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ANALYSIS AND COMPARISON OF A DEVELOPMENTAL TASK
SCALE ON DIFFERING ADOLESCENT POPULATIONS

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The following research questions were investigated:

(a) Can the age-mates scales from the Dales developmental task scales be used with southwestern-urban adolescent populations? (b) Are there any systematic differences between northeastern-nonurban and southwestern-urban subject populations on the response to these scales?

The subjects consisted of 884 adolescents, 11 through 15 years, evenly divided by sex. Subject responses were analyzed by sex and age groups using Guttman scalogram analysis. Goodman's test of significance revealed that the results could have occurred by chance ($p > .05$). The instrument in its present form was not found useful for an urban population. Lack of reproducibility made comparison of the performance of urban and nonurban adolescents unjustified.

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ANALYSIS AND COMPARISON OF A DEVELOPMENTAL TASK
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Administrators charged with the delivery of elementary and secondary education in this country are faced with increasing demands for accountability regarding student success in academic achievement, vocational pursuits, and coping with life in general. In order to meet these societal expectations, professionals in education are finding it necessary to concern themselves with a wider range of children's needs than those for which the traditional curriculum was designed. The addition of counselors and psychologists as supporting personnel in the schools has contributed to an awareness that learning is a complex process requiring a comprehensive understanding of a child's developmental needs--physical, mental, and emotional.

The developmental task concept has been found to be useful for educators who desire to relate human behavior to the problems of education (Havighurst, 1972). A major task of adolescence is the attainment of social and emotional maturity (Blos, 1972). Since children are placed in the school by age groups, the school becomes a place where they may learn the tasks of social development (Havighurst, 1972).

In 1952, R. J. Dales developed an instrument, the Dales developmental task scales (DDTS), to provide a device for

measuring achievement of specified developmental tasks of adolescence for school personnel. Further utilization of this scale was deemed necessary to study its utility with a southwestern-urban population as well as to compare levels of achievement on the task of getting along with age-mates between the southwestern-urban adolescent population and a northeastern-nonurban population studied in 1969 by Phelan.

Review of Literature

Developmental Tasks and Education

Havighurst (1972) defined developmental tasks in the following manner:

A developmental task is a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society, and difficulty with later tasks. (p. 6)

Developmental tasks, as conceptualized by Havighurst, arise from three sources: (a) physical maturation, (b) cultural pressure of society, and (c) the personal values and aspirations of the individual.

There are three possible procedures for discovering and defining developmental tasks (Havighurst, 1956). One is to observe people and infer what their principal developmental concerns are at any one age. Another, self-report, is to ask

people what their chief concerns and interests are, assuming that they are conscious of their developmental needs and willing to reveal them. A third procedure is for the researcher to think about his life, past and present, and to define his principal developmental concerns.

Dales (1953) followed one of these three procedures, that of subject self-report, and developed a check list of areas of concern based on the reported problems. These scales address the social developmental tasks of (a) getting along with age-mates, (b) relating to changing social groups, and (c) learning one's psycho-socio-biological sex role. Scalogram analysis was the method used to quantify the items of the check list into Guttman (1947) scales as discussed in the review of the literature. The results of Dales' study were interpreted as confirming the DDTS as a measure of three specified developmental tasks of adolescence. Bayer (1955) successfully replicated Dales' study on a sample of the same subjects a year later obtaining similar results as those obtained by Dales.

Phelan replicated Dales' study in 1969 and concluded that the DDTS was as functional then as it had been in 1952. The validity of Dales' method was reconfirmed with youth from small communities not associated with large metropolitan areas. Phelan suggested, however, that the DDTS should be utilized with adolescents from larger cities to determine if it is functional for them.

The Need for Developmental Research

American education in the 20th century was shaped by the victory of Thorndike over Dewey (Kohlberg & Gilligan, 1972). Achievement, rather than development, has been its aim. But now the achieving society, the achieving individual, and even the achievement tests are seriously questioned by adults and adolescents alike (Kohlberg & Gilligan, 1972). If development rather than achievement is to be the aim of education, such development must be meaningful to the adolescent himself. Education must be viewed by the adolescent as aiding him in his search for identity (Erikson, 1963). Kohlberg and Gilligan (1972) suggested that when stage development is taken seriously by educators as an aim, real developmental change can occur through education. John Dewey (cited in Kohlberg & Gilligan, 1972), a strong and early advocate of developmental education, wrote:

Education is precisely the work of supplying the conditions which will enable the psychical functions, as they successively arise, to mature and pass into higher functions in the freest and fullest manner. This result can be secured only by a knowledge of the process of development. (p. 176)

Blos (1972) has written that the social locus (ghetto, urban middle class, rural or regional environment, migrant worker, etc.) is taken for granted as an influence that

molds decisively the course of adolescence. Unfortunately, according to Blos, we still lack sufficient data to evaluate accurately the various forms and schedules of adolescence in relation to the attainment of social and emotional maturity.

Two Harvard educational researchers (Mosher & Sprinthall, 1970) have called attention to a heightened awareness of the problems of urban schools created by schooling that systematically avoids personal development or human growth as major and direct educational objectives. Their evaluation of recent efforts at reform revealed that schools, whether city, suburban, or rural, concentrated on improving the transmission of academic ideas and skills. Although extensive rhetoric about individual growth existed among educators, Mosher and Sprinthall found that very little intellectual energy or funding has been directed toward personal or psychological development.

Usefulness of the Developmental Task Concept

Havighurst (1972) has offered three reasons for the usefulness of the developmental task concept to educators: (a) in helping to determine and state educational objectives, (b) in the development of curriculums; to estimate the time at which educational efforts should be made, and (c) in the education of teachers, both pre-service and in-service. In discussing the second reason, Havighurst originated the expression "teachable moment."

