THE RELATIONSHIP OF SELECTED TEMPERAMENT CHARACTERISTICS TO IDEATIONAL FLUENCY IN PRESCHOOL CHILDREN

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Abstract

The relationship of selected temperament characteristics and ideational fluency in preschool children was explored in this study. The subjects were 58 children (31 boys and 27 girls) who ranged in age from 46-72 months, with a mean age of 57 months. The subjects were given the Multidimensional Stimulus Fluency Measure, a test of ideational fluency. The parents filled out the Behavioral Style Questionnaire, an assessment of preschool children's temperament. Regression analyses revealed that distractibility and adaptability were related to original scores on the patterns subtest of the MSFM, with a multiple r of .41, ($p < .05$). Temperament was shown to be related to original scores only on those tasks involving tactile manipulation of visible stimuli, but was related to total popular responses. Analyses revealed that distractibility, adaptability, and threshold yielded a multiple r of .43, ($p < .05$) with total popular scores on the MSFM.

The Relationship of Selected Temperament Characteristics to Ideational Fluency in Preschool Children

The United States Office of Education includes creative thinking among the abilities to be considered for participation in federally supported programs for the gifted and talented (Grinder, 1985). Although the importance of identifying and enhancing original thinking has been identified, until recently little work has been conducted which attempted to measure the original thinking of young children. Most studies of creativity have focused on only one aspect which might affect creativity: group vs individual administration (Milgram & Milgram, 1976), special training (Cliatt, Shaw, & Sherwood, 1980), gifted vs average children (Kershner & Ledger, 1985), and behavioral style (Singer & Rummo, 1973). These studies are limited because they neglect the many factors influencing creativity in young children. Moreover, the interplay between the factors could be important. Recently, work has been conducted by Moran and his associates to design a model of creativity which considers the many variables influencing creative thinking in young children (Sawyers, Moran, & Tegano, in press).

In the study of creativity and original problem-solving, it has been suggested that personality variables are at least as important as cognitive variables (Barron & Harrington, 1981; Dellas & Gaier, 1970). Few studies, however, have investigated the relationship of personality variables to creativity in young children. Internal locus of control has been linked to ideational fluency among second graders (Cohen & Oden, 1974) and in preschoolers (Sawyers & Moran, 1984). Starkweather (1971) has suggested that willingness-to-try-the-difficult and conformity were important components of creativity at this age.

One framework for looking at personality variables in young children involves the study of temperament. Thomas, Chess, Birch, Hertzig, and Korn (1963) found nine variables which constitute temperament. These are: activity level, rhythmicity, approach/withdrawal, adaptability, intensity, sensory threshold, mood, distractibility, and attention span/persistence.

Although numerous studies of temperament and children have been conducted, there is a surprising lack of studies which focus on temperament as it is related to or contributes to cognitive abilities. The case could certainly be made that at least some of the

temperament variables influence cognition, specifically problem-solving. For example, the approach/withdrawal dimension appears similar to the exploratory behavior that Burton White (1975) suggested as critical to problem-solving; attention span has been discussed as an important feature in children's learning literature (Stevenson, 1972); and Kaufman (1979) labeled the third factor he uncovered in the analysis of the Wechsler tests as "freedom from distractibility". In studies of infants, Sostek and Anders (1977) have found some of the temperament variables (e.g., intensity) related to mental scores on the Bayley scales.

Studies directed at the investigation of the relationship of personality to creativity in preschool children have been hindered by the lack of reliable and valid measures of this age group. Recent research efforts, however, have led to an improvement in this situation. Hubert, Wachs, Peters-Martin, and Gandour (1982) found the Behavioral Style Questionnaire (BSQ) which assesses the temperament variables identified in the NYLS to have a high test-retest reliability and acceptable measures of internal consistency. Carey, Fox, and McDevitt (1977) report the test-retest reliability (ages 3 to 7) as 0.89, with an alpha

reliability of 0.84. The Multidimensional Stimulus Fluency Measure (MSFM) which assesses the ideational fluency of preschool children has been reported to be relatively stable (r = 0.54) from ages 4 to 7 (Moore & Sawyers, in press) and to have acceptable internal reliability and construct validity (Godwin, 1984). Moran, Sawyers, Fu, and Milgram (1984) found the MSFM to be related to measures of fantasy and imaginative play. These recent research efforts may enable us to better measure the theoretical linkages between personality and cognitive factors in the developing creative potential of young children.

In this study, five [1] of the nine temperament characteristics were hypothesized to be related to ideational fluency in preschool children: approach, persistence, distractibility, sensory threshold, and adaptability. These five variables characterize an adaptable child, who is sensitive to environmental stimulation with the task persistence and low distractibility required to see a task through to completion. All of these characteristics have been cited by various investigators as components of creative thought. We hypothesize that adaptability, approach, and persistence would be positively correlated with

original responses on the MSFM and sensory threshold and distractibility would be correlated negatively.

Method

Subjects

The sample consisted of 31 boys and 27 girls enrolled in the Oklahoma State University Child Development Laboratory. The age range was 45-65 months, with a mean age of 57 months. This sample contained a seven percent international population and typically has an above average IQ. All children who met the age (minimum 3 years, 10 months) and consent requirements and who had been in the United States for at least one year, were used.

Instruments Used

Ideational Fluency. The Multidimensional Stimulus Fluency Measure (MSFM) was used to assess ideational fluency. These materials were adapted by Moran, Milgram, Sawyers, and Fu (1983) from those of Wallach and Kogan (1965), Ward (1968), and Starkweather (1971) for use with preschool children. Three subtests (instances, pattern meanings, and alternate uses) were used with two items per subtest. For the instances subtest, children name all the things they can think of that have a specific feature (i.e., round, red). In the

patterns task, children are handed three-dimensional styrafoam shapes, encouraged to turn them in any way desired, and asked, "What could this be?". For the uses task, children are asked what they could use items for (i.e., box, paper). Each test response was scored as popular or original (given by more or less than five percent of the normative group, respectively).

Temperament. The Behavioral Style Questionnaire (BSQ) developed by McDevitt and Carey (1978) was used to assess temperament. The BSQ is a 100-item questionnaire to be rated by the parent on a six-point scale from one (almost never) to six (almost always). A weighted procedure is then used to obtain scores on each of nine temperament dimensions (Field & Greenberg, 1982): activity, rhythmicity, adaptability, approach, threshold, intensity, mood, distractibility, and persistence.

Procedure

Sessions were conducted over a five-week period with each subject tested individually in a private room relatively free from external stimuli. Each of the two sessions took approximately 15-20 minutes per child. In session one, the instances and pattern meanings measures were given; in session two the alternate uses

task was given. The two testing sessions were approximately two weeks apart. During the testing, no time limits for responding were used. Three trained examiners obtained the measures; to help control for examiner bias, each child was tested by two different examiners whenever possible. Both sessions were audio-taped in order to aid in recording the responses. To ensure confidentiality, subject numbers were used on answer forms and tapes. The temperament questionnaire was sent home with each child participating in the study approximately one month after obtaining parental permission for children to participate in the study. In the letter, the parents were told that their child was participating in a study of temperament characteristics; but, at no time was the temperament study linked to the creativity research. To further ensure confidentiality, the child's research number was written on the questionnaire in the blank for the child's name.

Results and Discussion

Data were analyzed using an all possible subsets multiple regression with original responses on the ideational fluency measures serving as the criterion variable and the five target temperament variables (adaptability, approach, distractibility, persistence,

and threshold) serving as the predictors. Separate analyses were conducted for total original scores and original scores on each of the three subtests. A significant relationship was shown for distractibility with total original scores on the MSFM which yielded a correlation of -0.33, $p < .05$. The analysis of popular scores on the MSFM was conducted with each of the five target temperament variables. A significant correlation was shown for total popular scores with distractibility -0.31, $p < .05$. Age and gender effects were not evidenced. Table 1 lists the means and standard deviations for total original and popular scores on the MSFM and for the BSQ variables.

Insert Table 1 about here

The hypothesized relationship between temperament and creativity was only partially confirmed. The only significant relationship which the regression analysis revealed was that distractibility and adaptability yielded a multiple r of 0.41, $p < .01$, with original scores on the patterns task. A significant relationship was found for total popular scores with distractibility, adaptability, and threshold, yielding a multiple r of

0.43, $p < .05$.

Thus, personality variables as measured by temperament were related primarily to the ideational fluency task which involved tactile manipulation of tangible stimuli rather than only verbal responses, and to popular responses. Perhaps popular responses are more susceptible to a variety of influences than original responses, accounting for the relationship of distractibility, adaptability, and threshold to total popular scores. Popular scores have been shown to be more highly correlated to IQ (Moran, et al, 1983). There is also some suggestion that they appear to be more influenced by cultural differences (Marcos, 1987). It is interesting that the primary effect of temperament was on the nonverbal task. Certainly the presentation of a tangible stimulus might evoke a different response orientation in the children, thereby showing a different set of influences.

It appears from this data that the personality variables measured by these temperament scales are related to the generation of original ideas only within certain contexts (i.e., presentation of tangible stimuli). Whether these influences change as our focus moves from creative potential in preschoolers to creative products

and self-evaluation in older children is still an open question. Temperament, as a relatively stable personality characteristic, may play a different role in the creative process at different age levels or within different contexts.

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Footnote

[1]Due to the sample size, data analysis was limited to the five characteristics which were assumed to be most closely linked to creative potential. This preserved a more appropriate subject to variable ratio for the regression analysis.

Table 1

Means and Standard Deviations

Variable	Means	Standard Deviation
Original total	15.67	11.59
Popular total	15.57	6.90
Total frequencies	31.24	16.48
Activity	15.02	3.74
Rhythmicity	10.64	1.70
Approach	10.86	3.27
Adaptability	9.80	2.97
Intensity	20.48	5.17
Mood	12.53	3.85
Persistence	9.10	1.68
Distractibility	15.26	4.32
Threshold	17.69	4.20

APPENDIX A

LITERATURE REVIEW

The Relationship of Selected Temperament Characteristics to Ideational Fluency in Preschool Children

Creativity in Young Children

In the past thirty years, there has been an increased interest in the study of creativity. The United States Office of Education now includes creative thinking among the abilities to be considered for participation in federally supported programs for the gifted and talented (Grinder, 1985). Although the importance of identifying and enhancing creative thinking has been shown, little research has been conducted which studied creativity in young children.

Just as the study of intelligence began with adults, so did the study of creativity. An early pioneer in the study of creativity was J. P. Guilford. His structure-of-intellect model (1956) has served as the framework for numerous studies. His research showed that intelligence is multifaceted and a need exists to consider more than one dimension of a problem. Intelligence, as conceived by Guilford, has two factors: memory and thought. The thought factor has multiple levels: (1) cognition (discovery), (2) production, and (3) evaluation. The cognition factors have to do with

becoming aware of mental items or constructs of one kind or another (Guilford, 1956). The production group includes the concepts of convergent and divergent thinking abilities. Convergent thinking involves focusing thinking toward the production of one correct answer (solution). Divergent thinking involves moving from a single stimulus toward multiple solutions. This distinction is generally considered the basis of most research on creativity. It is divergent thinking that serves as the basis of ideational fluency. Guilford's third level of thinking involves evaluation, the suitability or effectiveness of the thinking.

