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A COMPARATIVE STUDY OF FLEXIBILITY BETWEEN INSTITUTIONAL
AND COMMUNITY, MALE, ADOLESCENT RETARDATE

A Thesis Submitted to the Graduate Division in Partial
Fulfillment of the Requirements for the
Degree of Master of Science

by 877

Casper Ferneti

KANSAS STATE COLLEGE OF PITTSBURG

Pittsburg, Kansas

July, 1967

ACKNOWLEDGEMENTS

I wish to express my appreciation for the advice and support afforded me by Dr. Henry Leland, my advisor, Dr. Kazuo Nihira, Mr. Ray Foster, and Mr. Max Shellhaas. For their assistance and cooperation I also wish to extend my gratitude to Mr. and Mrs. Gene Corsini, as well as the staff at Parsons State Hospital and Training Center, Seaman High School, and Shawnee Heights High School.

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ABSTRACT

This study was undertaken for the purpose of investigating the possibility of an appreciable difference in flexibility between institutional and community male, adolescent, retardates. The property of flexibility was chosen for investigation since the development of this attribute seems to be critical to occupational success in terms of satisfactory, inter-personal relationships. To begin with, an incidental sample was selected from the two Shawnee County special education classrooms in Topeka, Kansas. Matched for chronological age and verbal IQ, a second sample was chosen from the Parsons State Hospital and Training Center, Parsons, Kansas. A test was developed to measure spontaneous semantic flexibility. A discussion of content validity was presented. In addition, a measure of concurrent validity in terms of an empirical criterion was undertaken. The correlation between the new test and the empirical criterion was .63. The new test was administered to both groups of subjects. The results were scored for "class" and "shift" by two raters working independently of one another. A reliability figure of .98 was obtained between the raters in their scoring of both "shift" and "class." The correlation between "shift" and "class" scores was .99. Tests of significance between both groups on measures of "shift" and "class" were then calculated.

It was found that at the .01 level of confidence the community group displayed a significantly higher degree of flexibility than the institutional group on both measures of "shift" and "class."

From a review of the social histories of the subjects it was noted that all the subjects from the institutional sample had records of negative community involvement. There were no subjects in the community group that had histories of delinquent behavior. It was, therefore, concluded that those retardates who are institutionalized possibly lack the coping behaviors that enable the community group to remain in the community. And as a result of this study, it seemed reasonable to assume that the rigidity-flexibility dimension is a critical factor in the more generic concept of "coping."

CHAPTER I

INTRODUCTION

The mentally retarded¹ person is traditionally considered to be a burden not only to himself but also to the society in which he lives. Within the last two decades an impressive attempt has been made to understand and rehabilitate such an individual. In accordance with this end, several programs have evolved which hopefully cover the needed areas of investigation. Adaptive Behavior,² a relatively new and important dimension, is the name given to one such program. Within the adaptive behavior area, consideration is being given to flexibility along with many other presumably critical concepts. Briefly, adequate flexibility is thought to be a necessary attribute in the development of successful interpersonal relationships,

¹Mental retardation refers to "subaverage general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behavior." R. Heber, "A Manual on Terminology and Classification in Mental Retardation," Monograph Supplement, American Journal of Mental Deficiency, 2nd Ed., 1961, p. 3.

²"Thus, we define adaptive behavior as the effectiveness with which the individual copes with the natural and social demands of his environment." Ibid., p. 61.

which, in turn, has an affect on family and vocational adjustments or any other engagement involving social interaction. It should be emphasized, however, that at present the concept of flexibility is quite nebulous. It has only been within recent years that the term was defined. Unfortunately, behavioral evidence, of the construct has not been demonstrated. In addition, research on flexibility with retardates is non-existent. Testing, however, has been conducted with normals. Results from this testing have been described as measures of flexibility.

In this study an attempt was made to develop a testing device to use with retardates that closely resembles, in content, those instruments previously mentioned.

With the newly developed instrument, matched groups of retardates from community and institutional settings will be tested and compared.

This pilot study will hopefully be an initial step towards understanding the retardate through the dimension referred to as "flexibility."

Background Information and General Considerations

In 1904 Binet and Simon made the first systematic study of the prevalence of mental retardation in France. The results of this survey were negatively influenced by the unreliability of testing instruments and the somewhat nebulous criteria that was used to identify the

retardate.³ Since these earlier periods, refinements have been made in measuring instruments and a more accurate and acceptable definition of the mentally retarded has evolved. With increased transportation and communication facilities, more representative samples could be drawn from the total population. All of these factors have contributed to more precise and reliable research. Unfortunately, the public were only concerned with the incidence of mental retardation. And for this reason, improved research techniques were primarily used for this purpose. National emphasis on morality in the 1920's; economics in the 1930's; war in the 1940's; and progress in the 1950's were partially responsible for the public's attitude, but not entirely. Lack of information and fear were also noteworthy contributors. Clarke has written that progress in treatment and training of the mentally retarded was handicapped by myths that were circulated by the public which generated fear and fostered separation and isolation of the retarded. For example, one such fable stated an over-simplified genetic theory that proposed degeneration of the nation unless all mental defectives were segregated from the rest of the