Educators could make statements of their objectives more realistic if they were aware of the motivations of the students rather than if the objectives were formed only by the ideals of society (Havighurst, 1956). Havighurst has indicated the need for developmental task research on what he considers a major problem: how performance on developmental tasks can be measured.

The developmental task concept is also useful to school counselors as a local guide for counseling goals. Miller (1971) studied the amount of time spent by elementary school counselors on each of three main functions: (a) facilitate development, (b) remediate a problem, and (c) a combination purpose of facilitate and remediate. Counselors spent significantly more time on developmental functions or a combination function of remediating a problem and facilitating development than on functions for the purpose of remediating a problem. Consulting, in-service activities, developmental guidance units, and orientation activities were categorized as developmental kinds of functions.

Another source for clarification of the developmental task concept has been the use of the concept of psychosocial tasks by Erikson (1963). Erikson's scheme has value because of its simplicity and its stress on what is crucial at a given time in life. The division of developmental tasks into age groups has the advantage of bringing into focus all

the person's developmental needs and of enabling the educator and the guidance specialist to take specific steps in planning educational and guidance procedures for individuals or groups of persons.

Mosher and Sprinthall (1970) described extensive curriculum guidelines for incorporating developmental concerns in elementary and secondary schools. Among their crucial curriculum objectives for adolescents is "to enable the individual to relate to others--to have more complex, more profound interpersonal relations" (p. 918).

Schoeppe and Havighurst's (1952) study of 10, 13, and 16 year olds explored achievement of five developmental tasks: (a) sex role, (b) emotional independence, (c) conscience, morals, values, (d) age-mates, and (e) intellectual skills. Supporting data was obtained for the hypothesis that good achievement on one developmental task tends to be associated with good achievement on other tasks at the same age. The results of their correlational study were used to support the conclusion that satisfactory relations with peers is bound to accomplishment of the other tasks investigated.

The age-mate task correlations were significant and indicated close relationships from age to age. The age-mate task was the only developmental task to correlate highly with the other developmental tasks used in the study.

Schoeppe and Havighurst summarized that, "Satisfactory

relations with peers appear to be very closely linked to accomplishment of other tasks" (p. 352).

Schoeppe and Havighurst concluded that the formation of permanent personality patterns and the most effective socializing influences converge on the adolescent between the ages of 10 and 13 years. Their findings prompted Schoeppe and Havighurst to suggest that it would be necessary for those guiding children during this formative period to have as much information as possible on the status of the child's accomplishment of the developmental tasks at this age period.

Review of Scalogram Analysis

Guttman (1947) introduced the method of scalogram analysis after World War II. Scalogram analysis, also called Guttman scaling after its originator, has been used mainly in social science research. Guttman scale analysis was designed to analyze the characteristics of three or more items in order to determine if their interrelationships meet the several special properties which define a Guttman scale: Guttman scales must be unidimensional and cumulative. Unidimensionality is achieved if the component items all measure movement toward or away from the same single underlying object. Guttman scales differ from almost all other types of scales because they must be cumulative. A cumulative scale is a scale in which the component items can be ordered by degree of difficulty.

In a perfect Guttman scale respondents who reply positively to a difficult item will always respond positively to less difficult items. A perfect scale or perfect reproducibility is not to be expected in practice (Edwards, 1957). Reproducibility, which Guttman called the coefficient of reproducibility, is supposed to indicate the percent of accuracy with which responses to the various statements can be reproduced from the total scores. In a perfect cumulative scale the coefficient of reproducibility would equal 1.0. The coefficient of reproducibility equals unity minus the total number of errors divided by the total number of responses:

$$\text{Rep} = 1 - \frac{\text{total number of errors}}{\text{total number of responses.}}$$

Since its introduction, scalogram analysis has been the subject of reexamination. Several modifications of the original procedure have been suggested (Chilton, 1969). Chilton considered the most important suggestion to be an attempt to provide statistical procedures (Goodman, 1959; Green, 1956; Sagi, 1959; Schuessler, 1961) to replace some of the subjective criteria for the acceptance of an observed pattern of responses as a cumulative scale. Statistical methods have been formulated which provide tests of significance "to determine whether the observed configuration of responses might have arisen by chance" (Schuessler, 1961, p. 318).

Chilton (1969) reviewed and compared statistical tests for scalogram analysis and concluded that the best procedure would be to compute chance reproducibility according to Green's (1956) formula and to compute the standard error of the observed coefficient of reproducibility according to Goodman's (1959) formula. Guttman's (1947) observed coefficient of reproducibility (Rep), Green's chance reproducibility (Rep_I), and the square root of Goodman's standard error of the observed coefficient of reproducibility ($S.E. Rep$)² were used in the computation of z scores:

$$z = (Rep - Rep_I) / S.E. Rep.$$

In addition, Chilton wrote that interpretations or conclusions based on scalogram analysis should be made using the following data: (a) a clear definition of an error response, (b) the coefficient of reproducibility, (c) the item marginals, (d) the number of cases analyzed, (e) the number of original items discarded, (f) an expected reproducibility, and (g) an accurate standard error figure to assist in deciding the probable importance of chance factors.

Definition of Scalogram Terms

Various procedures for counting error responses for non-scale type response patterns have been developed (Green, 1956; Guttman, 1947; Sagi, 1959). Chilton (1969) analyzed the various methods and suggested that the number of error responses be counted according to the original Guttman rule.

The rule is clear and simple. "Any response which would have to be changed in order that it conform to a scale pattern is an error response" (p. 240).

Guttman's coefficient of reproducibility is one minus the proportion of the total number of errors divided by the total number of responses. The coefficient of reproducibility is a measure of unidimensionality for scalogram analysis.

Item marginals are the percentages of positive responses to each item in a scale. Guttman (1947) suggested the use of those items with marginal frequencies between 20% and 80% as one of his criteria for scalability.