Mednick (1962) introduced the notion of a response hierarchy: popular responses occur early in the sequence of responses and original responses come later. Quality of responses is said to be related to quantity. Thus, the subject who gives more responses typically also gives better responses. Wallach and Kogan (1965) were influenced by Guilford's work. They designed a measure to assess the creative process which focused on ideational fluency and utilized five subtests. In the instances task the subject is asked to generate possible instances for a class concept specified by the examiner (i.e., round things). Alternate uses requests the subjects

to think of as many uses as possible for a named object (e.g., newspaper). In the similarities task the subject is requested to generate possible similarities between a verbally specified pair of objects (e.g., cat and mouse). These three subtests were all verbal, the remaining two were presented visually. The pattern meanings task consisted of abstract visual designs, with the subject requested to name all possible meanings or interpretations for each design. In the line meanings task the subjects are presented with nonobjective line forms and asked to give meanings and interpretations for each stimulus.

Scoring Wallach and Kogan's battery consisted of tallying total number of responses per stimulus item as well as scoring each response for uniqueness (given by only one person in the sample). These scoring procedures as described by Wallach (1970) derived scores for ideational fluency (the generation of ideas) and for originality (the uniqueness defined by statistical infrequency). Wallach and Kogan assumed that, based on Mednick's response hierarchy, uniqueness would increase with a subjects's successive responses to an item, and that, therefore, a subject who produced a larger number of responses would generate a larger number of

unique responses. Kogan (1983) has stated that correlations among the different ways of scoring responses from divergent thinking tasks may be sufficiently high to warrant selection of the most reliable and economical index, the sheer number of different responses generated (i.e., ideational fluency).

Much of the research, such as that of Wallach and Kogan, was conducted with adults and older children. Starkweather (1964, 1971), however, argued that many of the methods used at these ages would be inappropriate for use with younger (preschool) children. Starkweather (1971) devoted a decade searching for the appropriate ways to test for young children's creativity. She began with the measures used with older subjects and found problem areas: the scoring methods and the stimulus materials, themselves.

Starkweather proposed to alter the scoring method in such a way that each response by a given child is compared with all other responses made by that child (within child variation); then, the child who gives the greatest variety of responses is judged to be the most original. The scoring of statistical infrequency (i.e., between subject variations, such as that used by Wallach and Kogan) was problematic for Starkweather (1971) in that a child with a pet name for an object will profit

in such a way that his or her response will not be duplicated by another child, and yet, these ideas may not be more original than those of other children.

Starkweather (1971) found the line drawings frequently used to be problematic because the children frequently wanted to handle the stimulus about which they were talking. She constructed simple three-dimensional objects from styrofoam to satisfy this need. This seemed most appropriate for children who were of preschool age and not functioning at an abstract cognitive level.

Other research has also focused on adapting creativity measures to better fit the needs of young children. In 1983, Moran, Milgram, Sawyers, and Fu developed the Multidimensional Stimulus Fluency Measure (MSFM) which they adapted from works of Ward (1968), Starkweather (1964, 1971), and Wallach and Kogan (1965). The MSFM consists of three subtests designed to assess ideational fluency: instances, patterns, and uses. In the instances task, children are asked to name all the things they can think of which have a particular feature (i.e., round, red). For the patterns task, subjects are asked to look at a shape and name all the things it could be. Based on Starkweather's concern that children needed to handle

the stimulus presented, Moran, Milgram, Sawyers, and Fu (1983a) utilized the three-dimensional styrofoam shapes used by Starkweather. These authors (Fu, Kelso, & Moran, 1984) found that construct validity was enhanced with the use of three-dimensional items accompanied by haptic exploration rather than with either two-dimensional items or when only visual exploration is provided. In the unusual uses task, subjects are asked to name all the uses they can think of for a specified object (i.e., box, paper). Sawyers, Moran, Fu, and Milgram (1983) adapted the task to be appropriate for young children from studies by Ward (1968) and Williams and Fleming (1969) which yielded a low number of responses. This low total frequency led to a concern that it might be difficult to discriminate between high and low creative children based on Mednick's response hierarchy. With the selection of items which were assumed to be more familiar to preschool children (Sawyers, et al, 1983) more responses were elicited and discrimination between subjects increased.

The MSFM incorporated many of Starkweather's suggestions in that the stimulus materials were adapted to be age appropriate, yet it utilized the between-subject definition or originality of Wallach and Kogan's

rather than Starkweather's within-subject method. This was partly due to some suggestions that Starkweather's method might be affected by developmental level and by an emphasis on the conception of creativity on evaluation. Additionally, the MSFM authors now indicate that the number of original responses are preferred as the basic score over total fluency scores because at this age the number of popular responses appears to be significantly correlated to IQ (Moran et al, 1983a; Moran, Sawyers, Fu, & Milgram, in press). Recently these authors have developed a model of creativity which incorporates a multidimensional framework for conceptualizing creativity (Sawyers, Moran, & Tegano, in press). This model suggests that (1) the primary criterion for creativity changes with age, and (2) the factors influencing the expression of that creativity must be considered within a multivariate model. Thus, whereas previous studies focused much attention on ideational fluency (or some other simple aspect of the creative process), this model suggests that ideational fluency is an appropriate criterion for creative potential only at the preschool level. Moreover, biological, cultural, contextual, and psychological factors all play an important part in the creative

process, and their relative influence changes with age and context.

Included in these psychological factors are a variety of personality variables. In the study of creativity and original problem-solving, it has been suggested that personality variables are at least as important as cognitive variables (Barron & Harrington, 1981; Dellas & Gaier, 1970). Few studies, however, have investigated the relationship of personality variables to creativity in young children. Internal locus of control has been linked to ideational fluency among second graders (Cohen & Oden, 1974) and in preschoolers (Sawyers & Moran, 1984). Starkweather had suggested that willingness-to-try-the-difficult and conformity (1971) were important components of creativity at this age. One framework for looking at personality variables in young children involves the study of temperament.

Temperament

What is temperament? Researchers have been arguing about this question for decades. At the present time there appears to be some agreement among researchers that the term "temperament" refers to dimensions of personality that are biological in origin (Plomin, 1983).

There also seems to be some agreement that temperament refers to the how as opposed to the what of behavior (Crockenberg, 1986). For example, virtually all babies cry. Temperament differences refer not to the fact that crying, but to how frequently, how intensely, how inconsolably any specific baby cries. Researchers differ on the extent to which temperament differences are assumed to be genetic in origin, on the stability in temperament they expected, and on the dimensions or characteristics they would include under the general rubric of temperament (Goldsmith, 1985). These issues still promote lively discussion among the major figures in temperament research (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987).

An early temperament study which has served as the basis of comparison was the New York Longitudinal Study (NYLS) conducted by Thomas, Chess, Birch, Hertzig, and Korn (1963). In this study, the researchers found nine variables which constitute temperament. These are activity level, rhythmicity, approach/withdrawal, adaptability, intensity, sensory threshold, mood, distractibility, and attention span/persistence.

Since publication of the NYLS, most studies which focused on temperament in young children have been aimed at replication of this study. Many of these

studies have been concerned with how temperament is assessed: through observations, parent interview, or parent questionnaire (Field & Greenberg, 1982; Lyon & Plomin, 1981; McDevitt & Carey, 1978). Numerous researchers (Carey, 1970, 1983; Carey & McDevitt, 1978; Hegvik, McDevitt, & Carey, 1982; Lerner, Palermo, Spiro, & Nesselroade, 1982; Scholom, Zucker, & Stollak, 1979) have modified the Thomas et al framework to develop scales appropriate for assessing temperament in infants, young children, and adults (Keogh, 1986).

McDevitt and Carey (1978) developed the Behavioral Style Questionnaire (BSQ) to assess the temperament variables identified in the NYLS. Hubert, Wachs, Peters-Martin, & Gandour (1982) found the BSQ to have high test-retest reliability and acceptable measures of internal consistency. Carey, Fox, and McDevitt (1977) state the test-retest reliability for ages 3-7 as 0.89, with an alpha reliability of 0.84.

Although numerous studies of temperament and children have been conducted, there is a surprisng lack of studies which focus on temperament as it is related to or contributes to cognitive abilities. In studies of infants, Sostek and Anders (1977) have found some of the temperament variables (e.g., intensity) related to mental scores on the Bayley scales. Despite

the lack of research, the case could certainly be made that at least some of the temperament variables influence cognition, specifically problem-solving. For example, the approach/withdrawal dimension appears similar to the exploratory behavior Burton White (1975) suggested as critical to problem-solving; attention span has been discussed as a critical feature in children's learning literature (Stevenson, 1972); and Kaufman (1979) labeled the third factor he uncovered in the analysis of the Wechsler tests as "freedom from distractibility".

Conclusions

The issue of personality influences on cognition in young children and in creative potential in particular, seems to be an area ripe for investigation. Perhaps studies directed at the investigation of the relationships of personality to creativity in preschool children have been hindered by the lack of reliable and valid measurements for this age group. Now that reasonably appropriate measures exist for these constructs, research can move forward that would contribute to the generation of appropriate theoretical models of creativity. Since the importance of creativity has been shown and because personality variables are a part of each child,

a need exists for a study to be conducted which examines the effects of personality variables upon the creative potential of young children. The focus on young children is important because they are at a critical point, the point at which they are most vulnerable to stimulation. Children with remedial tendencies in creative potential could receive remediation based on their temperament characteristics, should it become necessary or desirable to do so. One could also suggest that children with varying temperaments may express their creativity in different ways and/or may need different contextual factors to elicit their creative potential. Given the dearth of literature in this area we simply do not know how personality interacts with other variables in eliciting or promoting creative potential.

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APPENDIX B

LETTERS TO PARENTS

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS
AND CHILD DEVELOPMENT

STILLWATER, OKLAHOMA 74078
241 HOME ECONOMICS WEST
(405) 624-5057

February 24, 1986

Dear Parent,

We are preparing a research project on creativity sponsored by the Department of Family Relations and Child Development at OSU. This project will help us understand the development of creative thought. We would like to have your cooperation in permitting your child to participate in the project. Your child will be asked to respond to several standardized questions in a "pressure-free" setting. Since we are interested in the child's thought processes, there are no right, wrong or expected answers to the questions.

Each child will be seen individually by a researcher for a 15-minute session. In these sessions, measures of creativity and other cognitive tasks will be administered. Our experience has been that most children very much enjoy participating in research of this kind (the activities are similar to those already in the child's classroom or home). Your child's name will not be attached to the answer forms to ensure confidentiality.

We respect the right of the parent and of the child to withdraw from the research project at any time. No child will be forced to participate if he or she does not want to. As previously mentioned, however, we do not foresee any physical, emotional, or social risks to you or the child which might result from participation. We will be more than happy to share our results with you upon completion of the research.

We are assuming that, after you have read this information, we have your consent and can use your child in our research project. If you do not want your child to participate, or have any questions about the research, please contact the researchers through the Department of Family Relations and Child Development (624-5057). Thank you for your cooperation.