³ N. O'Connor, "The Prevalence of Mental Defect," Mental Deficiency, The Changing Outlook, A. M. Clarke and A.D.B. Clarke (eds.) Glenco, Illinois: The Free Press, 1958, pp. 21-25.

population.⁴ Isolation of the retardate was acceptable common practice. They were sent to institutions, put in private boarding establishments or kept home and hidden by their family. The real misfortune, however, was not wholly contingent upon their respective placement, but rather a gross underestimation of their worth and an unfounded opinion that a retardate was a social liability. For these reasons, retarded children were oftentimes deprived physically, emotionally, and intellectually. In summary, public consensus, held that it was horribly embarrassing for a family to have a retarded child as one of its members. This attitude alone was probably responsible for the wholesale neglect of this nation's retarded inhabitants.

In recent years a strikingly effective and inspiring emphasis has been placed on mental retardation. President Kennedy has written in "A National Plan to Combat Mental Retardation" that with the 160,000 mentally retarded people residing in institutions and a remaining 4,840,000 residing elsewhere, the national government, state governments, and citizenry of this country need to allocate funds to rehabilitate and care for the mentally retarded.⁵ The

⁴Ibid., p. xiii.

⁵John F. Kennedy, A National Plan to Combat Mental Retardation. Circular 623893, Washington, D.C.: U.S. Government Printing Office, 1962, 12 pp.

5,000,000 mentally retarded people or approximately three per cent of the nation's populous to which President Kennedy refers represents a figure common to most current studies on the incidence of retardation in this country.

Today, the cost to the community for the maintenance of the institutions for the more than 200,000 mentally retarded patients residing in them amounts to an approximately annual expense of \$300 million.⁶ In 1955, Windle reported that the annual cost per resident in public institutions was \$1,285 and this provided only minimal custodial care. This is far from sufficient to provide treatment for each individual.⁷ With increased funds, much more can be done for the retardate in the way of treatment and rehabilitation. Additional benefits for the retardate would include the knowledge that he could contribute to some extent or totally to his self support. O'Connor states that the expense for training the mentally retarded is extensive, but once the patients are trained, they will be able to work in the community which should be socially and financially valuable to the individual and also to the community.⁸

⁶Ibid., p. 4.

⁷C. Windle, "Prognosis of Mental Subnormals," Monograph Supplement, American Journal of Mental Deficiency, 66, 1962, p. 19.

⁸N. O'Connor, "Defectives Working in the Community," American Journal of Mental Deficiency, 59, 1954, pp. 173-180.

Paradoxically, with a current increased public interest and available funds, there are increased problems. Goldstein has stated that there is an acute need for research bearing on vocational and social adjustment. For example, research has indicated that job failure has been caused as much by the lack of social adjustment as failure to accomplish the task assigned. The aim of vocational rehabilitation, then, should include training in the area of interpersonal relationships.⁹ Further complexities involve subjective measures. Work in Adaptive Behavior has led Leland to the following conclusion:

Adaptive Behavior by its very terminology implies the behavior the child uses to adapt himself to social demands. Since social demands differ from one community to another, it would seem to follow that an absolute, universal scale for measuring adaptive behavior would be definitely counter-indicated, and that each psychologist must utilize the demands of the social-psychological factors present in his own setting and in the surrounding areas from which he draws his patients before he can properly discuss adaptive behavior in terms of any one patient. Thus, this is really a subjective measure, and as such, a test of the psychologist's knowledge of the social-cultural background of the patient, as it is any other one thing.¹⁰

⁹H. Goldstein, "Summary of the Conference," Preparation of Mentally Retarded Youth for Gainful Employment. United States Office of Education, Bulletin No. 28, Washington, D.C.: U.S. Government Printing Office, 1959, pp. 22-36.

¹⁰H. Leland, "Suggested Revisions in the Evaluation of Adaptive Behavior," (Parsons State Hospital and Training Center, 1960)(Mimeographed.)

With respect to vocational success, Kitson has mentioned that prediction of vocational success through the administration of a few tests is futile when one considers all the factors which influence the individual. Kitson continues to say that optimistic psychologists sometimes declare that we shall be able to predict vocational success "when vocational tests are more highly developed." On this point, William James made a pertinent observation 60 years ago: "It is safe to say that individual histories and biographies will never be written in advance no matter how evolved psychology may become."¹¹ With this final touch of pessimism by James, some troublesome issues appear to reach a distasteful logical conclusion. Hopefully, this and other critical issues will have a more favorable prognosis.