A scale of items which results in a coefficient of reproducibility of less than .90 can be purified. Purification is described as the combining of nondichotomous item categories, the discarding of items if they contribute too much error, and the ad hoc determination of positive and negative response categories (Sagi, 1959). If the error by item is over 15%, the item should be discarded (Ford, 1954). Items with marginal frequencies less than 20% or greater than 80% are also discarded to prevent the coefficient of reproducibility from being spuriously high (Guttman, 1947).

The expected reproducibility is the coefficient of reproducibility that would be expected by chance if the items had their observed item marginals but were mutually independent (Green, 1956). Green refers to expected and chance

reproducibility interchangeably. Green's formula for chance reproducibility (Rep_I) is used in the computation of z scores for Goodman's (1959) test of significance.

Sagi (1959) admonished that purification capitalizes on the chance features of the sample. He suggested that a test of significance should be applied to the scale before purification operations are performed. By application of the statistical measures prior to purification, the response patterns could be interpreted as forming a scale with the claimed theoretical properties rather than being merely an artifact of the operations performed in the analysis or the peculiarities of the sample (Sagi, 1959). Sagi stated that such evidence may be gained either by replication on a subsequent sample and/or by use of the appropriate tests of statistical significance.

Dales Developmental Task Scales

Dales (1953) developed the DDTS (Dales developmental task scales) based on statements of their problems by boys and girls from grades five through twelve. She found that a large proportion of these problems could be placed in developmental task areas recognized by other researchers (Erikson, 1963; Havighurst, 1972; Tryon & Lilienthal, 1950). The three developmental task areas were: (a) getting along with age-mates, (b) relating to changing social groups, and (c) learning one's psycho-socio-biological sex role. The

age-mate task entitled "getting along with age-mates" was composed of four subtasks: (a) forming friendships with peers, (b) learning to share affection with peers, (c) accepting oneself as a worthwhile person, and (d) accepting others as worthy of friendship.

Phelan replicated Dales' (1953) study in 1969. Her subjects were students in seven communities--small in size, free of large industry, and surrounded by rural areas--in the Upper Peninsula of Michigan and Central New York State. The communities were small towns and small cities with populations which ranged from 2,000 to 28,000. For the purpose of comparison in the present study, Phelan's sample was classified as nonurban. Phelan found the DDTS to be a continuing valid and reliable instrument for ascertaining selected developmental task levels of boys and girls between the ages of 11 and 14 years.

Of the three developmental tasks included on the DDTS, the age-mate task was selected for examination in this study. This limitation was made in the interest of minimizing the intervention time which would be necessary in the classroom to complete the entire 117-item questionnaire. The importance of the age-mate task (Mosher & Sprinthall, 1970) and its high correlation with other developmental tasks of the same age (Schoeppe & Havighurst, 1952) made it the logical choice if a limitation was necessary.

Purposes

Mosher and Sprinthall's (1970) research suggested that a somewhat different set of personal concerns would be found in an urban school. This study has attempted to collect a narrow preliminary range of developmental task data to test Mosher and Sprinthall's and Phelan's (1969) hypothesis that the developmental concerns of urban adolescents may differ from those of nonurban adolescents. Phelan's data from northeastern-nonurban children was to be used for comparison with the data from a southwestern-urban population obtained in this study.

The questions generated for investigation in the present study were:

1. Can the age-mates scales from the Dales developmental task scales be used with southwestern-urban adolescents?

2. Are there any systematic differences between northeastern-nonurban and southwestern-urban subject populations on the response to these scales?

On the basis of Dales' (1953), Bayer's (1955), and Phelan's (1969) research it was predicted that the DDTS would be useful on southwestern-urban adolescents and that any systematic differences between northeastern-nonurban and southwestern-urban samples would be in the degree of concern over the selected developmental task of getting along with age-mates.

Method

Subjects

A total of 909 subjects answered the DDTS (Dales developmental task scales) in the cooperating middle school. All students in grades six through nine were asked to complete the DDTS. The responses of all students aged 11 through 15 which were completed were used. The final sample of 887 children was divided into ten groups, according to age and sex (see Table 1).

Table 1
Sample Frequencies by
Sex and Age Groups

Age	Male	Female
	(N= 440)	(N= 444)
	N	N
11	38	48
12	98	108
13	101	101
14	108	118
15	95	69

The ST010 Alphanumeric Single Column Frequency Distribution computer program was used to obtain the description of the subjects.

The middle school used in this study was located in a residential suburb of a large metropolitan area in North Texas with a total population of 2.4 million. The median

annual family income was \$22,000 of the students who were subjects.

The percentages of minority group members contained in the sample were as follows: (a) 2% Negro, (b) 1% Mexican-American, and (c) 4% Oriental.

Instrument

Dales (1955) used the method of scalogram analysis to create a scaled check list which was designed to measure status and/or progress in attitudes related to developmental tasks. If a set of items could be arranged in order so that a person checking a particular item had checked all other items before it in the series and if the items were scaled, this became a definition of a developmental task or subtask. Then by measuring the frequency with which a group of boys or girls checked the items representing a particular developmental task, one could infer that this was a task of greater or less importance to them at one age than at another. Thus scalogram analysis permitted the operational definition of developmental tasks in terms of problems and the location of these tasks by age.

The Dales developmental task scales were the result of extensive research. Initially Dales (1953) obtained written problems from 463 students enrolled in grades five through twelve. The students attended five schools in western New York. The problems were classified under developmental

tasks for those age groups as defined by Tryon and Lilienthal (1950). Those developmental tasks which appeared most frequently were selected and the problems listed under them were classified into subtasks.