Respectfully,

Jim Moran

Dr. Jim Moran, Project Director

jj

CENTENNIAL DECADE
1980 • 1990

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS
AND CHILD DEVELOPMENT

STILLWATER, OKLAHOMA 74078
241 HOME ECONOMICS WEST
(405) 624-5057

April 2, 1986

Dear Parents:

The Department of Family Relations and Child Development is conducting a study of children and temperamental characteristics. Since you best know your child, we are asking for your help.

Enclosed please find a temperament questionnaire. This assessment should take approximately 20 minutes. When filling out this questionnaire please be certain to rate your child's recent behavior (that of the last four to six weeks). Please choose the number on the scale that best describes your child. Return the questionnaire to the box in your child's classroom. The results will be, of course, confidential.

Thank you for your cooperation. If you have any questions, please feel free to contact Dr. Jim Moran, the project director, at 624-5057 or Anne Bomba, researcher, at 624-5061.

Respectfully.

Jim Moran
Project Director

Anne Bomba
Researcher

jj

CENTENNIAL DECADE
1980 • 1990

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS AND CHILD DEVELOPMENT
Stillwater, Oklahoma 74074
(405) 624-5057

April 15, 1986

Parents:

Just a reminder to return the temperament questionnaire. If you need another copy, just contact us or your child's teacher. You don't need to put your child's name or fill out any of the demographic information on the form.

Thanks,

Jim Moran

Anne Bomba

jj

APPENDIX C

DESCRIPTION OF INSTRUMENTS

Ideational Fluency

The MSFM (Moran, Milgram, Sawyers, & Fu, 1983) uses three tasks from the Wallach and Kogan model to index ideational fluency: Instances, Pattern Meanings, and Unusual Uses. For each task the subject is first provided an example item, then asked to name all the things that they can think of to fit the particular task, (see pp. 45-49 for test instructions). The reliability and validity of the MSFM has been established as well as scoring protocols and normative data from research with over 120 preschool children (Godwin, 1984). Validity of the MSFM as a cognitive style distinct from intelligence was evidenced by Moran et al (1983) with correlation between original and popular scores with intelligence being 0.22. The MSFM appears to remain relatively stable, $r=0.54$, $p < .01$ between the ages of 4 and 7 (Moore & Sawyers, in press. The intertask reliability for the MSFM tasks runs greatest between round and red, $r=0.65$, $p < .05$, and lowest between boat and foot, $r=0.24$. Scoring of the MSFM was accomplished by joint consensus of the three examiners on the response scores given in the scoring protocol (Godwin, 1984).

Creativity Research Group

General Instruction for the Examiner

Please bear in mind the following general guidelines:

(1) The establishment of the proper atmosphere for testing and rapport between examiners and subjects is a critical factor in this study. Examiner behavior can significantly affect the research results. Examiners must behave in a friendly manner, create a pleasant atmosphere, and refrain from any behavior which creates the impression of school-type testing and evaluation. The very words and actions of the examiner are critical.

(2) Examiners are requested to arrive early and to make a special effort by means of informal talk to establish rapport. It is imperative not to express anger or impatience at any time. It is important to maintain a pleasant tone in your speech at all times.

(3) Since testing procedures are untimed, each subject will finish at a different time. Allow children enough time to do this task. Do not overschedule.

(4a) The examiner must bear in mind the importance of establishing trust, a pleasant atmosphere, and the desire to participate. The warm-up game is designed to help achieve these goals. The examiner should maintain as natural a manner as possible while at the same time stimulating the child's interest in the games, and encouraging him to think and to make the maximum effort to give as many responses as possible.

(4b) The examiner should exchange names with the subject, record the name, and continue to call the subject by his first name during the testing session. The child was asked his first name so that the examiner can use it in establishing a more relaxed and friendly atmosphere.

(4c) The examiner says:

> Today we are going to play some games. They are a new kind of game which you have probably not played before. We will play several different games. These are thinking and imagination games. You don't have to hurry. We can play for as long as you want.

(4d) Refer to specific task instructions for detailed instructions on tasks and answer sheets. Examiner records child's answers verbatim on the form provided. If you do not have enough room use the other side of the answer sheet.

(4e) At the end of the test session the examiner should say to the subject, "THAT WAS THE LAST GAME FOR TODAY. THANK YOU FOR YOUR COOPERATION, YOU WERE A BIG HELP. YOU DID VERY WELL. I'LL SEE YOU AGAIN AND PLAY SOME MORE GAMES LIKE THESE."

General Instructions (Cont.)

(5) The examiner is to answer the subjects' questions in the following manner:

(a) Procedural questions are to be answered by repeating the instructions or explaining in synonymous terms.

(b) Questions designed to elicit help from the examiner are answered by saying "WHATEVER YOU THINK" or "DO WHAT YOU THINK IS BEST."

(c) Children may ask "IS THAT RIGHT?" Respond by saying: "THERE ARE NO RIGHT OR WRONG ANSWERS, WHATEVER YOU THINK IS FINE."

(6) It is important to remember that we are guests within the school and have been allowed the privilege of testing the children. We need to remain courteous at all times. Confidentiality of data must be respected. Also children may refuse to be tested or decide to quit in the middle of a test session. If this occurs use "gentle cohersion" to try to persuade the child to stay but if the child will not, discontinue testing for that day and try later in the week.

(7) Be sure to record any irregularities in testing, such as discontinuance, which might occur before, during, or after testing on the form provided for general comments.

(8) In Session I we will be using the following tasks:

1. Instances
2. Patterns

In Session II the tasks will be:

1. Uses

Instances Task Instructions

"Now we're going to play a game called 'all the things you can think of'. I might say,"Tell me things that hurt" and I would like you to tell me as many things as you can think of that hurt. Let's try it. Please tell me all the things you can think of that hurt." (Let the child try to generate responses.) Then reply with,"Yes, that's fine. Some other things that hurt are falling down, getting slapped, fire, getting bruised, a knife, and probably there are a lot of other things too." (The examiner should vary answers so as to give all of these which the child did not give.) Then proceed by saying,"You see that there are all kinds of different answers in this game. Do you know how to play?" (If the child indicates understanding of the game proceed with test items. If the child does not understand repeat procedure from beginning. If child is still not understanding, terminate test sessions.) The examiner should then say,"Now remember, I will name something and you are supposed to name as many things as you can. Take as long as you want. OK, let's try another" (NO help should be given to the child when test items are being used)

(1) Name all the things you can think of that are ROUND.

(2) Name all of the things you can think of that are RED.

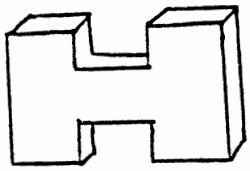
When child stops responding ask "What else can you think of" or "Tell me some more things you can think of" until the child indicates he or she has no more responses.

PATTERNS (3 Dimensional)

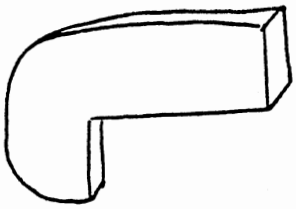
This task deals with the three dimensional designs. The administration of the test should go as follows:

"In this game I'm going to show you some blocks. After looking at each one I want you to tell me all of the things you think each block could be. Here is an example- you can turn it any way you'd like to (Give the example block to the child) "What could this be?" (Let the child respond) "Yes, those are fine. Some other things I was thinking of were a bridge, a bed, a building block, a chair, and there are probably a lot of other things too." The experimenter should vary answers so as to give different ones than the child. If the child indicates an understanding of the game, proceed with the tasks.

Example:"



Stimuli:



"Hammer"

"Half"

Uses Task Instructions

"Now today we have a game called "what can you use it for?" The first thing we're going to play with will be a pencil-(Experimenter hands pencil to child) I want you to tell me all the things you can think of that you can DO with a pencil, or PLAY with it, or MAKE with it. What can you use a pencil for?" (Let the child try to generate some responses.) Then reply with "Yes, that's fine. Some other things you could use a pencil for are as a flagpole, to dig in the dirt, or you could use a pencil as a mast in a toy boat. Probably there are a lot of other things too. (The examiner should vary answers so as to give all of these which the child did not give.) Then proceed by saying,"You see that there are all different answers in this game. Do you know how to play?" If the child indicates understanding of the game proceed with test items. If the child does not understand, repeat procedure from beginning. If child still does not understand, terminate. The examiner should then say: "Now remember I will name something and you are supposed to tell as many uses for it as you can think of. Take as long as you want. Let's try this one." NO help should be given to thechild on the test items.

(1) What can you use a BOX for?

(2) What can you use PAPER for?

Problems may arise when children ask additional questions. For example, if the child asks, "What size box" the experimenter should reply with a very neutral answer such as "Whatever size you think of." All clarifications of the test questions should be non-committal type.

When the child stops responding ask "What else can you think of ?" or "Tell me some more things you can think of " until child indicates he or she has no more responses.

Temperament

The Behavioral style Questionnaire-BSQ (McDevitt & Carey, 1978) is a 100-item questionnaire which requests parents to answer questions on a six-point scale. The ratings are based on recent behavior. Hubert, Wachs, Peters-Martin, and Gandour (1982) in their review of various temperament measures state the BSQ has a high test-retest reliability and acceptable measures of internal consistency. Carey, Fox, and McDevitt (1977) stated the test-retest reliability for ages 3-7 as 0.89, with an alpha reliability of 0.84.

USING THE SCALE SHOWN BELOW, PLEASE MARK AN "X" IN THE SPACE THAT TELLS HOW OFTEN THE CHILD'S RECENT AND CURRENT BEHAVIOR HAS BEEN LIKE THE BEHAVIOR DESCRIBED BY EACH ITEM.