The Specific Issue

In the foregoing section it was mentioned that there is an acute need for training and research in the area of social adjustment. It was also noted that the nebulous concept of flexibility appears to be related in some respect to the global dimension of social adjustment. This hypothesis, supported to some extent by research, seems plausible

¹¹H. Kitson, "Can We Predict Vocational Success?" Occupations, Vol. 26 (1948), p. 539.

enough to justify further investigation on flexibility.

At this point, a clearer and more concise understanding of flexibility was deemed necessary. To accomplish this end a theoretical explanation of the intellect needed to be adopted to answer the following questions:

1. How does flexibility relate to the rest of the intellect?
2. How many different kinds of flexibility are there?

Of the many theories currently proposed, J. P. Guilford's "Structure of Intellect" seemed to be the most highly comprehensive, systematic and empirical. For these reasons the model was employed as the theoretical frame of reference for this study.

In Figure I Guilford has diagrammed the relationship among the various aspects of the intellect.¹²

The following list of definitions will serve to clarify those terms used in the previously illustrated model.¹³

Definitions

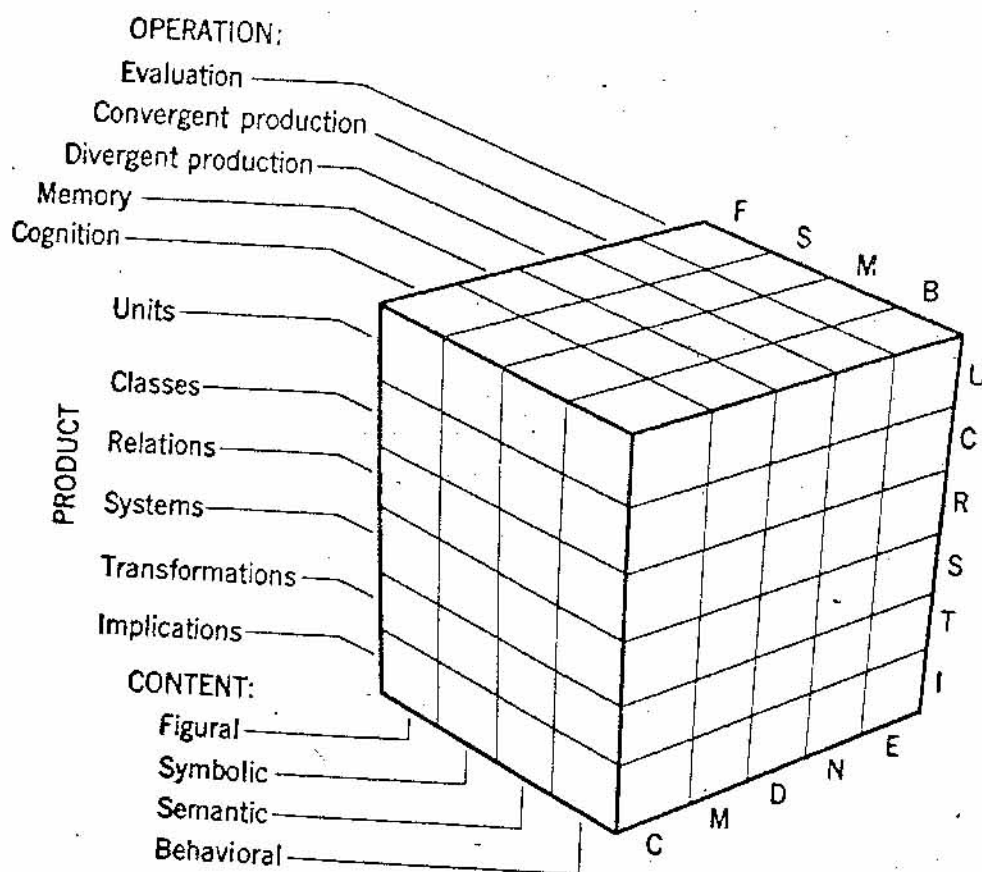
- I. Operations -- the kind of mental facility employed
 - A. Evaluation -- judgment

¹² J. P. Guilford, "Three Faces of Intellect," American Psychologist, 14 (1959), pp. 469-479.

¹³ J. P. Guilford, The Nature of Human Intelligence, New York: McGraw-Hill Book Company, 1967, pp. 46-220.

Figure 1

A THREE-DIMENSIONAL MODEL FOR THE STRUCTURE OF THE INTELLECT



- B. Convergent production -- generation of information from given information where the emphasis is on deduction and logical necessities desired from the same source.
- C. Divergent production -- generation of information from given information where the emphasis is on variety and quantity of output from the same source; likely to involve transfer.
- D. Memory -- retention of information.
- E. Cognition -- awareness, immediate discovery or rediscovery, or recognition of information in various forms.