The check list was pretested on a sample of 502 children attending four schools from the ages of 10 to 17 years. There were 10 original items in each subtask. A scalogram analysis was performed on the results of the pretest. The groups of remaining scalable items were used to compose a final check list which was administered to a sample of 510 children in grades six through nine in three schools. The result was 16 subtask scales for boys and 17 for girls called the Dales developmental task scales. The DDTS represented three major developmental tasks of adolescence. The age-mate task selected for use in this study was composed of four subtasks: (a) forming friendships with peers, (b) learning to share affection with peers, (c) accepting oneself as a worthwhile person, and (d) accepting others as worthy of friendship. Those four subtasks represented a 21-item excerpt from the 117-item Dales developmental task scales. Each subtask formed a unique Guttman scale independent of any other subtask. This fact allowed the use of selected subtask scales pertaining to the developmental task of getting along with age-mates.

The age-mate developmental task was represented on the DDTS (see Appendix A) by four independent subtasks. Subtask 1, forming friendships with peers, included items 1 through 6. Subtask 2, learning to share affection with peers, included items 7 through 12. Subtask 3, accepting oneself as a worthwhile person, included items 13 through 17. Subtask 4, accepting others as worthy of friendship, included items 18 through 21. The total of 21 items from the DDTS, representing the four subtasks, constituted the instrument used in this study.

Phelan (1969) used the Dales developmental task scales to determine if the developmental tasks of youth in the same location differed significantly from those used in Dales' study 17 years earlier. Phelan used the complete DDTS to obtain data from 800 adolescents. Her sample included 100 girls and 100 boys in each age group of 11, 12, 13, and 14 years. Subtask scales were compared with those obtained by Dales on similar populations and containing Dales' original scalable items. The number of scales did not differ significantly in 1952 and in 1969. Phelan concluded that developmental tasks of the youth in 1969, in small communities such as those represented in the two samples, had not changed appreciably.

Green's (1956) test of significance was applied to all 1969 scaling results. It was found that the DDTS produced acceptable and statistically significant coefficients of

reproducibility for the majority of scales. For total samples of boys and girls all except one subtask for boys which consisted of Dales' original scalable items produced coefficients of reproducibility which were significantly higher than would be anticipated by chance probabilities when item marginals were taken into consideration.

Phelan found that according to item frequencies and scaling results, the DDTS appeared as functional in 1969 as they had been in 1952. As a result of her findings, Phelan stated that the DDTS is probably the best instrument available for use by teachers and researchers in determining adolescent levels of achievement of the specified tasks. She concluded that the results of her study confirmed the validity of the DDTS with youth from small communities. She suggested that the DDTS should be used with other types of adolescents, including those from larger cities, to determine if they are functional for them.

Procedure

Background information sheets, sets of directions, and 1,000 copies of the age-mates portion of the Dales developmental task scales were provided to the home economics teachers in the school. The cooperating teachers administered the DDTS to all students. Written instructions were read to the subjects. To encourage honesty in answering the items, the instructions stated that upon completion by the

student the questionnaires would be collected in large manila envelopes and sealed in order to assure students that no one in the school would see their answers. The sealed envelopes were collected from the teachers by the investigator.

The data were coded by the investigator in the spaces provided on the DDTS and transferred to IBM cards. Two essential subject responses to each question on the DDTS were possible. The subject could make a positive or a negative response regarding whether or not the problem stated on any of the 21 questions was of concern to the subject at that time. That essential response, positive or negative, provided the data necessary for the scalogram analysis. The remaining procedure was accomplished in four steps.

Step 1. Subject responses to the DDTS were analyzed by scalogram analysis. Scalogram analysis of the data was accomplished using the BMD05S Guttman Scale #1, revised, computer program on an IBM 360 at the North Texas State University Computing Center. Developmental subtasks were analyzed separately according to subject subgroups. There were 10 subgroups sorted according to age and sex. In addition, the total samples of males and of females were analyzed for each of the four subtasks.

Step 2. The scalogram results were analyzed for statistical significance using Goodman's (1959) procedure.

A computer program was written to use Goodman's procedure to provide z scores for testing the levels of significance of the coefficients of reproducibility.

Step 3. Purification of obtained scales was performed by discarding items which did not meet Guttman's (1947) and Ford's (1954) criteria.

Step 4. The purified scales were subjected to scalogram analysis.

Steps 1 and 2 provided the results needed to answer the first research question concerning the usefulness of the DDTS on a southwestern-urban population sample. Coefficients of reproducibility $\geq .90$ and $p \leq .05$ for the majority of scales would have indicated that the DDTS was useful.

The results of Steps 3 and 4 were used to answer the second research question concerning the existence of any systematic differences between northeastern-nonurban and southwestern-urban population samples. Comparisons between the scaling results for data collected in 1969 and 1976 were to be made. The criteria for comparability between urban and nonurban responses as to levels of concern regarding the four age-mate subtasks was that the percentages of positive response (item marginals) to a scale item differ not more than five percentage points. Phelan (1969) set that criteria for comparability in her replication of Dales' (1953) study.

Results

The first research question asked: Can the age-mates scales from the Dales developmental task scales be used with southwestern-urban adolescents? The data collected from that subject population sample for this study was subjected to Guttman's (1947) scalogram analysis and Goodman's (1959) test of significance. A review of the data revealed that: (a) the majority of the obtained coefficients of reproducibility did not reach .90, and (b) the results could have occurred by chance (see Table 2).

Goodman's test of significance took scale error and item marginals into account in formulating the standard error of the observed coefficient of reproducibility. The resulting probability that the obtained reproducibility coefficients could have occurred by chance reflected the high level of scale error and the extremes and closeness of the item marginals.

On Subtasks 1, 2, and 3 the percentage of scale error was between 15% and 20%. That level of scale error was too high to obtain the required coefficient of reproducibility of .90 or higher (see Table 2).

On Subtask 4, levels of reproducibility generally met or exceeded the .90 criteria but the item marginals were either too high or too close to accept the scales as true Guttman scales.