Almost never	Rarely	Usually does not	Usually does	Frequently	Almost always
1	2	3	4	5	6

1. The child is moody for more than a few minutes when corrected or disciplined.	almost never	1	2	3	4	5	6	almost always
2. The child seems not to hear when involved in a favorite activity.	almost never	1	2	3	4	5	6	almost always
3. The child can be coaxed out of a forbidden activity.	almost never	1	2	3	4	5	6	almost always
4. The child runs ahead when walking with the parent.	almost never	1	2	3	4	5	6	almost always
5. The child laughs or smiles while playing.	almost never	1	2	3	4	5	6	almost always
6. The child moves slowly when working on a project or activity.	almost never	1	2	3	4	5	6	almost always
7. The child responds intensely to disapproval.	almost never	1	2	3	4	5	6	almost always
8. The child needs a period of adjustment to get used to changes in school or at home.	almost never	1	2	3	4	5	6	almost always
9. The child enjoys games that involve running or jumping.	almost never	1	2	3	4	5	6	almost always
10. The child is slow to adjust to changes in household rules.	almost never	1	2	3	4	5	6	almost always
11. The child has bowel movements at about the same time each day.	almost never	1	2	3	4	5	6	almost always
12. The child is willing to try new things.	almost never	1	2	3	4	5	6	almost always
13. The child sits calmly while watching TV or listening to music.	almost never	1	2	3	4	5	6	almost always
14. The child leaves or wants to leave the table during meals.	almost never	1	2	3	4	5	6	almost always
15. Changes in plans bother the child.	almost never	1	2	3	4	5	6	almost always
16. The child notices minor changes in mother's dress or appearance (clothing, hairstyle, etc.).	almost never	1	2	3	4	5	6	almost always

Almost never	Rarely	Usually does not	Usually does	Frequently	Almost always
1	2	3	4	5	6

17. The child does not acknowledge a call to come in if involved in something.	almost never	1 2 3 4 5 6	almost always
18. The child responds to mild disapproval by the parent (a frown or shake of the head).	almost never	1 2 3 4 5 6	almost always
19. The child settles arguments with playmates within a few minutes.	almost never	1 2 3 4 5 6	almost always
20. The child shows strong reaction to things, both positive and negative.	almost never	1 2 3 4 5 6	almost always
21. The child had trouble leaving the mother the first three days when he/she entered school.	almost never	1 2 3 4 5 6	almost always
22. The child picks up the nuances or subtleties of parental explanations (example: implied meanings).	almost never	1 2 3 4 5 6	almost always
23. The child falls asleep as soon as he/she is put to bed.	almost never	1 2 3 4 5 6	almost always
24. The child moves about actively when he/she explores new places.	almost never	1 2 3 4 5 6	almost always
25. The child likes to go to new places rather than familiar ones.	almost never	1 2 3 4 5 6	almost always
26. The child sits quietly while waiting.	almost never	1 2 3 4 5 6	almost always
27. The child spends over an hour reading a book or looking at the pictures.	almost never	1 2 3 4 5 6	almost always
28. The child learns new things at his/her level quickly and easily.	almost never	1 2 3 4 5 6	almost always
29. The child smiles or laughs when he/she meets new visitors at home.	almost never	1 2 3 4 5 6	almost always
30. The child is easily excited by praise.	almost never	1 2 3 4 5 6	almost always
31. The child is outgoing with strangers.	almost never	1 2 3 4 5 6	almost always
32. The child fidgets when he/she has to stay still.	almost never	1 2 3 4 5 6	almost always
33. The child says that he/she is "bored" with his/her toys and games.	almost never	1 2 3 4 5 6	almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

34. The child is annoyed at interrupting play to comply with a parental request.	almost never	1 2 3 4 5 6	almost always
35. The child practices an activity until he/she masters it.	almost never	1 2 3 4 5 6	almost always
36. The child eats about the same amount at supper from day to day.	almost never	1 2 3 4 5 6	almost always
37. Unusual noises (sirens, thunder, etc.) interrupt the child's behavior.	almost never	1 2 3 4 5 6	almost always
38. The child complains when tired.	almost never	1 2 3 4 5 6	almost always
39. The child loses interest in a new toy or game the same day.	almost never	1 2 3 4 5 6	almost always
40. The child becomes engrossed in an interesting activity for one half hour or more.	almost never	1 2 3 4 5 6	almost always
41. The child cries intensely when hurt.	almost never	1 2 3 4 5 6	almost always
42. The child reacts strongly to kidding or light-hearted comments.	almost never	1 2 3 4 5 6	almost always
43. The child approaches children his/her age that he/she doesn't know.	almost never	1 2 3 4 5 6	almost always
44. The child plays quietly with his/her toys and games.	almost never	1 2 3 4 5 6	almost always
45. The child is outwardly expressive of his/her emotions.	almost never	1 2 3 4 5 6	almost always
46. The child is enthusiastic when he/she masters an activity and wants to show everyone.	almost never	1 2 3 4 5 6	almost always
47. The child is sleepy at his/her bed-time.	almost never	1 2 3 4 5 6	almost always
48. The child stops an activity because something else catches his/her attention.	almost never	1 2 3 4 5 6	almost always
49. The child is hungry at dinner time.	almost never	1 2 3 4 5 6	almost always
50. The child holds back until sure of himself/herself.	almost never	1 2 3 4 5 6	almost always

Almost never	Rarely	Usually does not	Usually does	Frequently	Almost always
1	2	3	4	5	6

51. The child looks up when someone walks past the door-way.	almost never	1 2 3 4 5 6	almost always
52. The child becomes upset if he/she misses a regular television program.	almost never	1 2 3 4 5 6	almost always
53. The child reacts strongly (cries or complains) to a disappointment or failure.	almost never	1 2 3 4 5 6	almost always
54. The child accepts new foods within one or two tries.	almost never	1 2 3 4 5 6	almost always
55. The child has difficulty getting used to new situations.	almost never	1 2 3 4 5 6	almost always
56. The child will avoid misbehavior if punished firmly once or twice.	almost never	1 2 3 4 5 6	almost always
57. The child is sensitive to noises (telephone, doorbell) and looks up right away.	almost never	1 2 3 4 5 6	almost always
58. The child prefers active outdoor play to quiet play inside.	almost never	1 2 3 4 5 6	almost always
59. The child dislikes milk or other drinks if not ice-cold.	almost never	1 2 3 4 5 6	almost always
60. The child notices differences or changes in the consistency of food.	almost never	1 2 3 4 5 6	almost always
61. The child adjusts easily to changes in his/her routine.	almost never	1 2 3 4 5 6	almost always
62. The child eats about the same amount at breakfast from day to day.	almost never	1 2 3 4 5 6	almost always
63. The child seems to take setbacks in stride.	almost never	1 2 3 4 5 6	almost always
64. The child cries or whines when frustrated.	almost never	1 2 3 4 5 6	almost always
65. The child repeats behavior for which he/she has previously been punished.	almost never	1 2 3 4 5 6	almost always
66. The child looks up from playing when the telephone rings.	almost never	1 2 3 4 5 6	almost always
67. The child is willing to try new foods.	almost never	1 2 3 4 5 6	almost always

Almost never	Rarely	Usually does not	Usually does	Frequently	Almost always
1	2	3	4	5	6

68. The child needs encouragement before he/she will try new things.	almost never	1 2 3 4 5 6	almost always
69. The child cries or whines when ill with a cold or upset stomach.	almost never	1 2 3 4 5 6	almost always
70. The child runs to get where he/she wants to go.	almost never	1 2 3 4 5 6	almost always
71. The child's attention drifts away or lapses when listening to parental instructions.	almost never	1 2 3 4 5 6	almost always
72. The child becomes angry with one of his/her playmates.	almost never	1 2 3 4 5 6	almost always
73. The child is reluctant to give up when trying to do a difficult task.	almost never	1 2 3 4 5 6	almost always
74. The child reacts to mild approval from the parent (a nod or smile).	almost never	1 2 3 4 5 6	almost always
75. The child requests "something to eat" between meals and regular snacks.	almost never	1 2 3 4 5 6	almost always
76. The child rushes to greet the parent or greets loudly after absence during the day.	almost never	1 2 3 4 5 6	almost always
77. The child looks up when he/she hears voices in the next room.	almost never	1 2 3 4 5 6	almost always
78. The child protests when denied a request by by the parent.	almost never	1 2 3 4 5 6	almost always
79. The child ignores loud noises when reading or looking at pictures in a book.	almost never	1 2 3 4 5 6	almost always
80. The child dislikes a food that he/she had previously seemed to accept.	almost never	1 2 3 4 5 6	almost always
81. The child stops what he/she is doing and looks up when the parent enters the room.	almost never	1 2 3 4 5 6	almost always
82. The child cries for more than a few minutes when hurt.	almost never	1 2 3 4 5 6	almost always
83. The child watches a long (1 hour or more) TV program without getting up to do something else.	almost never	1 2 3 4 5 6	almost always
84. The child spontaneously wakes up at the usual time on weekends and holidays.	almost never	1 2 3 4 5 6	almost always

Almost never	Rarely	Usually does not	Usually does	Frequently	Almost always
1	2	3	4	5	6

85. The child responds to sounds or noises unrelated to his/her activity.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
86. The child avoids new guests or visitors.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
87. The child fidgets when a story is being read to him/her.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
88. The child becomes upset or cries over minor falls or bumps.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
89. The child interrupts an activity to listen to conversation around him/her.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
90. The child is unwilling to leave a play activity that he/she has not completed.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
91. The child is able to fall asleep when there is conversation in a nearby room.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
92. The child becomes highly excited when presented with a new toy or game.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
93. The child pays attention from start to finish when the parent tries to explain something to him/her.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
94. The child speaks so quickly that it is sometimes difficult to understand him/her.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
95. The child wants to leave the table during meals to answer the doorbell or phone.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
96. The child complains of events in school or with playmates that day.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
97. The child frowns when asked to do a chore by the parent.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
98. The child tends to hold back in new situations.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
99. The child laughs hard while watching television cartoons or comedy.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always
100. The child has "off" days when he/she is moody or cranky.	almost never	___:___:___:___:___:___ 1 2 3 4 5 6	almost always