II. Contents -- signs

- A. Figural -- information in concrete form, as perceived or as recalled in the form of images.
- B. Symbolic -- information in the form of signs, materials, the elements having no significance in and of themselves, such as letters, numbers, musical notations, and other "code" elements.
- C. Semantic -- meanings of which words commonly become attached.
- D. Behavioral -- information, essentially nonverbal, involved in human interactions, where awareness of attention, perceptions, thoughts, desires, feelings, moods, emotions, intentions, and actions of other persons and of ourselves is important.

III. Productions -- pertains to the way or form in which any information occurs.

- A. Units -- things, segregated wholes, figures on grounds, or "chunks."
- B. Class -- a set of objects with one or more common properties; but it is more than a set, for a class idea is involved.
- C. Relation -- some kind of connection between two things, a kind of bridge or connecting link having its own character.

- D. Systems -- complexes, patterns, or organizations of interdependent or interacting parts, such as a verbally stated arithmetic problem, an outline, a mathematical equation, or a plan or program.
- E. Transformations -- changes, revisions, redefinitions, or modifications, by which any product of information in one state goes over into another state.
- F. Implications -- something expected, anticipated, or predicted from given information.

Of the many facets of the intellect that Guilford describes, only the "operation" of "divergent production" involves flexibility of thinking. In Table I the different types of flexibility are illustrated.¹⁴

In this study, an investigation will be made of only one form of flexibility -- semantic spontaneous flexibility.

To measure this attribute, Guilford and others have devised a series of sub-tests to be used with normals. Unfortunately, no attempt has been made to develop comparable sub-tests to be used with retardates. Also, no previous attempt has been made to develop behavioral criterion which will measure the same attribute. In view of these limitations a questionnaire had to be developed to use with retardates. This device closely parallels, in content, those instruments currently in use to measure the same attribute in normals. In addition an attempt will be made to demonstrate the

¹⁴Guilford, "Three Faces of Intellect," op. cit., pp. 359-382.

TABLE I
MATRIX OF DIVERGENT-THINKING FACTORS

KIND OF THINGS PRODUCED	KIND OF CONTENT		
	Figural	Symbolic	Semantic
Units		word fluency	ideational fluency
Classes	figural spontaneous flexibility		semantic spontaneous flexibility
Correlates			associational fluency
Systems		expressional fluency	
Transformation	figural adaptive flexibility	symbolic adaptive flexibility	originality
Implications	elaboration		elaboration

degree of correlation between verbal flexibility (as demonstrated on the questionnaire), and behavioral flexibility (as demonstrated from empirical observations).

Of central concern in this study, however, will be the comparison of flexibility measures between institutional and community, male, adolescent, retardates as obtained from the questionnaire.

Nature of the Study: An Overview

The general nature of this study is to investigate semantic spontaneous flexibility in institutional and

community, male, adolescent, retardates. The investigator has formulated a list of sixteen questions that will be utilized in the testing. Each question serving as an unstructured stimulus will be presented verbally. All responses by the subject will be recorded and evaluated. In terms of the specific study, success will be seen as an appreciable difference (level of significance being .05) between the degree of flexibility in the institutional retardate, as compared with the community retardate.

CHAPTER II

REVIEW OF LITERATURE

This presentation has been subdivided into the following three parts:

- 1) Flexibility
- 2) The effects of institutionalization on human behaviors
- 3) The relationship between institutionalization and flexibility

General explorations have been made into available studies on flexibility. The more generic terms of creativity and divergent thinking have been investigated too since these concepts oftentimes include information on flexibility. It should be noted as well that earlier research in this area can only be found under references on creativity. The term "flexibility" is relatively new in the literature. Only a few years ago (1961), Amthauer, in a study on productive indowment, mentions in his writings that he detected a new dimension of intelligence which he named "flexibility of thinking."¹⁵

¹⁵ Rudolf Amthauer, "Empirical Contributions to the Problem of Productive Endowment," Psychol. Resch., 1961, 12, pp. 81-92.

The area concerned with the affects of institutionalization on human behavior include comparative studies between communities and institutions, and institutional studies dealing with the influence of the institution on human behavior.

In the third and final area, an attempt is made to associate the flexibility-rigidity concept with the institutional environment.

Flexibility

In a study by Price, it was concluded that IQ is associated with divergent thinking from IQ's of 100 to 130+. It was found, too, that no particular deviations in divergent thinking scores were obtained from 12-year-old groups and 15-year-old groups. Also as a result of this study, no deviation in scores could be attributed to differences in sex.¹⁶

Klausmeier and Wiersma, in an experiment with 160 fifth graders and 160 seventh graders of high IQ, administered tests of divergent thinking and convergent thinking, yielding 14 scores. Girls generally scored higher than boys in divergent thinking; boys scored higher than girls

¹⁶ Marian Blewitt Price, "The Relationship of Age, Mental Age, IQ, and Sex to Divergent Thinking Tests," Dissertation Abstracts, 23 (11), 4423.

on convergent thinking tests. The seventh graders scored higher than the fifth graders except on three of ten divergent thinking tests and one of four convergent thinking tests.¹⁷