Table 2
 Summary of 1976 Data for Subtask Scales
 Composed of Original Scalable Items

Age Group	# of Items	% Scale Error	Coefficient of Reproducibility	Level of Significance
Subtask 1 for Boys				
11	6	18.9	.811	.50
12	6	18.7	.813	.50
13	6	16.8	.832	.50
14	6	17.7	.823	.50
15	6	19.6	.804	.50
Total	6	12.9	.871	.50
Subtask 1 for Girls				
11	6	13.5	.865	.50
12	6	16.5	.835	.50
13	6	15.2	.848	.50
14	6	17.8	.822	.50
15	6	15.7	.843	.50
Total	6	12.5	.875	.50
Subtask 2 for Boys				
11	6	15.8	.842	.50
12	6	16.3	.837	.50
13	6	15.7	.843	.50
14	6	16.4	.836	.50
15	6	14.4	.856	.50
Total	6	13.0	.870	.50
Subtask 2 for Girls				
11	6	18.7	.813	.50
12	6	19.9	.801	.50
13	6	19.0	.810	.50
14	6	17.1	.829	.50
15	6	15.5	.845	.50
Total	6	18.1	.819	.50

Table 2--Continued

Age Group	# of Items	% Scale Error	Coefficient of Reproducibility	Level of Significance
Subtask 3 for Boys				
11	5	10.0	.900	.50
12	5	13.9	.861	.50
13	5	11.9	.881	.50
14	5	13.5	.865	.50
15	5	16.0	.840	.50
Total	5	10.7	.893	.50
Subtask 3 for Girls				
11	5	11.3	.888	.49
12	5	10.7	.893	.50
13	5	13.3	.867	.50
14	5	14.4	.856	.50
15	5	15.9	.841	.50
Total	5	9.3	.907	.50
Subtask 4 for Boys				
11	4	7.2	.928	.50
12	4	10.7	.893	.50
13	4	9.9	.901	.50
14	4	7.6	.924	.50
15	4	7.6	.924	.50
Total	4	8.9	.910	.50
Subtask 4 for Girls				
11	4	9.4	.906	.50
12	4	8.8	.912	.50
13	4	5.7	.943	.50
14	4	8.3	.917	.50
15	4	10.9	.891	.50
Total	4	7.7	.923	.50

The predicted outcome of the first research question that the DDTS was useable for southwestern-urban adolescents was not supported by the results obtained from the sample population used in this study.

The predicted outcome for the second research question that any systematic differences between northeastern-nonurban and southwestern-urban samples would be in the degree of concern was not supported by the data. The criteria established to determine degree-of-concern comparability between the urban and nonurban data could be used only if the items formed an acceptable Guttman scale for both samples. The results of the urban sample of subjects did not meet Guttman's (1947) criteria for scalability or obtain a level of significance of at least .05 (see Table 2).

Although the systematic differences between urban and nonurban samples were not as predicted, differences between the two subject populations on the response to the DDTS items did exist. The high level of scale error combined with the nonrandom distribution of scale error in the majority of age-group subsamples indicated, according to Guttman (1974), that unknown variables were present in the southwestern-urban population sample which were not present in the northeastern-nonurban population sample.

Sagi's (1959) premise for providing a test of significance for scalogram analysis was to help the researcher

decide whether or not his data warranted further manipulation or purification. Purification was performed on the scales obtained in this study although the significance levels did not justify it. The investigator wanted to determine if there were subgroups of items on the DDTS which might be used in further research. After purification to discard items with scale error over 15% and item marginals above 80% and below 20%, coefficients of reproducibility on several remaining scales reached .90 or higher. However, in order to obtain an accurate level of significance for these purified scales, they would have to be tested on a new sample of adolescents from the same population (Chilton, 1974). Statisticians (Chilton, 1969; Sagi, 1959) have warned that purified scales are not yet subject to statistical verification except by replication. Inferences or comparisons made from these scales would not be justified until they are tested on another sample population (Guttman, 1974).

The scales which are reported in Tables 3 through 11 (see Appendix B) were the result of discarding items with high error or excessive marginal frequencies. The scales reported in these tables were those scales with three or more items which met Guttman's (1947) and Ford's (1954) criteria for inclusion in a purified scale. Table 12 (see Appendix B) presents the item marginals for all of the

items obtained prior to purification. Those were the item marginals used to purify the scales.

Tables 3 through 6 (see Appendix B) report the findings of Dales (1953), Phelan (1969), and the present study for total male and total female subgroups.

For Subtask 1, forming friendships with peers, neither the purified 4-item scale for males nor the purified 4-item scale for females reached the .90 level of reproducibility. Scale error was higher than 10% (see Table 3 in Appendix B).

For Subtask 2, learning to share affection with peers, neither of the purified 4-item scales for males nor for females obtained the .90 level of reproducibility. Scale error was too high (see Table 4 in Appendix B).

For Subtask 3, accepting oneself as a worthwhile person, the 4-item scale for males had scale error of more than 10% and failed the .90 level of reproducibility. The 4-item scale for females did obtain a coefficient of reproducibility of .907 (see Table 5 in Appendix B).

For Subtask 4, accepting others as worthy of friendship, the 4-item scales for males and for females had coefficients of reproducibility of .910 and .923 respectively (see Table 6 in Appendix B).

Tables 7 through 11 (see Appendix B) report the purified scales for age and sex subgroups which obtained coefficients of reproducibility of .90 or higher.

For Subtask 1, forming friendships with peers, three 3-item scales for girls at the ages of 11, 13, and 15 were obtained with acceptable coefficients of reproducibility (see Table 7 in Appendix B). No scales for boys had sufficient items for a scale after purification.

For Subtask 2, learning to share affection with peers, one 3-item scale for 11 year old boys was obtained (see Table 8 in Appendix B). No scales were obtained for girls on this subtask after purification.