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APPENDIX D

VARIABLE CODES

Variable Codes

Variable Labels

V1 Subject number

V2 Gender

V3 Tester Session 1

V4 Tester Session 2

V5 Age in months at session 1

V6 Total original first half scores

V7 Total popular first half scores

V8 Total original second half scores

V9 Total popular second half scores

V10 Total original

V11 Total popular

V12 Total frequencies

V13 Original Red

V14 Popular Red

V15 Total Red

V16 Original Round

V17 Popular Round

V18 Total Round

V19 Original Half

V20 Popular Half

V21 Total Half

V22 Original Hammer

V23 Popular Hammer

V24 Total Hammer

V25 Original Paper

V26 Popular Paper

V27 Subject Number

V28 Gender

V29 Age in Months as of 1 April 1986

V30 Scores Activity

V31 Scores Rhythmicity

V32 Scores Approach

V33 Scores Adaptability

V34 Scores Intensity

V35 Scores Mood

V36 Scores Persistence

V37 Scores Distractibility

V38 Scores Threshold

V39 Total Paper

V40 Original Box

V41 Popular Box

V42 Total Box

V43 Original Instances

V44 Popular Instances

V45 Original Patterns

V46 Popular Patterns

V47 Original Uses

V48 Popular Uses

V49 Total Instances

V50 Total Patterns

V51 Total Uses

Value Labels

V2 1 = Male, 2 = Female

V3 1 = Examiner 1, 2 = Examiner 2, 3 = Examiner 3

V28 1 = Male, 2 = Female

9999 = Missing Data

APPENDIX E

RAW DATA

Raw Data

V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17
101	1	3	2	58	1	13	11	7	12	20	32	5	4	9	2	3
102	1	3	2	66	6	9	11	5	17	14	31	4	0	4	4	3
103	1	3	1	57	1	8	3	2	4	10	14	1	2	3	0	1
104	1	3	1	60	9	13	12	10	21	23	44	6	5	11	6	6
105	1	2	1	61	0	7	3	3	3	10	13	0	2	2	0	1
106	1	3	1	60	6	6	4	7	10	13	23	2	1	3	3	3
107	1	3	1	62	2	7	3	8	5	15	20	1	3	4	2	1
108	1	3	1	63	3	15	9	12	12	27	39	2	6	8	1	4
109	1	*	*	63	**	**	**	**	**	***	***	**	**	**	**	**
110	1	*	*	55	**	**	**	**	**	***	***	**	**	**	**	**
111	2	2	1	59	7	4	5	5	12	9	21	4	0	4	1	3
112	2	3	3	58	5	4	5	5	10	9	19	3	0	3	3	2
113	2	2	1	55	7	10	13	5	20	15	35	11	4	15	2	2
114	2	1	2	59	1	8	4	3	5	11	16	0	1	1	3	1
115	2	2	1	56	7	9	6	7	13	16	29	4	4	8	5	3
116	2	2	3	62	1	9	4	10	5	19	24	2	3	5	1	2
117	2	2	3	62	6	5	5	9	11	14	25	2	3	5	2	2
201	1	*	*	53	**	**	**	**	**	***	***	**	**	**	**	**
202	1	*	*	48	**	**	**	**	**	***	***	**	**	**	**	**
203	1	1	3	48	4	5	2	3	6	8	14	3	1	4	0	3
204	1	3	3	51	6	8	10	3	16	11	27	2	2	4	4	2
206	1	3	1	52	6	8	5	6	11	14	25	8	7	15	0	1
208	1	*	*	48	**	**	**	**	**	***	***	**	**	**	**	**
209	1	3	3	47	6	4	3	8	9	12	21	1	0	1	1	1
210	2	1	3	50	1	9	3	7	4	16	20	1	7	8	1	3
211	2	2	1	50	6	7	9	4	15	11	26	2	0	2	4	1
213	2	3	3	47	4	11	7	7	11	18	29	0	4	4	4	1
214	2	3	1	49	6	18	15	11	21	29	50	6	9	15	5	3
217	2	2	3	52	6	10	8	5	14	15	29	2	3	5	0	3
301	1	3	1	72	12	27	19	19	31	46	77	3	1	4	8	1
302	1	2	1	61	27	16	38	6	65	22	87	17	4	21	20	0
303	1	2	1	65	7	12	12	7	19	19	38	1	2	3	2	4
304	1	2	1	66	4	5	4	4	8	9	17	4	0	4	2	0
305	1	1	2	64	2	12	11	3	13	15	28	2	1	3	3	2
306	1	1	2	63	4	9	10	5	14	14	28	4	3	7	4	3
307	1	2	3	61	5	9	9	5	14	14	28	1	1	2	2	2
308	1	1	2	68	2	4	2	6	4	10	14	2	0	2	0	2
309	1	3	3	68	16	10	21	6	37	16	53	6	3	9	10	3
310	1	1	2	65	0	3	0	1	0	4	4	0	0	0	0	1
311	1	1	2	70	6	12	10	6	16	18	34	6	3	9	2	4
312	2	2	1	64	2	9	6	7	8	16	24	1	3	4	0	4
313	2	1	2	67	6	14	15	6	21	20	41	2	2	4	2	4
314	2	1	3	60	4	6	3	6	7	12	19	3	0	3	0	2
315	2	2	1	64	11	11	16	8	27	19	46	8	3	11	4	4
316	2	2	2	66	11	16	17	8	28	24	52	11	4	15	6	3
317	2	3	1	64	8	10	13	4	21	14	35	10	1	11	5	1
318	2	1	2	61	0	8	2	4	2	12	14	0	1	1	1	1
401	1	3	2	57	2	6	4	3	6	9	15	1	3	4	1	1
402	1	2	1	58	15	13	17	10	32	23	55	21	3	24	0	4
403	1	2	3	47	12	9	11	8	23	17	40	9	4	13	8	5
404	1	1	2	46	1	4	2	4	3	8	11	0	0	0	1	0
406	1	1	3	47	0	5	2	3	2	8	10	0	1	1	0	2
407	1	1	2	50	5	6	9	3	14	9	23	3	2	5	3	1
408	1	3	1	56	4	6	8	2	12	8	20	3	2	5	3	1
409	1	3	1	47	17	15	28	4	45	19	64	9	3	12	3	3
410	2	2	2	58	10	17	16	12	26	29	55	2	3	5	7	6
412	2	2	3	49	15	12	13	15	28	27	55	13	9	22	10	1
413	2	3	3	54	5	8	8	7	13	15	28	4	3	7	2	4
414	2	1	3	47	5	7	7	4	12	11	23	1	0	1	0	1
415	2	1	2	53	6	8	11	4	17	12	29	4	0	4	3	4
416	2	1	2	48	15	11	16	7	31	18	49	7	2	9	8	5
417	2	2	1	57	12	6	13	7	25	13	38	7	6	13	2	2
418	2	2	2	57	7	8	11	6	18	14	32	4	1	5	1	2

V1	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27	V28	V29	V30	V31
101	5	1	3	4	1	3	4	2	3	101	1	58	12.07	10.88
102	7	2	2	4	4	1	5	1	2	102	1	66	19.23	11.55
103	1	0	2	2	1	1	2	2	3	103	1	57	13.83	13.78
104	12	1	3	4	5	1	6	3	3	104	1	60	7.85	10.89
105	1	2	1	3	1	1	2	0	2	105	1	61	19.54	9.33
106	6	1	2	3	2	4	6	0	2	106	1	60	17.15	13.11
107	3	1	2	3	1	4	5	0	2	107	1	62	16.61	10.88
108	5	1	4	5	1	3	4	7	4	108	1	63	12.92	10.62
109	**	**	**	**	**	**	**	**	**	109	1	63	13.38	10.88
110	**	**	**	**	**	**	**	**	**	110	1	55	18.15	13.11
111	4	3	2	5	1	1	2	0	2	111	2	59	9.85	10.67
112	5	2	1	3	0	2	2	1	3	112	2	58	21.00	11.67
113	4	2	1	3	3	1	4	2	2	113	2	55	14.25	12.11
114	4	1	3	4	1	3	4	0	1	114	2	59	13.30	12.44
115	8	2	3	5	1	3	4	0	3	115	2	56	19.38	10.67
116	3	0	5	5	0	4	4	0	3	116	2	62	6.92	11.22
117	4	1	2	3	2	2	4	1	2	117	2	62	15.15	11.89
201	**	**	**	**	**	**	**	**	**	201	1	53	15.23	11.44
202	**	**	**	**	**	**	**	**	**	202	1	48	17.38	10.33
203	3	1	0	1	1	0	1	0	2	203	1	48	16.46	13.13
204	6	3	2	5	4	1	5	1	3	204	1	51	12.38	12.44
206	1	0	2	2	1	0	1	0	1	206	1	52	17.61	11.22
208	**	**	**	**	**	**	**	**	**	208	1	48	15.38	9.44
209	2	4	5	9	3	1	4	0	3	209	1	47	9.92	7.22
210	4	0	3	3	1	2	3	1	1	210	2	50	15.23	12.11
211	5	5	3	8	3	2	5	1	2	211	2	50	9.00	7.89
213	5	2	2	4	3	3	6	1	3	213	2	47	15.53	9.66
214	8	2	3	5	3	2	5	1	11	214	2	49	9999.0	9999.0
217	3	6	2	8	6	3	9	0	3	217	2	52	9999.0	9999.0
301	9	3	6	9	4	2	6	9	19	301	1	72	9999.0	9999.0
302	20	8	3	11	10	2	12	5	8	302	1	61	9999.0	9999.0
303	6	3	3	6	4	5	9	4	4	303	1	65	15.30	8.44
304	2	2	0	2	0	3	3	0	1	304	1	66	18.84	12.55
305	5	2	3	5	3	3	6	1	2	305	1	64	18.61	10.00
306	7	1	3	4	3	3	6	1	1	306	1	63	18.38	7.22
307	4	6	3	9	2	2	4	1	3	307	1	61	21.00	10.11
308	2	1	2	3	1	2	3	0	2	308	1	68	15.46	10.22
309	13	5	2	7	8	4	12	5	1	309	1	68	14.58	10.00
310	1	0	0	0	0	2	2	0	1	310	1	65	18.07	10.77
311	6	3	4	7	2	3	5	2	2	311	1	70	15.15	8.77
312	4	3	3	6	2	2	4	1	2	312	2	64	11.77	10.78
313	6	5	4	9	8	2	10	2	6	313	2	67	17.38	10.89
314	2	1	4	5	1	1	2	1	2	314	2	60	6.23	9.22
315	8	3	5	8	6	3	9	3	1	315	2	64	9.92	9.88
316	9	8	4	12	2	5	7	1	4	316	2	66	15.23	8.22
317	6	5	3	8	0	4	4	1	3	317	2	64	17.00	13.77
318	2	0	1	1	1	3	4	0	3	318	2	61	8.38	10.22
401	2	3	2	5	1	2	3	0	1	401	1	57	16.55	8.22
402	4	3	3	6	3	3	6	2	5	402	1	58	21.92	10.11
403	13	1	2	3	2	3	5	2	0	403	1	47	17.92	12.66
404	1	1	1	2	1	2	3	0	2	404	1	46	12.30	11.00
406	2	0	1	1	1	1	2	1	1	406	1	47	18.08	11.11
407	4	1	1	2	3	2	5	2	3	407	1	50	14.77	11.67
408	4	2	1	3	3	2	5	0	1	408	1	56	15.69	11.55
409	6	4	3	7	3	1	4	21	4	409	1	47	15.92	7.56
410	13	2	2	4	8	6	14	6	2	410	2	58	7.23	9.78
412	11	4	3	7	1	2	3	0	8	412	2	49	14.76	11.22
413	6	5	2	7	2	1	3	0	3	413	2	54	18.30	12.77
414	1	0	3	3	5	4	9	3	1	414	2	47	19.15	8.00
415	7	4	2	6	3	3	6	0	1	415	2	53	16.46	11.33
416	13	4	2	6	6	2	8	2	4	416	2	48	9999.0	9999.0
417	4	6	1	7	4	1	5	2	3	417	2	57	10.76	6.44
418	3	6	2	8	7	4	11	0	3	418	2	57	15.46	11.88

