Needs (.0494); FA--Failure Avoidance (.0003); Motivation (.0001); Physical Appearance (.0275); and Anxiety (.0017). The direction of the difference between the sexes on the SCAMIN test cannot be determined because the cell frequencies in the crosstabulation are too small.

Tables 70 through 74 present the discriminant functions of groups defined by sex.

Table 70

Analysis 1: Discriminant Function of Piers-Harris/SCAMIN
in Group Defined by Sex

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.03026	100.00	100.00	0.1713855	0	0.9706270	6.7079	2	0.0349

Table 71

Analysis 2: Discriminant Function of Piers-Harris
in Group Defined by Sex

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.00581	100.00	100.00	0.0760106	0	0.9942224	1.3066	1	0.2530

Interpretation of Table 70

Taken together, the variables "Piers-Harris" and "SCAMIN" provide a significant (.0349) discrimination between the immigrant Arabic boys and girls in this study. This is likely due to the discriminating power of the SCAMIN test.

Interpretation of Table 71

By itself, the variable "Piers-Harris" did not discriminate significantly (.2530) between the sexes for the sample of immigrant Arabic children under study.

Table 72
 Analysis 3: Discriminant Function of SCAMIN
 in Group Defined by Sex

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.01834	100.00	100.00	0.1341860	0	0.9819941	4.0973	1	0.0430

Table 73
 Analysis 4: Discriminant Function of Piers-Harris Sub-Scales (Behavior,
 Intelligence and School Status, Physical Appearance, Anxiety,
 Popularity, Happiness) in Group Defined by Sex

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.06102	100.00	100.00	0.2398154	0	0.9424886	13.209	6	0.0398

Interpretation of Table 72

The variable "SCAMIN" when analyzed alone did provide a significant (.0430) discrimination between the sexes.

Interpretation of Table 73

Taken together, the Piers-Harris sub-scales (Behavior, Intelligence and School Status, Physical Appearance, Anxiety, Popularity, Happiness) yielded a significant (.0398) discriminant function in the analysis between the sexes of the sample under study.

Table 74

Analysis 5: Discriminant Function of SCAMIN Sub-Scales (GAN, FA, RE, SA, Motivation, Self-Concept) in Group Defined by Sex

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.09656	100.00	100.00	0.2967404	0	0.9119451	20.555	6	0.0022

Interpretation of Table 74

Analyzed together, the SCAMIN sub-scales (GAN--Goal/Achievement Needs, FA--Failure Avoidance, RE--Role Expectations, SA--Self-Adequacy, Motivation, Self-Concept) did discriminate significantly (.0022) between the sexes of the immigrant Arabic children sampled by this study.

Discriminant Analysis by Place of Birth

Table 75

Discriminant Analysis of Group Defined by United States Born/non-United States Born

Discriminating Variable	Significance of F
Piers-Harris	.6823
SCAMIN	.4447
Behavior	.8232
Intelligence & School Status	.3768
GAN (Goal/Achievement Needs)	.7774
FA (Failure Avoidance)	.2031
RE (Role Expectations)	.5053
SA (Self-Adequacy)	.0042
Motivation	.3559
Self-Concept	.0431
Physical Appearance	.0916
Anxiety	.1054
Popularity	.3345
Happiness	.8401

Interpretation of Table 75

Taken individually, the following variables provide a significant ($p < .05$) discrimination between the immigrant

Arabic students sampled by this study who were born in the United States and those who were not born in the United States: SA--Self-Adequacy (.0042); and Self-Concept (.0431). Also a "good" discriminator is Physical Appearance with a significance of .0916.

Tables 76 through 80 present the discriminant functions of groups defined by United States born/non-United States born.

Table 76

Analysis 1: Discriminant Function of Piers-Harris/SCAMIN in Group
Defined by United States Born/non-United States Born

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.00038	100.00	100.00	0.0536055	0	0.9971265	0.64748	2	0.7234

Table 77

Analysis 2: Discriminant Function of Piers-Harris in Group Defined by
United States Born/non-United States Born

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.00074	100.00	100.00	0.0272526	0	0.9992573	0.16754	1	0.6823

Interpretation of Table 76

Analyzed together, the variables "Piers-Harris" and "SCAMIN" did not discriminate significantly (.7234) between United States born and non-United States born immigrant Arabic children as sampled by this study.

Interpretation of Table 77

The variable "Piers-Harris" when analyzed alone did not discriminate significantly (.6823) between the immigrant Arabic children who were born in the United States and those who were foreign-born.