For Subtask 3, accepting oneself as a worthwhile person, two 3-item scales were obtained for boys at the ages of 11 and 15 years. One 4-item scale was obtained for 13 year old boys (see Table 9 in Appendix B). Four 3-item scales were obtained for girls at the ages of 11, 12, 13, and 14 years. A 4-item scale was obtained for the total female sample on this subtask (see Table 10 in Appendix B).

For Subtask 4, accepting others as worthy of friendship, three 3-item scales for 11, 13, and 14 year old boys was obtained. Two 3-item scales were obtained for girls at the ages of 13 and 14 years (see Table 11 in Appendix B).

Discussion

The failure to obtain coefficients of reproducibility of at least .90 and the failure to obtain levels of probability of .05 or less indicated that the items on the Dales

developmental task scales did not allow prediction of developmental task achievement on the southwestern-urban population studied.

The level of item scale error and nonrandom distribution of scale error indicated that for this population sample the DDTs items were not cumulative (Guttman, 1974). The high probability level that the obtained responses could have occurred by chance alone did not justify the assumption of unidimensionality (Chilton, 1974). There did not appear to be enough consistency in the responses by this population sample to indicate that a single factor was being measured by each of the subtask scales.

In order for qualitative variables such as developmental tasks to be quantified by the method of scalogram analysis, rigid requirements concerning levels of scale error, levels of item marginals, and assurance that the results could not have occurred by chance must be met. If these criteria were met it could have been assumed that a respondent's Guttman scale score, as the quantitative variable, would have accurately predicted his developmental task level, a qualitative variable. The excessive amount of scale error on the items drawn from the sample of adolescents in this study prevented any of the necessary criteria from being met. The nature of the errors was nonrandom which indicated that one or two other variables of lesser magnitude may be in each subtask group of items (Guttman, 1974).

The Dales developmental task scales has been tested previously on samples from the same populations: nonurban adolescents living in the northeastern United States (Bayer, 1955; Dales, 1953; Phelan, 1969). Guttman (1974) suggested that when a set of items scales for one population but not for another the structure of the attitudes, or in this case developmental tasks, for the two groups might be too different for the same items to have the same meaning in both situations. The previous studies by Dales, Bayer, and Phelan supported the hypothesis that the Dales developmental task scales provided an operational definition of certain developmental tasks of adolescence. However, scale analysis does not define content. Scale analysis "...presumes that the universe is already defined, and it merely tests whether or not the area is representable by a single variable" (Guttman, 1974, p. 166). The failure of the present study to support the assumption that the Dales developmental task scales are representable by single variables does not therefore prove or disprove the assumption that developmental tasks are the same for urban and nonurban adolescents. In order for the Dales developmental task scales to be useful in assessing the achievement of developmental tasks with the southwestern-urban population used in this study, further research would be required.

If the data had formed acceptable scales, a comparison between urban and nonurban adolescents as to the level of achievement of the age-mates developmental task would have been justified. The results of this study did not warrant such a comparison. If a set of items is scalable for one population but not for another population, they differ in more than one dimension, or in kind of attitude rather than in degree with respect to the same dimension (Guttman, 1974).

Several basic assumptions for scale construction and validation which previous research by Bayer (1955) and Phelan (1969) did not violate are now brought into question. When a scale meets the criteria for reproducibility established by Guttman (1974), several conditions must be met: (a) the items must be unidimensional in content, and (b) all subjects must be similarly constituted in the trait or ability being tapped. Any departure from these conditions will result in the lack of reproducibility. White and Saltz (1974) stated that the lack of reproducibility in a response matrix is as likely to be caused by heterogeneity in the population tested, as by heterogeneity in the test items. Therefore, there is no way of determining what assumptions are reasonable from a single response matrix (White & Saltz, 1974). The plausibility of the assumptions can be determined only by further investigation.

Conclusions

The need for the recognition of the value of developmental concepts by educators and the usefulness of the developmental task concept in the education of children still exists. The results of this study reflect the difficulty involved in the attempt to quantify and measure the achievement of developmental tasks. Further investigation of the DDTS is recommended to identify and control for population variances. Different methods of analysis may be required. Leik and Matthews (1974) suggested that Guttman's procedures have provided a point of departure for establishing more appropriate procedures for assessing the presence of a developmental process. As a result of their research, Leik and Matthews stated that they were convinced that the concept of ordered developmental change is theoretically meaningful and that there must be some way of assessing whether order is evident in a sample of observable cases.

It may be that only a limited range of psychological and social phenomena have the intrinsic cumulative characteristic required by scalogram analysis (Stouffer, 1974). It is also possible that human abilities, attitudes, and traits may not be unidimensional traits, although White and Saltz (1974) see little harm in continuing to assume unidimensionality at least as a beginning point for research.

Appendix A

Dales Developmental Task Scales

DO YOU HAVE THIS PROBLEM ?	NO I DON'T HAVE THIS PROB- LEM	YES I DO HAVE THIS PROB- LEM	HOW IMPORTANT IS THIS PROBLEM TO YOU ?		
			VERY	SOME	NOT MUCH
1. I have trouble getting along with certain boys and girls					
2. I wish that my friends and I wouldn't get into arguments					
3. I wish more people would choose me, but there's a favorite everybody picks					
4. I'd like to make more new friendships but I don't know how					
5. How can I keep from getting mad at my friends					
6. My friends want to play one way and I want to play another					
7. I have trouble knowing if my best friends really like me					
8. I try to divide my time with several friends but they get jealous					
9. My best friend seems to like someone else better than me					