While it is commonly suspected that there is a linear relationship between IQ and creativity, Price and Bell have seemingly demonstrated otherwise. They mention that "in some cases there is a curvilinear relationship while in other instances there seems to be a discontinuous relationship." Discussion at this point involves the possibility of the person with an IQ of over 130 as being better able to express himself.¹⁸

Klausmeier and Wiersma reported from their study that "girls received higher scores than boys on nine of fifteen tests of divergent thinking ability." All tests were correlated positively with IQ.¹⁹

¹⁷Herbert J. Klausmeier and William Wiersma, "Relationship of sex, grade level, and locale to performance of high IQ students on divergent thinking tests," Journal of Educational Psychology, 1964, 55 (2), 114-119.

¹⁸B. Marian Price and B. Graham Bell, "The relationship of chronological age, mental age, IQ and sex to divergent thinking test," Journal of Psychological Researches, 1965, 9 (1), 1-9.

¹⁹Herbert J. Klausmeier and William Wiersma, "The effects of IQ level and sex on divergent thinking of 7th grade pupils of low, average, and high IQ," Journal of Educational Research, 1965, 58 (7), 300-302.

Sixty-eight academically talented elementary school children were tested by Fleming, Elyse, and Weintraub. Their scores on a battery of verbal and nonverbal creativity tests were correlated with their performances on a paper and pencil test purporting to measure attitudinal rigidity. "A moderate negative relationship ($r = -.41$) was found to exist between rigidity and verbal creativity only." Also, chronological age appeared to be related to verbal creativity production. Intelligence and sex were investigated and found to be insignificant factors.²⁰

"The most significant finding in a study by Kelson was that educable retarded children are more proficient in nonverbal creative tasks than verbal creative tasks. Their nonverbal scores on measures of creative production did not differ significantly from the nonverbal scores of intellectually average children.

"Correlations between intellectual and creative abilities were found to be statistically insignificant in both verbal and nonverbal areas for educable retarded children and brain-injured children.

²⁰

Elyse S. Fleming and Samuel Weintraub, "Attitudinal rigidity as a measure of creativity in gifted children," J. Educ. Psychol., 1962, 53, 81-85.

"Significant differences were found between upper and lower class educable retarded children in verbal creativity only."²¹

The foregoing studies have all treated to some extent the relationship of IQ to creativity. The results while generally conflicting, are consistent in the area comparing verbal creativity with IQ. It should be noted that the apparent consistency here might possibly be attributed to a linear correlation between verbal fluency and IQ rather than verbal creativity and IQ.

Saarinen found that an S shaped growth curve represented the development of abstract thinking. The author further felt that physical development is possibly a crucial factor affecting or related to abstract and concrete thinking.²²

In a comparative study of motor ability to creativity, Stroup and Pielstick have indicated as a result of their study that no significant relationship (.05 level of confidence) exists.²³

²¹Florence Kelson, "An assessment of creativity in the retarded child," Dissertation Abstracts, 1965, 26 (6), 3478-3479.

²²Pirkko Saarinen, "Abstract and concrete thinking at different ages," Unpublished manuscript, Helsinki, Finland; Univer. Helsinki, 1961, 156 pp.

²³Francis Stroup and N. L. Pielstick, "Motor ability and creativity," Perceptual and Motor Skills, 1965, 20 (1), 76-78.

Kelly, Hunka, and Conklin concluded that "anxiety" tended to facilitate performance among older Ss and to hinder performance among the younger Ss on tests of flexibility in cognitive processes.²⁴

Utilizing 20 high- and 20 low-anxious children from grades seven, eight, and nine, Feldhusen and Denny administered a battery of five divergent thinking tests to the two groups. They concluded that neither sex nor anxiety provided for significant differences in the test scores.²⁵

From a comparison of profiles obtained with the Intelligence-Struktur-Test, Amthauer detected a new dimension of intelligence which he named "flexibility of thinking." He concluded that this diversion is of great value for occupational guidance, since persons high on this scale tend to be successful in a chosen occupation.²⁶

A study by Hersch revealed that "both relatively mature and primitive processes are more available to the

²⁴ Francis J. Kelly, Stephen Hunka, and Rodney Conklin, "Further normative data on tests measuring flexibility in cognitive processes," Psychological Reports, 1965, 17 (3), 683-686.

²⁵ John F. Feldhusen and Terry Denny, "Teachers' and children's perceptions of creativity in high- and low-anxious children," Journal of Educational Research, 1965, 58 (10), 442-446.

²⁶ Amthauer, op. cit., pp. 81-92.

creative individual as compared with non-creative normals."²⁷
 This would suggest that the development of creativity is not independent of psychophysiological maturity. The commonality here would essentially imply, then, that measures of mature and primitive processes are also, to some extent, measures of creativity.