Table 78

Analysis 3: Discriminant Function of SCAMIN in Group Defined by
United States Born/non-United States Born

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.00259	100.00	100.00	0.0508602	0	0.9974132	0.58407	1	0.4447

Table 79

Analysis 4: Discriminant Function of Piers-Harris Sub-Scales (Behavior, Intelligence
and School Status, Physical Appearance, Anxiety, Popularity, Happiness)
in Group Defined by United States Born/non-United States Born

Function	Eigen- value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi- Squared	DF	Sig.
1	0.02514	100.00	100.00	0.1565948	0	0.9754781	5.5366	6	0.4771

Interpretation of Table 78

The variable "SCAMIN" when taken alone did not discriminate significantly (.4447) between the United States born and non-United States born study sample.

Interpretation of Table 79

As a group, the Piers-Harris sub-scales (Behavior, Intelligence and School Status, Physical Appearance, Anxiety, Popularity, Happiness) did not discriminate between the samples immigrant Arabic children who were born in the United States and those who were not.

Table 80

Analysis 5: Discriminant Function of SCAMIN Sub-Scales (GAN, FA, RE, SA, Motivation, Self-Concept) in Group Defined by United States Born/non-United States Born

Function	Eigen-value	Percent of Variance	Cumulative Percent	Canonical Correlation	After Function	Wilks' Lambda	Chi-Squared	DF	Sig.
1	0.05045	100.00	100.00	0.2191540	0	0.9519715	11.025	4	0.0263

Interpretation of Table 80

Analyzed together, the SCAMIN sub-scales (GAN--Goal/Achievement Needs, FA--Failure Avoidance, RE--Role Expectations, SA--Self-Adequacy, Motivation, Self-Concept) did discriminate significantly (.0263) between the immigrant Arabic students who were United States born and those who were non-United States born.

CHAPTER V
CONCLUSION

Overview of Study

The purpose of this study was twofold: (1) to investigate and evaluate the validity and reliability of the Self-Concept and Motivation Inventory (SCAMIN) in comparison to the Piers-Harris Children's Self Concept Scale (The Way I Feel About Myself) as criterion measures, and (2) to determine the degree of self-concept of immigrant Arabic children sampled in this study.

Background/Study Objectives

Upon reviewing the available literature in the field of self-concept, the researcher determined that there was no specific test designed to measure self-concept of immigrant Arabic children. As a result, two widely-used tests measuring, or assumed to measure, self-concept were selected. The Piers-Harris and SCAMIN tests were selected because they are accepted as measurements of children's self-concept and are designed for use on the general population. Additionally, the SCAMIN was selected because of the similarity of the subject, but mainly because of the design of the test and its applicability to the subjects under study.

The data analysis provided in this study was an attempt to add information about validity and reliability tests

for culturally different groups using tests designed for the general population.

Study Design/Methodology

To obtain the data on the subjects in this study, the sample was selected from the Dearborn School Districts since the majority of immigrant Arabic students reside in the area. The student sample was taken from Lowrey, Salina and Fordson Schools, including grades 7, 9 and 11. The sample consisted of 228 subjects with approximately equal numbers of males and females.

The Self-Concept and Motivation Inventory (SCAMIN)

One of the instruments used in this study to determine the self-concepts of a sample of immigrant Arabic children is based upon a definition of self that encompasses how a child views his or her role as learned in school. It reflects the pupil's sum of experiences, perceptions, attitudes, and feelings about school and academic scholarship.

The SCAMIN test is composed of four factors: Goal/Achievement Needs, Failure Avoidance, Role Expectations, and Self-Adequacy. Two sub-factors contribute to the way a child feels about his performance on school tasks. One sub-factor is the school self-concept derived from: (a) role expectations--the positive acceptance of the demands that a pupil thinks others make of him; and (b) self-adequacy--how a pupil views his/her present and future probabilities of success in school. Both of these are summed to equate to a

school self-concept score. The second sub-factor measured by this instrument is school motivation, defined by the SCAMIN as an "expressed need of a child to achieve a goal in school," and derived from achievement investment, which is the pupil's awareness of the embarrassment and sanction of failure in school and the desire to shun the humiliation of it (SCAMIN, 1969). Both of these factors are summed to equate to a school motivation score. Thus, two scores are derived from the instrument: (1) school self-concept, and (2) motivation.

The present study focused upon the degree to which SCAMIN is a valid and reliable instrument to measure the self-concept of immigrant Arabic children.