V1	V32	V33	V34	V35	V36	V37	V38
101	10.90	6.17	28.58	8.67	6.50	11.60	13.73
102	17.09	15.08	.08	12.75	8.90	17.40	20.45
103	10.91	11.67	12.34	11.83	11.80	10.80	12.40
104	15.36	10.58	23.17	10.50	6.00	9.70	13.91
105	4.91	4.25	25.08	9.92	8.90	26.10	21.91
106	6.27	7.42	25.50	7.75	7.78	16.20	24.55
107	13.18	5.33	18.75	9.75	7.80	20.00	23.18
108	11.72	9.36	17.00	15.41	8.80	13.33	15.36
109	18.45	14.16	22.50	17.16	11.60	13.80	24.90
110	7.45	12.42	24.08	18.58	9.40	12.50	17.70
111	11.82	9.67	22.75	19.75	9.90	23.00	23.73
112	10.55	15.83	24.83	25.25	12.20	20.00	15.91
113	12.11	7.00	20.08	10.67	7.10	16.33	18.73
114	13.36	12.00	16.08	10.66	10.20	14.30	19.00
115	9.55	12.33	21.45	10.83	8.03	14.00	14.18
116	13.45	13.75	29.00	18.33	8.60	13.60	21.56
117	6.82	9.59	21.83	17.75	10.50	17.90	24.73
201	12.00	11.25	19.58	14.75	9.70	11.90	13.54
202	10.18	10.25	21.91	12.66	7.50	17.30	17.45
203	7.64	13.42	19.58	13.33	8.90	22.40	12.73
204	5.36	8.17	24.25	16.33	10.80	17.80	12.45
206	7.81	10.83	23.41	13.08	8.90	15.40	11.54
208	12.36	7.83	21.25	14.33	11.10	16.80	15.27
209	11.09	11.00	20.83	13.17	10.00	13.90	16.30
210	9.81	9.50	22.50	9.83	8.80	12.00	17.09
211	15.27	13.67	23.42	12.58	8.60	12.80	19.73
213	11.72	11.08	22.08	15.00	13.50	13.80	15.81
214	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0
217	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0
301	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0
302	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0
303	11.90	9.50	18.00	11.08	9.00	13.90	20.09
304	13.72	11.50	16.83	15.25	8.20	17.60	18.27
305	10.72	7.91	22.91	12.83	8.30	15.55	20.00
306	5.45	5.75	22.66	12.91	8.50	25.50	23.27
307	15.63	16.75	16.25	7.41	6.70	8.30	17.18
308	9.00	7.42	16.92	6.25	10.00	9.30	17.27
309	8.54	6.75	15.83	5.16	10.60	10.40	15.90
310	17.36	16.66	27.58	17.41	11.10	21.00	15.36
311	15.09	5.66	26.50	10.91	7.20	19.00	22.81
312	14.09	10.67	19.83	14.67	10.00	16.30	10.45
313	10.91	6.75	19.50	14.08	8.20	6.70	16.09
314	12.55	7.58	13.42	12.75	9.10	14.70	13.82
315	14.27	9.83	21.58	9.83	9.60	7.20	21.09
316	9.18	7.25	25.66	11.25	8.80	14.70	19.09
317	10.63	11.33	16.58	12.08	11.80	14.10	15.63
318	8.72	9.41	27.50	14.41	6.80	15.90	21.36
401	8.62	7.25	20.25	4.09	6.90	15.12	21.00
402	10.45	9.75	20.58	11.50	9.90	25.70	11.63
403	9.18	13.91	24.41	16.25	10.70	21.30	16.27
404	10.30	11.11	10.09	10.30	9.70	13.44	14.27
406	12.09	7.92	22.00	10.17	8.50	13.10	18.00
407	14.27	7.08	15.83	11.08	8.00	16.00	21.00
408	10.09	11.66	16.08	14.33	9.90	14.70	16.63
409	8.36	11.50	22.58	14.17	11.10	16.20	18.36
410	5.27	4.83	18.25	5.67	7.20	8.30	17.09
412	5.09	7.83	18.75	8.75	9.70	12.80	13.36
413	10.00	10.75	13.58	9.66	10.50	12.20	10.09
414	6.18	7.91	16.41	11.50	8.40	18.50	13.27
415	7.72	7.41	24.00	14.58	6.80	11.88	22.27
416	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0	9999.0
417	15.09	7.75	31.50	17.50	4.90	14.90	30.90
418	12.38	7.66	14.16	8.33	10.00	16.10	16.18

V1	V39	V40	V41	V42	V43	V44	V45
101	5	1	4	5	7.00	7.00	2.00
102	3	2	6	8	8.00	3.00	6.00
103	5	0	1	1	1.00	3.00	1.00
104	6	0	5	5	12.00	11.00	6.00
105	2	0	3	3	.00	3.00	3.00
106	2	2	1	3	5.00	4.00	3.00
107	2	0	3	3	3.00	4.00	2.00
108	11	0	6	6	3.00	10.00	2.00
109	**	**	**	**	.	.	.
110	**	**	**	**	.	.	.
111	2	1	1	2	5.00	3.00	4.00
112	4	1	1	2	6.00	2.00	2.00
113	4	0	5	5	13.00	6.00	5.00
114	1	0	2	2	3.00	2.00	2.00
115	3	1	0	1	9.00	7.00	3.00
116	3	2	2	4	3.00	5.00	.00
117	3	3	3	6	4.00	5.00	3.00
201	**	**	**	**	.	.	.
202	**	**	**	**	.	.	.
203	2	1	2	3	3.00	4.00	2.00
204	4	2	1	3	6.00	4.00	7.00
206	1	2	3	5	8.00	8.00	1.00
208	**	**	**	**	.	.	.
209	3	0	2	2	2.00	1.00	7.00
210	2	0	0	0	2.00	10.00	1.00
211	3	0	3	3	6.00	1.00	8.00
213	4	1	5	6	4.00	5.00	5.00
214	12	4	1	5	11.00	12.00	5.00
217	3	0	1	1	2.00	6.00	12.00
301	28	4	17	21	11.00	2.00	7.00
302	13	5	5	10	37.00	4.00	18.00
303	8	5	1	6	3.00	6.00	7.00
304	1	0	5	5	6.00	.00	2.00
305	3	2	4	6	5.00	3.00	5.00
306	2	2	1	3	8.00	6.00	4.00
307	4	2	3	5	3.00	3.00	8.00
308	2	0	2	2	2.00	2.00	2.00
309	6	3	3	6	16.00	6.00	13.00
310	1	0	0	0	.00	1.00	.00
311	4	1	2	3	8.00	7.00	5.00
312	3	1	2	3	1.00	7.00	5.00
313	8	2	2	4	4.00	6.00	13.00
314	3	1	3	4	3.00	2.00	2.00
315	4	3	3	6	12.00	7.00	9.00
316	5	0	4	4	17.00	7.00	10.00
317	4	0	2	2	15.00	2.00	5.00
318	3	0	3	3	1.00	2.00	1.00
401	1	0	0	0	2.00	4.00	4.00
402	7	3	5	8	21.00	7.00	6.00
403	2	1	3	4	17.00	9.00	3.00
404	2	0	3	3	1.00	.00	2.00
406	2	0	2	2	.00	3.00	1.00
407	5	0	2	2	6.00	3.00	4.00
408	1	1	1	2	6.00	3.00	5.00
409	25	5	5	10	12.00	6.00	7.00
410	8	1	10	11	9.00	9.00	10.00
412	8	0	4	4	23.00	10.00	5.00
413	3	0	2	2	6.00	7.00	7.00
414	4	3	2	5	1.00	1.00	5.00
415	1	3	2	5	7.00	4.00	7.00
416	6	4	3	7	15.00	7.00	10.00
417	5	4	0	4	9.00	8.00	10.00
418	3	0	2	2	5.00	3.00	13.00

V1	V46	V47	V48	V49	V50	V51
101	6.00	3.00	7.00	14.00	8.00	10.00
102	3.00	3.00	8.00	11.00	9.00	11.00
103	3.00	2.00	4.00	4.00	4.00	6.00
104	4.00	3.00	8.00	23.00	10.00	11.00
105	2.00	.00	5.00	3.00	5.00	5.00
106	6.00	2.00	3.00	9.00	9.00	5.00
107	6.00	.00	5.00	7.00	8.00	5.00
108	7.00	7.00	10.00	13.00	9.00	17.00
109	.	.	.	.	.	.
110	.	.	.	.	.	.
111	3.00	1.00	3.00	8.00	7.00	4.00
112	3.00	2.00	4.00	8.00	5.00	6.00
113	2.00	2.00	7.00	19.00	7.00	9.00
114	6.00	.00	3.00	5.00	8.00	3.00
115	6.00	1.00	3.00	16.00	9.00	4.00
116	9.00	2.00	5.00	8.00	9.00	7.00
117	4.00	4.00	5.00	9.00	7.00	9.00
201	.	.	.	.	.	.
202	.	.	.	.	.	.
203	.00	1.00	4.00	7.00	2.00	5.00
204	3.00	3.00	4.00	10.00	10.00	7.00
206	2.00	2.00	4.00	16.00	3.00	6.00
208	.	.	.	.	.	.
209	6.00	.00	5.00	3.00	13.00	5.00
210	5.00	1.00	1.00	12.00	6.00	2.00
211	5.00	1.00	5.00	7.00	13.00	6.00
213	5.00	2.00	8.00	9.00	10.00	10.00
214	5.00	5.00	12.00	23.00	10.00	17.00
217	5.00	.00	4.00	8.00	17.00	4.00
301	8.00	13.00	36.00	13.00	15.00	49.00
302	5.00	10.00	13.00	41.00	23.00	23.00
303	8.00	9.00	5.00	9.00	15.00	14.00
304	3.00	.00	6.00	6.00	5.00	6.00
305	6.00	3.00	6.00	8.00	11.00	9.00
306	6.00	3.00	2.00	14.00	10.00	5.00
307	5.00	3.00	6.00	6.00	13.00	9.00
308	4.00	.00	4.00	4.00	6.00	4.00
309	6.00	8.00	4.00	22.00	19.00	12.00
310	2.00	.00	1.00	1.00	2.00	1.00
311	7.00	3.00	4.00	15.00	12.00	7.00
312	5.00	2.00	4.00	8.00	10.00	6.00
313	6.00	4.00	8.00	10.00	19.00	12.00
314	5.00	2.00	5.00	5.00	7.00	7.00
315	8.00	6.00	4.00	19.00	17.00	10.00
316	9.00	1.00	8.00	24.00	19.00	9.00
317	7.00	1.00	5.00	17.00	12.00	6.00
318	4.00	.00	6.00	3.00	5.00	6.00
401	4.00	.00	1.00	6.00	8.00	1.00
402	6.00	5.00	10.00	28.00	12.00	15.00
403	5.00	3.00	3.00	26.00	8.00	6.00
404	3.00	.00	5.00	1.00	5.00	5.00
406	2.00	1.00	3.00	3.00	3.00	4.00
407	3.00	2.00	5.00	9.00	7.00	7.00
408	3.00	1.00	2.00	9.00	8.00	3.00
409	4.00	26.00	9.00	18.00	11.00	35.00
410	8.00	7.00	12.00	18.00	18.00	19.00
412	5.00	.00	12.00	33.00	10.00	12.00
413	3.00	.00	5.00	13.00	10.00	5.00
414	7.00	6.00	3.00	2.00	12.00	9.00
415	5.00	3.00	3.00	11.00	12.00	6.00
416	4.00	6.00	7.00	22.00	14.00	13.00
417	2.00	6.00	3.00	17.00	12.00	9.00
418	6.00	.00	5.00	8.00	19.00	5.00

APPENDIX F

REGRESSION ANALYSES

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:14 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V43

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V32 SCORES APPROACH

		ANALYSIS OF VARIANCE			
MULTIPLE R	.14382		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.02068	REGRESSION	1	31.29654	31.29654
ADJUSTED R SQUARE	.00148	RESIDUAL	51	1481.83554	29.05560
STANDARD ERROR	5.39032				

F = 1.07713 SIGNIF F = .3042

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V32	-.242084	.233256	-.143817	-1.038	.3042
(CONSTANT)	9.054324	2.613694		3.464	.0011

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V33	-.019074	-.017409	.815857	-.123	.9025
V36	.023567	.023647	.985981	.167	.8678
V37	-.009682	-.009647	.972411	-.068	.9459
V38	-.075008	-.075287	.986617	-.534	.5958