Torrence concluded from his investigation in Samoa that particular teaching techniques are capable of increasing original thinking. He compares a decline in creativity to the low value placed on adventurousness and curiosity and the high value placed on promptness and competitiveness. He concludes too that a rise in creativity is associated with cultural discontinuities.²⁸

The development of four areas of critical thinking was investigated by Sikora in 140 elementary school children by individual testing procedures. The writer concluded that adult maturity in the areas of inferences, analogies, induction, and syllogisms is developed by age twelve.²⁹

²⁷C. Hersch, "The cognitive functioning of the creative person: A Development Analysis," J. Proj. Tech., 1962, 26, (2), 193-200.

²⁸E. P. Torrence, "Must Creative Development be Left to Chance?" Gifted Child Quart., 1962, 6 (2), 41-44.

²⁹Antoni Sikora, "Critical thinking in elementary school children," Roczniki Fil., 1960, 8 (4), 93-114.

In a study demonstrating the effects of sensory deprivation on an unstructured cognitive task, Suedfeld concluded that of the 30 undergraduate men selected for the experiment, isolated-deprived Ss showed a decrease in length of stories; isolated Ss showed an increase in story-length; control Ss showed no significant changes.³⁰

Successful collaboration among professionals according to Stueks is attributed to many factors including flexibility.³¹

Al-Issa and Robertson illustrated in their study that "thought disorder was associated with lower scores on divergent thinking tests. Divergent thinking was associated with occupational achievement and leisure pursuits before illness."³²

Dreyer and Wells have concluded as a result of their study that "parents of high-creative children had less domestic value consensus and more role tension than parents of low-creative children, reflecting an emphasis on

³⁰Peter Suedfeld, Robert J. Grisson, and Jack Vernon, "The effects of sensory deprivation and social isolation on the performance of an unstructured cognitive task," American Journal of Psychology, 1964, 77 (1), 111-115.

³¹Alice M. Stueks, "Working together collaboratively with other professionals," Community Mental Health Journal, 1965, 1 (4), 316-319.

³²Al-Issa I. and J. P. S. Robertson, "Divergent thinking abilities in chronic schizophrenia," Journal of Clinical Psychology, 1964, 20 (4), 433-435.

individual divergence and expression of feeling."³³

Gold found in his data that in most instances significant relationships were found to exist between all divergent production scores.³⁴

Lieberman concluded from her study that "there is a positive relationship between the quality of playfulness in children's behavior and divergent thinking abilities."³⁵

In a study by Guilford, Frick, Christensen, and Merrifield, it was found that "one form of rigidity, perseveration, is a quality opposite to spontaneous flexibility and another form of rigidity, persistence, is a quality opposite to adaptive flexibility." This testing was accomplished with the use of 28 tests being administered to 208 Air Force cadets.³⁶

³³Albert S. Dreyer and Mary B. Wells, "Parental values, parental control, and creativity in young children," Journal of Marriage and the Family, 1966, 28 (1), 83-88.

³⁴Marvin J. Gold, "An investigation into the relationship among several divergent production scoring procedures," Exceptional Children, 1965, 32 (2), 112-113.

³⁵J. Nina Lieberman, "Playfulness and divergent thinking: An investigation of their relationship at the kindergarten level," Journal of Genetic Psychology, 1965, 107 (2), 219-224.

³⁶J. P. Guilford, J. W. Frick, P. R. Christensen, and P. R. Merrifield, "A factor analytic study of flexibility in thinking," U. Sth. Calif. Psychol. Lab. Rep., 1957, No. 18.

In the preceding section flexibility is discussed in terms of its relationship with a number of presumably related properties. While most of the studies mentioned compare flexibility with I.Q., sex, and age, there is seemingly little consistency in the reporting. Generally speaking, however, the studies apparently hint at the possibility of a positive linear correlation between creative fluency and the combined affects of age and I.Q. In a singly listed study with educable retardates, Kelson might support this claim when he mentions that, "significant differences were found between upper and lower class educable retarded children in verbal creativity only."³⁷ It would seem, then, that through greater realization of, extended exposure to, and increased quality in experience, creative fluency increases.

Amthauer, Stueks, Al-Issa and Robertson all mention flexibility as a crucial component in the development of interpersonal functioning. Even though this relationship is not discussed pointedly, it is, nevertheless, important that such a relationship is thought to exist.

Unfortunately, variables which are critical to the development of flexibility have not been isolated; nor have any specific effects resulting from the development of flexibility been determined. Also, the notion of

³⁷

Kelson, op. cit., pp. 3478-3479.

creativity or divergent thinking or flexibility is still quite nebulous in the literature. And finally, in relation to this study, research on flexibility with retardates is sparse.