Piers-Harris Children's Self-Concept Scale

The second instrument, the Piers-Harris Children's Self Concept Scale, is designed to measure children's self-concept. The Piers-Harris instrument utilizes both positive and negative statements of situations that concern children. This instrument is composed of 80 items which cover six factors: Behavior, Intelligence and School Status, Physical Appearance, Anxiety, Popularity, and Happiness.

The Piers-Harris instrument is used in this study to correlate the effectiveness of the SCAMIN self-concept inventory as a valid and reliable measuring device for the group of immigrant Arabic children under study.

Data Gathering/Analysis

Each of the three schools involved in this study provided an administrative person who possessed the knowledge of test administration. These persons administered the two tests sequentially (first SCAMIN, then Piers-Harris) to all grades for a given school.

The researcher assembled the raw data and utilized the computing services at Wayne State University to produce the analysis. The data were tabulated and analyzed for final presentation in this study.

Reliability

Three methods of estimating the reliability coefficient were utilized. First, the researcher made use of the split-half reliability coefficient that was determined by establishing the relationship between the scores on two equivalent halves of the SCAMIN and Piers-Harris tests that were administered to the target sample. Since longer tests tend to be more reliable, and since split-half reliability represents the reliability of a test only half as long as the actual test, a correction known as the Spearman-Brown Prophecy Formula was utilized.

Second, the Kuder-Richardson Formula 20 was applied to measure both Piers-Harris and SCAMIN. Third, the Guttman method of estimating the reliability coefficient was presented to support the findings.

In the case of the SCAMIN and Piers-Harris forms, reliability coefficients obtained by the repeated testing

procedures have been reported in the SCAMIN and Piers-Harris test manuals. No subsequent studies of SCAMIN or Piers-Harris reliability and validity have been reported since the publication of these manuals for a study on this particular culture.

Correlation Matrix

A Pearson correlation matrix was applied in this study since the objective of using a correlation analysis is to determine the extent to which variation in one variable is linked to variation in another. Pearson's r , which is computed both by SCATTER GRAM and PEARSON CORR, serves a dual purpose.

Partial Correlation for Piers-Harris and SCAMIN

Partial correlation for Piers-Harris and SCAMIN was utilized to aid the researcher in understanding and clarifying the relationship between the variables and to locate spurious relationships.

Procedure

The total and sub-test scale scores for the subjects were factor analyzed together and separately for each grade level, using the factor program SPSS (Nie et al., 1975). The principal factoring with iteration methods type PA 2 with rotated oblique were utilized for the total variables for both Piers-Harris and SCAMIN. "This program places the squared multiple correlation between a variable and the rest

of the variable as the communality estimate on the diagonal of the correlation matrix" (Nie et al., 1975). The PA 1 factoring methods (principal factoring without iteration) were used for SCAMIN and Piers-Harris sub-population.

Statistical consideration was given to represent the original set of variables in terms of a number of factors that were determined in sequence so that factors would account for a maximum of the variance.

Factor analysis was used to confirm the hypotheses regarding the structuring of the variables in terms of the expected numbers of significant factors and factor loadings. The construction of indices was used as a new variable in the analysis.

Discriminant Analysis

A discriminant analysis was used to provide tests for measuring the success with which the discriminant variable actually discriminated when combined into the discriminant function. To distinguish between the groups, the researcher selected discriminating variables that measure characteristics on which the groups were expected to differ. These variables were grade level, sex, and place of birth (United States born/non-United States born).

Results

The following results were obtained from the data gathered and analyzed by this study:

1. The validity analysis for both Piers-Harris and

SCAMIN revealed that these tests do not measure what they were designed to measure, as related to this group of Arabic immigrant children.

2. The Piers-Harris test reliability results, as reported in this study for the total sample and as produced by the grade levels for the total scale and the sub-scales, proved that the test is not a reliable measure to be used for either group or individual decision-making for this group of immigrant Arabic children.
3. Even though the reliability on the SCAMIN test was reported high in comparison to Piers-Harris for the total sample by grade levels and also in comparison to Piers-Harris sub-scales and SCAMIN sub-scales, it was found that SCAMIN reported validity and reliability were not significant enough to consider SCAMIN a valid and reliable self-concept measurement to be used on this particular group of immigrant Arabic children.
4. The self-concept results cannot be determined due to validity and reliability results of the evaluation instruments.
5. The discriminant analysis indicated that SCAMIN is able to discriminate between sexes, grades, and place of birth.
6. Piers-Harris does not discriminate between grades, sexes, and place of birth.