Dales Developmental Task Scales--Continued

10. When I choose one friend to go someplace I'm likely to hurt the other's feelings					
11. I'd really like more friends but I don't want to lose my best friend					
12. I have trouble trying to treat all my friends the same way					
13. You don't try hard because you don't think you can do it, sometimes you get nervous					
14. When no one pays any attention to me I feel left out					
15. Sometimes you are afraid to do things because your friends might laugh at you					
16. When I get up in front of a group to give a report, my classmates tease me. I know they are doing it in fun and they really like me, but it shakes my confidence					
17. I become shy and afraid to meet and talk to people. I get feeling sorry for myself					
18. Nobody in class likes certain people but I like them					
19. Some people just don't appeal to me as friends					
20. How can I avoid people without insulting them					
21. After I have a friend for awhile I don't like him (or her) anymore					

Appendix B

Table 3

Original Scalable Items for Boys and Girls Compared
in Three Studies for Subtask 1: Forming
Friendships with Peers

Item	Male			Female		
	1952 N=244	1969 N=397	1976 N=440	1952 N=266	1969 N=390	1976 N=444
	%	%	%	%	%	%
1 I have trouble getting along with certain boys and girls.....	64.8	66.2	54.3	66.5	64.4	65.1
2 I wish that my friends and I wouldn't get into arguments.....	..	49.0	45.7	55.6	56.9	62.4
3 I wish more people would choose me, but there's a favorite everybody picks ..	..	..	..	..	..	54.7
4 I'd like to make more new friendships but I don't know how.....	35.7	24.4	26.6	..	..	..
5 How can I keep from getting mad at my friends..	43.9	39.3	36.8	41.0	44.9	..
6 My friends want to play one way and I want to play another.....	..	..	..	29.3	30.5	28.8
Total Scale Error	9.6	7.6	12.9	10.8	9.5	12.5
Coefficient of Reproducibility	.904	.924	.871	.892	.905	.875

Table 4
Original Scalable Items for Boys and Girls Compared
in Three Studies for Subtask 2: Learning
to Share Affection with Peers

Item	Male			Female		
	1952 N=244 %	1969 N=396 %	1976 N=440 %	1952 N=266 %	1969 N=398 %	1976 N=444 %
7 I have trouble knowing if my best friends really like me.....	35.7	36.4	34.1	..	..	48.2
9 My best friend seems to like someone else better than me.....	30.3	33.3	..	..	..	38.5
10 When I choose one friend to go someplace I'm likely to hurt the other's feelings.....	..	..	46.1	54.1	47.2	57.4
12 I have trouble trying to treat all my friends the same way..	26.6	23.2	30.0	39.1	32.4	36.0
8 I try to divide my time with several friends but they get jealous.....	17.2	20.5	21.6	30.1	33.9	..
Total Scale Error	10.5	9.2	13.0	7.6	9.0	18.1
Coefficient of Reproducibility	.895	.908	.870	.924	.910	.819

Table 5
Original Scalable Items for Boys and Girls Compared
in Three Studies for Subtask 3: Accepting
Oneself as a Worthwhile Person

Item	Male			Female		
	1952 N=266	1969 N=377	1976 N=440	1952 N=266	1969 N=396	1976 N=444
	%	%	%	%	%	%
15 Sometimes you are afraid to do things because your friends might laugh at you..	48.4	52.2	..	53.0	56.3	..
14 When no one pays any attention to me I feel left out.....	43.0	45.2	60.0	..	..	78.2
13 You don't try hard because you don't think you can do it, sometimes you get nervous.....	..	..	45.9	40.2	39.8	54.3
17 I become shy and afraid to meet and talk to people. I get feeling sorry for myself.....	18.0	25.1	21.8	19.9	26.0	25.5
16 When I get up in front of a group to give a report, my classmates tease me Etc.....	..	..	30.7	..	..	33.8
Total Scale Error	7.1	7.0	10.7	6.8	7.1	9.3
Coefficient of Reproducibility	.929	.930	.893	.932	.929	.907

Table 6
Original Scalable Items for Boys and Girls Compared
in Three Studies for Subtask 4: Accepting
Others as Worthy of Friendship

Item	Male			Female		
	1952 N=244	1969 N=396	1976 N=440	1952 N=266	1969 N=392	1976 N=444
	%	%	%	%	%	%
19 Some people just don't appeal to me as friends.....	52.5	48.2	71.8	63.2	56.9	75.7
20 How can I avoid people without insulting them	29.5	29.0	38.6	43.6	39.0	48.4
18 Nobody in class likes certain people but I like them.....	27.5	24.0	31.1	34.9	29.8	43.7
21 After I have a friend for awhile I don't like him (or her) anymore.....	16.4	17.0	13.6	18.4	18.4	12.8
Total Scale Error	10.5	8.9	8.9	10.2	10.2	7.7
Coefficient of Reproducibility	.895	.911	.910	.898	.897	.923

Table 7
 Percentage of Positive Responses to
 Subtask 1: Forming Friendships
 with Peers for Girls

Item	Age		
	11 N=48	13 N=101	15 N=69
	%	%	%
1 I have trouble getting along with certain boys and girls.	73	66	..
2 I wish that my friends and I wouldn't get into arguments.	..	..	43
3 I wish more people would choose me, but there's a favorite everybody picks....	..	52	49
5 How can I keep from getting mad at my friends.....	63	..	..
6 My friends want to play one way and I want to play another.....	40	21	15
<hr/>			
Total Scale Error	8.3	4.9	8.7
Reproducibility	.917	.951	.913

Table 8
 Percentage of Positive Responses to
 Subtask 2: Learning to Share
 Affection with Peers
 for Boys

Item	Age 11 N=38
	%
7 I have trouble knowing if my best friends really like me.	61
8 I try to divide my time with several friends but they get jealous.....	42
12 I have trouble trying to treat all my friends the same way.....	32
Total Scale Error	4.4
Reproducibility	.956

Table 9
 Percentage of Positive Responses to
 Subtask 3: Accepting Oneself
 as a Worthwhile Person
 for Boys