The Effects of Institutionalization on Human Behavior

"Forty-two mongoloid children were assessed (1) prior to admission, (2) on admission, (3) eighteen months after admission, and (4) three or more years following admission to a state hospital for the retarded." Shipe and Shotwell concluded in this study that "home-reared mongols would be superior to children institutionalized at birth and that superiority would persist."³⁷

Damborska and Stepanova concluded from their study that the "manifestations of inadequate adaptation to a change in situation in institutionalized children aged 24-40 weeks were three times more frequent than in home-reared children. Manifestations of fear of an unknown object were twice as frequent in institutionalized children, but inadequate

³⁷ Dorothy Shipe and Anna M. Shotwell, "Effect of out-of-home care on mongoloid children: A continuation study," American Journal of Mental Deficiency, 1965, 69 (5), 649-652.

manifestations of fear were seven times more frequent."³⁸

In a study by Rusalem and Cohen, it was concluded that from "a comparison of the prestige rankings of both the female and the male subgroups, the normal group and the institutionalized retardates agreed upon the five highest and the five lowest prestige occupations. The rankings of the institutionalized retardates, however, differed significantly. This would suggest that retardation, per se, is not a crucial factor in assigning occupational prestige rankings."³⁹

As a result of this study, Bortner concluded in support of his hypothesis, that "institutionalized groups differed from non-institutional samples and among themselves on measures of superego functioning and that these differences in functioning could not be attributable solely to the effects of aging."⁴⁰

³⁸Marie Damborska and Pavla Stepanova, "Problems of adaptability of institutionalized children," Ceskoslovenska Pediatrie, 1962, 17 (7/8), 600-606.

³⁹Herbert Rusalam and Julius S. Cohen, "Occupational prestige rankings by institutionalized and non-institutionalized retarded students," Personnel and Guidance Journal, 1964, 42 (10), 981-986.

⁴⁰R. W. Bortner, "Superego functioning and institutional adjustment," Perceptual and Motor Skills, 1962, 14 (3), 375-379.

In a comparison of institutionalized and non-institutionalized retardates of both sexes from ages 13-25, Hobbs concluded from her study that, "the institutionalized group was found to have a higher incidence of anti-social or immoral behavior, to have fewer educational opportunities, to have less professional help, to be more often from broken homes, to be less conforming to societal standards, and to have parents with less adequate educational background. No differences were found with respect to family size or parental attitudes of acceptance or rejection."⁴¹

Lipsitt has made an attempt in this study to demonstrate some of the ways in which hospital practices may possibly strengthen the patient-hospital symbiosis rather than help the patient to attain individualism, separation, and rehabilitation. In his recommendations, mention was made of a therapeutic atmosphere which stressed resocialization, independence, and individual identity, rather than reinforcement of desocialization, dependence, and conformity.⁴²

Dentler and Mackler concluded from this study that "while the character of the institution studied proved

⁴¹Mary T. Hobbs, "A comparison of institutionalized and non-institutionalized mentally retarded," American Journal of Mental Deficiency, 1964, 69 (2), 206-210.

⁴²D. R. Lipsitt, "Dependency, depression and hospitalization: Toward an understanding of a 'conspiracy'," The Psychiatric Quarterly, 1962, 36 (3), 537-554.

incompatible with individuality, it was compatible with efficient management and rehabilitation toward limited participation and adult subsistence in the community upon discharge."⁴³

Banasiak, in a study of anxiety in institutionalized and non-institutionalized children concluded that "the institutionalized child of this study was characterized by less anxiety than his non-institutionalized counterpart, probably because of more effective anxiety reducing defenses. On the other hand, the institutionalized child was less able to cope with additional anxiety stimulations as compared with his control mate, apparently because of having less in the way of defense reserves."⁴⁴

Wing discusses the syndrome of "institutionalism" which he ascribes to the gradually developed attitude of indifference towards events outside the hospital. Results from randomly selected halves of all chronic male schizophrenic patients resident two or more years in two London hospitals, demonstrated that the syndrome was prevalent

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Robert A. Dentler and Bernard Mackler, "The socialization of retarded children in an institution," J. Hlth. Hum. Behav., 1961, 2 (4), 243-252.

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Joseph Frederick Banasiak, "Anxiety and its relationship to test performance in institutionalized and non-institutionalized children," Dissertation Abstracts, 1963, 24 (2), 829-830.

and detrimental to therapeutic programs.⁴⁵

The most strikingly significant characteristic in this group of studies is the pervasive conclusion that institutionalized persons fail to compare favorably to their home-reared counterparts. Hobbs emphasized this point when she mentions in her study that institutionalized compare with non-institutionalized retardates have "a higher incidence of anti-social or immoral behavior, fewer educational opportunities, less professional help, are more often from broken homes, are less conforming to societal standards and have parents with less adequate educational background."⁴⁶ If the institutionalized retardate does function less adaptively than the non-institutionalized retardate the question of the institutional environment as a primary causal factor becomes immediately suspect. Another possible explanation, however, which should not be overlooked is that the pre-institutional family environment might have been a central causal factor in subsequent maladaptive behaviors observed in the institution. It is also plausible that pre-institutional, maladaptive functioning could have initiated

⁴⁵J. K. Wing, "Institutionalism in mental hospitals," Brit. J. soc. clin. psychol., 1962, 1 (1), 38-51.