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:18 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V44

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V33 SCORES ADAPTABILITY

MULTIPLE R	.23560	ANALYSIS OF VARIANCE			
R SQUARE	.05551		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.03699	REGRESSION	1	22.74828	22.74828
STANDARD ERROR	2.75490	RESIDUAL	51	387.06304	7.58947

F = 2.99735 SIGNIF F = .0894

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.219676	.126886	-.235604	-1.731	.0894
(CONSTANT)	6.879941	1.284545		5.356	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.051490	-.047855	.815857	-.339	.7362
V36	-.155880	-.148721	.859725	-1.063	.2927
V37	-.185080	-.190427	.999860	-1.372	.1763
V38	-.172631	-.171075	.927537	-1.228	.2253

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.29960	ANALYSIS OF VARIANCE			
R SQUARE	.08976		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.05335	REGRESSION	2	36.78418	18.39209
STANDARD ERROR	2.73140	RESIDUAL	50	373.02715	7.46054

F = 2.46525 SIGNIF F = .0953

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.217637	.125813	-.233417	-1.730	.0898
V37	-.116335	.084815	-.185080	-1.372	.1763
(CONSTANT)	8.644194	1.810102		4.776	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.093685	-.087088	.786553	-.612	.5434
V36	-.126498	-.121267	.836511	-.855	.3966
V38	-.144577	-.143896	.901679	-1.018	.3137

* * * * M U L T I P L E R E G R E S S I O N * * * *

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V44

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V38 SCORES THRESHOLD

		ANALYSIS OF VARIANCE			
MULTIPLE R	.32955		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.10861				
ADJUSTED R SQUARE	.05403	REGRESSION	3	44.50807	14.83602
STANDARD ERROR	2.73042	RESIDUAL	49	365.30325	7.45517

F = 1.99003 SIGNIF F = .1277

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.254181	.130792	-.272610	-1.943	.0577
V37	-.101720	.085992	-.161829	-1.183	.2426
V38	-.095850	.094168	-.144577	-1.018	.3137
(CONSTANT)	10.468139	2.546594		4.111	.0002

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.050936	-.045533	.691918	-.316	.7535
V36	-.216446	-.193493	.712366	-1.366	.1782

* *

VARIABLE(S) ENTERED ON STEP NUMBER 4.. V36 SCORES PERSISTENCE

		ANALYSIS OF VARIANCE			
MULTIPLE R	.37680		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.14198				
ADJUSTED R SQUARE	.07048	REGRESSION	4	58.18488	14.54622
STANDARD ERROR	2.70658	RESIDUAL	48	351.62644	7.32555

F = 1.98568 SIGNIF F = .1117

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.199259	.135738	-.213706	-1.468	.1486
V37	-.072872	.087817	-.115934	-.830	.4107
V38	-.149095	.101153	-.224891	-1.474	.1470
V36	-.361567	.264616	-.216446	-1.366	.1782
(CONSTANT)	13.700808	3.459722		3.960	.0002

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.103694	-.092156	.601245	-.634	.5288

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:21 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V45

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.33462	ANALYSIS OF VARIANCE			
R SQUARE	.11197		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.09456	REGRESSION	1	63.83629	63.83629
STANDARD ERROR	3.15071	RESIDUAL	51	506.27692	9.92700

F = 6.43057 SIGNIF F = .0143

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.248080	.097829	-.334621	-2.536	.0143
(CONSTANT)	8.615610	1.561377		5.518	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.043082	-.045082	.972411	-.319	.7510
V33	-.238083	-.252630	.999860	-1.846	.0708
V36	-.039457	-.041353	.975421	-.293	.7710
V38	.122565	.128437	.975159	.916	.3642

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

MULTIPLE R	.41067	ANALYSIS OF VARIANCE			
R SQUARE	.16865		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.13539	REGRESSION	2	96.14774	48.07387
STANDARD ERROR	3.07885	RESIDUAL	50	473.96547	9.47931

F = 5.07145 SIGNIF F = .0099

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.245995	.095604	-.331808	-2.573	.0131
V33	-.261829	.141817	-.238083	-1.846	.0708
(CONSTANT)	11.116648	2.040357		5.448	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	.077223	.075114	.786553	.527	.6004
V36	.060061	.060247	.836511	.422	.6745
V38	.060983	.063510	.901679	.445	.6579

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V46

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.29460
R SQUARE	.08679
ADJUSTED R SQUARE	.06889
STANDARD ERROR	1.93583

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	1	18.16404	18.16404
RESIDUAL	51	191.11898	3.74743

F = 4.84707 SIGNIF F = .0322

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.132332	.060107	-.294604	-2.202	.0322
(CONSTANT)	6.802884	.959325		7.091	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.073624	-.075973	.972411	-.539	.5924
V33	-.223260	-.233612	.999860	-1.699	.0956
V36	-.012445	-.012862	.975421	-.091	.9279
V38	.135149	.139658	.975159	.997	.3234

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

MULTIPLE R	.36963
R SQUARE	.13663
ADJUSTED R SQUARE	.10209
STANDARD ERROR	1.90099

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	28.59428	14.29714
RESIDUAL	50	180.68874	3.61377

F = 3.95629 SIGNIF F = .0254

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.131147	.059030	-.291966	-2.222	.0309
V33	-.148760	.087563	-.223260	-1.699	.0956
(CONSTANT)	8.223867	1.259790		6.528	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	.031339	.029913	.786553	.209	.8349
V36	.084954	.083622	.836511	.587	.5596
V38	.079048	.080783	.901679	.567	.5731

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:28 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * MULTIPLE REGRESSION * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V47

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V32 SCORES APPROACH

		ANALYSIS OF VARIANCE			
MULTIPLE R	.10690		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.01143				
ADJUSTED R SQUARE	-.00796	REGRESSION	1	9.31645	9.31645
STANDARD ERROR	3.97533	RESIDUAL	51	805.96657	15.80327
		F = .58953	SIGNIF F = .4461		

VARIABLES IN THE EQUATION						VARIABLES NOT IN THE EQUATION					
VARIABLE	B	SE B	BETA	T	SIG T	VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.132082	.172025	-.106898	-.768	.4461	V33	.011724	.010651	.815857	.075	.9403
(CONSTANT)	4.192969	1.927583		2.175	.0343	V36	.042925	.042869	.985981	.303	.7628
						V37	-.109592	-.108692	.972411	-.773	.4431
						V38	.084710	.084626	.986617	.601	.5509

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V37 SCORES DISTRACTIBILITY

		ANALYSIS OF VARIANCE			
MULTIPLE R	.15201		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.02311				
ADJUSTED R SQUARE	-.01597	REGRESSION	2	18.83810	9.41905
STANDARD ERROR	3.99110	RESIDUAL	50	796.44492	15.92890
		F = .59132	SIGNIF F = .5574		

VARIABLES IN THE EQUATION						VARIABLES NOT IN THE EQUATION					
VARIABLE	B	SE B	BETA	T	SIG T	VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.154574	.175141	-.125101	-.883	.3817	V33	.023087	.021006	.786553	.147	.8837
V37	-.097161	.125669	-.109592	-.773	.4431	V36	.059328	.059016	.953345	.414	.6808
(CONSTANT)	5.924615	2.959985		2.002	.0508	V38	.107867	.106621	.940719	.751	.4565

* * * * M U L T I P L E R E G R E S S I O N * * * *

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V47

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V38 SCORES THRESHOLD

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.18496				
R SQUARE	.03421				
ADJUSTED R SQUARE	-.02492	REGRESSION	3	27.89220	9.29740
STANDARD ERROR	4.00864	RESIDUAL	49	787.39082	16.06920

F = .57859 SIGNIF F = .6318

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V32	-.174017	.177807	-.140838	-.979	.3325
V37	-.114551	.128329	-.129206	-.893	.3764
V38	.100865	.134374	.107867	.751	.4565
(CONSTANT)	4.617052	3.445736		1.340	.1864

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V33	.079045	.066906	.691918	.465	.6443
V36	.131909	.118541	.770123	.827	.4123

* *

VARIABLE(S) ENTERED ON STEP NUMBER 4.. V36 SCORES PERSISTENCE

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.21859				
R SQUARE	.04778				
ADJUSTED R SQUARE	-.03157	REGRESSION	4	38.95656	9.73914
STANDARD ERROR	4.02163	RESIDUAL	48	776.32646	16.17347

F = .60217 SIGNIF F = .6629

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V32	-.169053	.178484	-.136820	-.947	.3483
V37	-.140445	.132497	-.158414	-1.060	.2945
V38	.155417	.150079	.166206	1.036	.3056
V36	.310796	.375763	.131909	.827	.4123
(CONSTANT)	1.189762	5.396338		.220	.8264

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V33	.032622	.025922	.601245	.178	.8597

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:31 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V48

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V38 SCORES THRESHOLD

		ANALYSIS OF VARIANCE			
MULTIPLE R	.21455		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.04603	REGRESSION	1	15.30643	15.30643
ADJUSTED R SQUARE	.02733	RESIDUAL	51	317.22188	6.22004
STANDARD ERROR	2.49400				

F = 2.46083 SIGNIF F = .1229

VARIABLES IN THE EQUATION						VARIABLES NOT IN THE EQUATION					
VARIABLE	B	SE B	BETA	T	SIG T	VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V38	-.128125	.081676	-.214547	-1.569	.1229	V32	-.034712	-.035301	.986617	-.250	.8038
(CONSTANT)	7.359453	1.484023		4.959	.0000	V33	-.206132	-.203256	.927537	-1.468	.1484
						V36	-.151642	-.141546	.831167	-1.011	.3169
						V37	-.183507	-.185533	.975159	-1.335	.1879

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

		ANALYSIS OF VARIANCE			
MULTIPLE R	.29230		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.08544	REGRESSION	2	28.41183	14.20592
ADJUSTED R SQUARE	.04886	RESIDUAL	50	304.11647	6.08233
STANDARD ERROR	2.46624				

F = 2.33560 SIGNIF F = .1072

VARIABLES IN THE EQUATION						VARIABLES NOT IN THE EQUATION					
VARIABLE	B	SE B	BETA	T	SIG T	VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V38	-.161263	.083863	-.270036	-1.923	.0602	V32	.079958	.072804	.712824	.511	.6117
V33	-.173129	.117945	-.206132	-1.468	.1484	V36	-.094719	-.086149	.756069	-.605	.5478
(CONSTANT)	9.620189	2.127344		4.522	.0000	V37	-.172602	-.177938	.901679	-1.266	.2116

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:32 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

*** * * * M U L T I P L E R E G R E S S I O N * * * ***

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V48

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V37 SCORES DISTRACTIBILITY

		ANALYSIS OF VARIANCE			
MULTIPLE R	.33823		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.11440	REGRESSION	3	38.04080	12.68027
ADJUSTED R SQUARE	.06018	RESIDUAL	49	294.48750	6.00995
STANDARD ERROR	2.45152				