7. Despite the fact that the number of United States born Arabic students was relatively small, the discriminant analysis indicated that these students possess a lower self-concept than the majority of the sample under study.

It was also concluded that the establishment of construct validity presents special problems when measuring personal traits. The self-concept may vary widely from individual to individual and from one culture to another. The issue of construct validity is, therefore, of particular interest in the field of measurement of the self-concept for this group of immigrant Arabic children and other culturally different subjects.

Furthermore, a test designed to be used on the general population cannot be of value when measuring a specific cultural background unless a sample of that population is included when the test is originally constructed. When a testing instrument is accepted as a standardized test, then the percentages of culturally different groups must be itemized in the test manual. In this way, current findings can be more accurately compared to previous findings, especially if population make-up has shifted. Also, a test which was designed to measure a group of American children's self-concept in 1969, for example, may not reflect the same results when used in 1983 on culturally different subjects due to the time involved and the changing attitudes and behaviors of the children over time.

Recommendations for Future Research

The following recommendations for future research are made, based on the data analysis of this study:

1. To continue studying the stability of the factor structure of both the Piers-Harris and SCAMIN when used on culturally different subjects.
2. To study the characteristics and the format of the items structure of both the Piers-Harris and SCAMIN, and refine the instruments with respect to their theoretical frame of reference.
3. To validate more tests for the purpose of investigating the self-concept of immigrant Arabic children and other culturally different groups.

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ABSTRACT

THE SCAMIN "WHAT FACE WOULD YOU WEAR" AND THE PIERS-HARRIS
EVALUATION AS MEASURES OF SELF-CONCEPT IN IMMIGRANT
ARABIC CHILDREN: A COMPARATIVE STUDY OF
CONSTRUCT VALIDITY AND RELIABILITY

by

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December 1983

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Upon reviewing the available literature in the field of self-concept, the researcher determined that there was no specific test designed to measure self-concept of immigrant Arabic children. Therefore, the purpose of this study was twofold: (1) to investigate and evaluate the validity and reliability of the Self-Concept and Motivation Inventory (SCAMIN) in comparison to the Piers-Harris Children's Self-Concept Scale as criterion measures, and (2) to determine the degree of self-concept in immigrant Arabic children.

A sample of immigrant Arabic children (N = 228), roughly divided between sexes, in the 7th, 9th and 11th grades of three Dearborn, Michigan, schools, was studied. The sample was administered both the SCAMIN and Piers-Harris tests and results were analyzed. Three methods of estimating test reliability were applied: Guttman, Spearman-Brown, and Kuder-Richardson Formula 20. Factor analysis to deter-

mine the construct validity of SCAMIN as related to the Piers-Harris self-concept measure was completed. Also, to distinguish between groups, a discriminant analysis was performed. The researcher selected discriminating variables that measure characteristics on which the groups were expected to differ, i.e., grade level, sex, place of birth.

Based on the data gathered and analyzed for the immigrant Arabic students under study, the following summary of results was obtained:

1. The validity analysis for both Piers-Harris and SCAMIN revealed that these tests do not measure what they were designed to measure as related to the study sample.
2. The reliability results suggested that neither the Piers-Harris nor SCAMIN tests are valid and reliable self-concept measures as related to the groups of immigrant Arabic students under study.
3. The SCAMIN test is able to discriminate between sex, grade level, and place of birth; Piers-Harris is not able to discriminate between these groups.
4. Self-concept results for this group of immigrant Arabic children could not be determined due to validity and reliability results of the evaluation instruments.

Additional detailed results of the study as well as recommendations for future research are provided.

AUTOBIOGRAPHICAL STATEMENT

The researcher was born in Alexandria, Egypt. She received her B.S. degree in 1960 in Social Work from the School of Social Work at the University of Alexandria, Egypt. From 1960 to 1964 she served on the faculty of the School of Social Work as Laboratory Instructor. From 1964 to 1968 she worked at the Higher Institute of Social and Mental Health, Alexandria, Egypt, doing social research on mental health subjects. From 1968 to 1969 she worked at the Department of Health in Sao Paulo, Brazil, as a social service worker.

Ms. Abdalla obtained her M.A. from Wayne State University in 1973, at which time a course practicum included Rehabilitation Institute and Harbor Light. In 1974 she joined the Educational Evaluation and Research Department at Wayne State University as a student assistant and with the goal of achieving her Ph.D. in Evaluation and Research. Her study curriculum included training at the Macomb Intermediate School District in Macomb, Michigan.

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