Item	Age		
	11 N=38	13 N=101	15 N=95
	%	%	%
13 You don't try hard because you don't think you can do it, sometimes you get nervous.....	42	42	..
14 When no one pays any attention to me I feel left out.....	..	66	..
15 Sometimes you are afraid to do things because your friends might laugh at you.....	66	..	55
16 When I get up in front of a group to give a report, my classmates tease me. I know they are doing it in fun and they really like me, but it shakes my confidence.....	29	30	39
17 I become shy and afraid to meet and talk to people. I get feeling sorry for myself..	..	22	28
Total Scale Error	5.3	9.7	8.4
Reproducibility	.947	.903	.916

Table 10
 Percentage of Positive Responses to
 Subtask 3: Accepting Oneself
 as a Worthwhile Person
 for Girls

Item	Total Sample N = 444 %	Age			
		11 N=48 %	12 N=108 %	13 N=101 %	14 N=118 %
13 You don't try hard because you don't think you can do it, sometimes you get nervous.....	54	54	51	..	..
14 When no one pays any attention to me I feel left out.....	78	..	..	74	78
15 Sometimes you are afraid to do things because your friends might laugh at you..	..	79	64	54	..
16 When I get up in front of a group to give a report, my classmates tease me. I know they are doing it in fun and they really like me, but it shakes my confidence.....	34	23	..	31	41
17 I become shy and afraid to meet and talk to people. I get feeling sorry for myself.....	26	..	20	..	28
Total Scale Error	9.3	6.9	6.8	3.9	5.1
Reproducibility	.907	.931	.932	.960	.949

Table 11
 Percentage of Positive Responses to
 Subtask 4: Accepting Others
 as Worthy of Friendship

Item	Age	Boys			Girls	
		11 N=38	13 N=101	14 N=108	13 N=101	14 N=118
		%	%	%	%	%
18	Nobody in class likes certain people but I like them.....	29	31	26	39	40
19	Some people just don't appeal to me as friends.....	71	72	70	76	73
20	How can I avoid people without insulting them.....	34	40	45	49	49
Total Scale Error		7.0	7.6	7.4	6.6	9.3
Reproducibility		.929	.924	.926	.934	.907

Table 12
Percentages of Positive Responses
by Item for 1969 and 1976

For Boys		1976					
Items	Totals		By Age				
	1969	1976	11	12	13	14	15
	%	%	%	%	%	%	%
Subtask 1							
	N=388	N=440	N=38	N=98	N=101	N=108	N=95
1	66.0	54.3	50.0	54.1	52.5	49.1	64.2
2	49.0	45.7	50.0	52.0	40.6	41.7	47.4
3	37.9	41.1	44.7	37.8	44.6	36.1	45.3
4	24.0	26.6	18.4	24.5	27.7	25.0	32.6
5	39.4	36.8	44.7	45.9	34.7	33.3	30.5
6	36.6	38.9	50.0	41.8	40.6	30.6	38.9
Subtask 2							
	N=392						
7	36.2	34.1	60.5	36.7	29.7	27.8	32.6
8	20.7	21.6	42.1	17.3	22.8	20.4	17.9
9	32.7	31.8	52.6	36.7	30.7	25.0	27.4
10	34.9	46.1	44.7	50.0	48.5	50.9	34.7
11	25.8	27.0	31.6	23.5	28.7	24.1	30.5
12	23.0	30.0	31.6	26.5	24.8	29.6	38.9
Subtask 3							
	N=393						
13	31.6	45.9	42.1	47.9	41.6	46.3	49.5
14	45.3	60.0	57.9	56.1	66.3	60.2	57.9
15	52.3	56.1	65.8	56.1	61.4	49.1	54.7
16	18.0	30.7	28.9	23.5	29.7	31.5	38.9
17	25.2	21.8	18.4	13.3	21.8	25.0	28.4
Subtask 4							
	N=396						
18	24.0	31.1	28.9	30.6	30.7	25.9	38.9
19	48.2	71.8	71.1	77.6	71.3	70.4	68.4
20	29.0	38.6	34.2	33.7	39.6	45.4	36.8
21	16.7	13.6	13.2	17.3	15.8	13.9	7.4

Table 12--Continued

For Girls Totals		1976 By Age				
1969	1976	11	12	13	14	15
%	%	%	%	%	%	%
N=384	N=444	N=48	N=108	N=101	N=118	N=69
64.6	65.1	72.9	79.9	66.3	60.2	47.8
56.8	62.4	81.3	73.1	60.4	57.6	43.5
52.1	54.7	60.4	52.8	52.5	59.3	70.8
24.0	33.8	27.1	29.6	33.7	39.8	34.8
44.5	46.6	62.5	54.6	45.5	39.8	37.7
30.7	28.8	39.6	43.5	20.8	26.3	14.5
N=395						
45.3	48.2	62.5	58.3	50.5	41.5	30.4
33.7	35.6	41.7	40.7	36.6	32.2	27.5
42.5	38.5	58.3	47.2	41.6	31.4	18.8
47.1	57.4	68.8	69.4	54.5	56.8	36.2
30.9	37.2	52.1	40.7	34.7	34.7	28.9
32.4	36.0	39.6	37.9	37.6	33.1	33.3
N=392						
39.8	54.3	54.2	50.9	55.4	58.5	50.7
57.4	78.2	81.3	82.4	74.3	77.9	75.4
56.4	59.9	79.2	63.9	54.5	60.2	47.8
20.9	33.8	22.9	35.2	30.7	40.7	31.8
26.2	25.5	16.7	20.4	26.7	27.9	33.3
N=392						
29.8	43.7	52.1	50.9	38.6	39.8	40.6
56.9	75.7	81.3	82.4	75.2	72.9	66.7
39.0	48.4	47.9	52.8	48.5	49.2	40.6
18.4	12.8	18.8	19.4	3.9	11.0	14.5

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