F = 2.10988 SIGNIF F = .1110

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V38	-.143394	.084549	-.240115	-1.696	.0962
V33	-.164651	.117432	-.196038	-1.402	.1672
V37	-.097728	.077208	-.172602	-1.266	.2116
(CONSTANT)	10.720920	2.286474		4.689	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	.033924	.030424	.691918	.211	.8339
V36	-.050624	-.045404	.712366	-.315	.7542

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:35 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V49

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V32 SCORES APPROACH

		ANALYSIS OF VARIANCE			
MULTIPLE R	.16250		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.02640				
ADJUSTED R SQUARE	.00731	REGRESSION	1	72.10436	72.10436
STANDARD ERROR	7.22009	RESIDUAL	51	2658.61262	52.12966

F = 1.38317 SIGNIF F = .2450

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V32	-.367451	.312436	-.162496	-1.176	.2450
(CONSTANT)	15.156259	3.500920		4.329	.0001

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V33	-.096910	-.088713	.815857	-.630	.5317
V36	-.076439	-.076924	.985981	-.546	.5878
V37	-.091509	-.091453	.972411	-.649	.5191
V38	-.087303	-.087885	.986617	-.624	.5356

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:38 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V50

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.38765
R SQUARE	.15027
ADJUSTED R SQUARE	.13361
STANDARD ERROR	4.07951

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	1	150.10392	150.10392
RESIDUAL	51	848.76400	16.64243

F = 9.01935 SIGNIF F = .0041

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.380412	.126668	-.387652	-3.003	.0041
(CONSTANT)	15.418494	2.021655		7.627	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.066248	-.070869	.972411	-.502	.6176
V33	-.282062	-.305967	.999860	-2.272	.0274
V36	-.035506	-.038041	.975421	-.269	.7889
V38	.154458	.165466	.975159	1.186	.2411

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

MULTIPLE R	.47940
R SQUARE	.22982
ADJUSTED R SQUARE	.19901
STANDARD ERROR	3.92252

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	229.56162	114.78081
RESIDUAL	50	769.30631	15.38613

F = 7.46002 SIGNIF F = .0015

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.377142	.121802	-.384319	-3.096	.0032
V33	-.410589	.180678	-.282062	-2.272	.0274
(CONSTANT)	19.340515	2.599456		7.440	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	.072686	.073455	.786553	.516	.6085
V36	.084262	.087815	.836511	.617	.5400
V38	.082255	.089000	.901679	.625	.5346

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*** * * * M U L T I P L E R E G R E S S I O N * * * ***

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V51

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

		ANALYSIS OF VARIANCE			
MULTIPLE R	.16710		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.02792	REGRESSION	1	41.16099	41.16099
ADJUSTED R SQUARE	.00886	RESIDUAL	51	1432.91448	28.09636
STANDARD ERROR	5.30060				

F = 1.46499 SIGNIF F = .2317

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.199206	.164583	-.167103	-1.210	.2317
(CONSTANT)	10.922724	2.626781		4.158	.0001

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.139149	-.139173	.972411	-.994	.3251
V33	-.088418	-.089672	.999860	-.637	.5273
V36	.050330	.050416	.975421	.357	.7226
V38	-.023181	-.023218	.975159	-.164	.8702

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V32 SCORES APPROACH

		ANALYSIS OF VARIANCE			
MULTIPLE R	.21622		DF	SUM OF SQUARES	MEAN SQUARE
R SQUARE	.04675	REGRESSION	2	68.91520	34.45760
ADJUSTED R SQUARE	.00862	RESIDUAL	50	1405.16027	28.10321
STANDARD ERROR	5.30125				

F = 1.22611 SIGNIF F = .3021

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.226758	.166921	-.190215	-1.358	.1804
V32	-.231184	.232633	-.139149	-.994	.3251
(CONSTANT)	13.829602	3.931648		3.518	.0009

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V33	-.035141	-.032369	.786553	-.227	.8216
V36	.037491	.037754	.953345	.264	.7925
V38	-.003002	-.003004	.940719	-.021	.9833

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
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*** * * * M U L T I P L E R E G R E S S I O N * * * ***

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V10 ORIGINAL TOTAL

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V33 SCORES ADAPTABILITY

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.14572				
R SQUARE	.02123				
ADJUSTED R SQUARE	.00204	REGRESSION	1	97.60672	97.60672
STANDARD ERROR	9.39224	RESIDUAL	51	4498.92158	88.21415

F = 1.10647 SIGNIF F = .2978

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.455039	.432592	-.145722	-1.052	.2978
(CONSTANT)	18.496545	4.379381		4.224	.0001

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.062430	-.056998	.815857	-.404	.6882
V36	.080327	.075284	.859725	.534	.5958
V37	-.142270	-.143795	.999860	-1.027	.3091
V38	-.033821	-.032924	.927537	-.233	.8168

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V37 SCORES DISTRACTIBILITY

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.20365				
R SQUARE	.04147				
ADJUSTED R SQUARE	.00313	REGRESSION	2	190.63042	95.31521
STANDARD ERROR	9.38712	RESIDUAL	50	4405.89788	88.11796

F = 1.08168 SIGNIF F = .3468

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.449790	.432386	-.144041	-1.040	.3032
V37	-.299492	.291488	-.142270	-1.027	.3091
(CONSTANT)	23.038445	6.220854		3.703	.0005

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.095716	-.086706	.786553	-.609	.5452
V36	.108467	.101328	.836511	.713	.4792
V38	-.009420	-.009137	.901679	-.064	.9493

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
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*** * * * M U L T I P L E R E G R E S S I O N * * * ***

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V10 ORIGINAL TOTAL

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V36 SCORES PERSISTENCE

MULTIPLE R	.22653
R SQUARE	.05131
ADJUSTED R SQUARE	-.00677
STANDARD ERROR	9.43361

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	3	235.86777	78.62259
RESIDUAL	49	4360.66053	88.99307

F = .88347 SIGNIF F = .4562

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V33	-.576036	.469221	-.184470	-1.228	.2254
V37	-.334284	.296969	-.158797	-1.126	.2658
V36	.606821	.851118	.108467	.713	.4792
(CONSTANT)	19.313502	8.147349		2.371	.0217

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.067379	-.058290	.631767	-.405	.6876
V38	.036199	.032567	.712366	.226	.8224

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:47 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V11 POPULAR TOTAL

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.30835
R SQUARE	.09508
ADJUSTED R SQUARE	.07734
STANDARD ERROR	5.17765

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	1	143.65446	143.65446
RESIDUAL	51	1367.21346	26.80811

F = 5.35862 SIGNIF F = .0247

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.372150	.160765	-.308352	-2.315	.0247
(CONSTANT)	20.291794	2.565853		7.908	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.174556	-.180949	.972411	-1.301	.1992
V33	-.259928	-.273224	.999860	-2.008	.0500
V36	-.105100	-.109117	.975421	-.776	.4413
V38	-.078184	-.081162	.975159	-.576	.5673

* *

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

MULTIPLE R	.40328
R SQUARE	.16263
ADJUSTED R SQUARE	.12914
STANDARD ERROR	5.03021

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	245.71852	122.85926
RESIDUAL	50	1265.14940	25.30299

F = 4.85552 SIGNIF F = .0118

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.368443	.156198	-.305280	-2.359	.0223
V33	-.465346	.231700	-.259928	-2.008	.0500
(CONSTANT)	24.736860	3.333525		7.421	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.073345	-.071085	.786553	-.499	.6201
V36	-.006750	-.006746	.836511	-.047	.9625
V38	-.162692	-.168825	.901679	-1.199	.2363

19 MAR 87 REGRESSION: ORIGINAL AND POPULAR
14:39:48 OKLAHOMA STATE UNIVERSITY IBM 3081K MVS/XA 2.1.1

* * * * M U L T I P L E R E G R E S S I O N * * * *

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V11 POPULAR TOTAL

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V38 SCORES THRESHOLD

MULTIPLE R	.43186
R SQUARE	.18650
ADJUSTED R SQUARE	.13669
STANDARD ERROR	5.00834

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	3	281.77751	93.92584
RESIDUAL	49	1229.09042	25.08348

F = 3.74453 SIGNIF F = .0168

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.336867	.157733	-.279117	-2.136	.0377
V33	-.544305	.239908	-.304033	-2.269	.0277
V38	-.207100	.172729	-.162692	-1.199	.2363
(CONSTANT)	28.677805	4.671161		6.139	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.021897	-.020490	.691918	-.142	.8877
V36	-.084337	-.078921	.712366	-.548	.5859

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

*** * * * M U L T I P L E R E G R E S S I O N * * * ***

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V12 TOTAL FREQUENCIES

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V37 SCORES DISTRACTIBILITY

MULTIPLE R	.22592
R SQUARE	.05104
ADJUSTED R SQUARE	.03243
STANDARD ERROR	13.13029

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	1	472.91229	472.91229
RESIDUAL	51	8792.63488	172.40461

F = 2.74304 SIGNIF F = .1038

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.675226	.407693	-.225920	-1.656	.1038
(CONSTANT)	39.033768	6.506886		5.999	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.169994	-.172082	.972411	-1.235	.2225
V33	-.206415	-.211878	.999860	-1.533	.1316
V36	-.015685	-.015902	.975421	-.112	.9109
V38	-.009507	-.009638	.975159	-.068	.9459

*** ***

VARIABLE(S) ENTERED ON STEP NUMBER 2.. V33 SCORES ADAPTABILITY

MULTIPLE R	.30601
R SQUARE	.09364
ADJUSTED R SQUARE	.05739
STANDARD ERROR	12.95987

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	867.63481	433.81740
RESIDUAL	50	8397.91236	167.95825

F = 2.58289 SIGNIF F = .0856

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V37	-.667936	.402429	-.223481	-1.660	.1032
V33	-.915135	.596953	-.206415	-1.533	.1316
(CONSTANT)	47.775305	8.588522		5.563	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V32	-.097034	-.090394	.786553	-.635	.5282
V36	.073672	.070776	.836511	.497	.6216
V38	-.072332	-.072145	.901679	-.506	.6149

APPENDIX G

PEARSON CORRELATIONS

Correlations for Original Scores

Temperament	Task			
	Instances	Patterns	Uses	Total
Adaptability	-0.08	-0.24	-0.04	-0.15
Approach	-0.14	0.01	-0.11	-0.11
Distractibility	0.01	-0.33*	-0.09	-0.14
Persistence	0.04	-0.09	0.06	0.01
Threshold	-0.09	0.07	0.07	0.01

*$p < .05$

Correlations for Popular Scores

Temperament	Task			
	Instances	Patterns	Uses	Total
Adaptability	-0.24	-0.23	-0.13	-0.26
Approach	0.14	-0.02	-0.06	-0.12
Distractibility	-0.19	-0.29	-0.21	-0.31*
Persistence	-0.22	-0.06	-0.04	-0.15
Threshold	-0.10	0.08	-0.21	-0.12

*$p < .05$

VITA

Anne Killingsworth Bomba

Candidate for the Degree of

Master of Science

Thesis: THE RELATIONSHIP OF SELECTED TEMPERAMENT CHARACTERISTICS TO IDEATIONAL FLUENCY IN PRESCHOOL CHILDREN

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