⁴⁶Hobbs, op. cit., pp. 206-210.

institutional placement. Even though available research has not resolved this issue, the problem is, nevertheless, important. In this study an attempt will be made to compare the institutionalized and non-institutionalized retardates on measures of flexibility. If a discrepancy is found the question again of pre-institutional and/or institutional causal factors would arise.

Although comparative studies on flexibility between institutional and non-institutionalized persons have not been undertaken, it is particularly noteworthy that presumably consistent differences in these two groups with respect to other variables exist. It does not necessarily follow that the trend should continue in a similar fashion when flexibility is investigated but, all indications available now certainly suggest this.

The Relationship Between Institutionalization and Flexibility

The previously listed studies on flexibility made mention of a number of characteristics which are supposedly critical to the development of this attribute. While it is difficult to specifically describe those qualities which are directly responsible for the development of flexibility, there are, nevertheless, investigators who refer to some characteristics which are seemingly most important. Al-Issa and Robertson mention the accumulation of leisure pursuits

as a crucial factor.⁴⁷ Adventurousness and curiosity are discussed by Torrence as factors which appear to have a linear relationship with flexibility.⁴⁸ Dreyer conceptualizes individual divergence and expression of feeling as necessary components in the development of flexibility.⁴⁹ Whether there is an absence or presence of environmental cues in an institutional setting to foster these qualities is only speculative. Observable differences between institutional and community settings are obvious, however. A comparison of environmental stimuli is probably most striking. In the community there is a constant turnover of stimuli. Diversity can be seen in facilities, people, and social atmosphere, to mention a few. The institution, on the other hand, is prone to continuity and routine rather than diversity. Structures are planned according to a total design of the campus. Other facilities are developed exclusively in accordance with humanitarian needs. People are trained to respond therapeutically. The social atmosphere is static and organized. The supposition that differences in locale does effect flexibility is plausible. Klausmeier

⁴⁷ Al-Issa and Robertson, op. cit., pp. 433-435.

⁴⁸ Torrence, op. cit., pp. 41-44.

⁴⁹ Dreyer, op. cit., pp. 83-88.

In addition to the previous finding, Provence concluded that institutionalized children, compared with similar children in a home setting, had greater difficulty in thinking through situations. Excessive concreteness of thought and rigidity beyond what one expects in the average family child of the same age was seen in the institutionalized children.⁵³

The previously mentioned studies and discussion indicate that there is sufficient evidence to suspect institutionalization as being responsible for negatively influencing a number of intellectual and personality characteristics. Less tenuous an argument, however, is that these characteristics are directly related to flexibility. Even so, the assumption that flexibility is somehow stifled in the institutional process has, it would seem, adequate backing or enough to warrant investigation in this area.

⁵³Ibid., pp. 25-30.

CHAPTER III

METHOD

Setting

This study was conducted in the following two areas:

1. Shawnee County, Kansas
 - a. Shawnee Heights High School
 - b. Seaman High School
2. Parsons State Hospital and Training Center, Parsons, Kansas.

Both Shawnee Heights and Seaman are high schools within the Shawnee County public high school complex. These two schools lie within the greater metropolitan area of Topeka, Kansas. The city and urban area have an approximate population of 70,000 and 80,000, respectively. With respect to Topeka, Kansas, Shawnee Heights is located about three miles west and Seaman, one mile north of the city. Both schools were designed to accomodate an enrollment of approximately 500 students. Each school includes in its curriculum four major areas of concentration: English, Mathematics, Science, and History. In addition to these areas of emphasis, courses are offered in art, music, physical education, health, mechanical arts, and special education. With successful completion of the school program, students from both schools graduate with either a regular diploma or special education diploma. The latter refers to successful completion of

course requirements especially designed for educable retarded children.

The Parsons State Hospital and Training Center is a state institution located in Parsons, Kansas. The purpose of the institution is "to provide psychiatric treatment and educate to full capability the mentally retarded as emotionally disturbed children and young adults of Kansas."⁵⁴ The institution was established in 1903 as a treatment center for epileptics and changed to an institution for the training of the mentally retarded in 1956 by the state legislature. The enrollment capacity of the institution is 700. This includes children and young adults between the ages of six and twenty-one. The care and treatment of patients consists of a psychiatric, medical, dietary, and psychological program. Supplementary care and training can be obtained through the Adjunctive Therapy services which include: elementary education, religious education, vocational education, speech therapy, music therapy, occupational therapy, recreational therapy, reading, crafts, and various experimental programs.⁵⁵ The patient population is classified,

⁵⁴ H. Bair, "What It Is, What It Does," (Parsons State Hospital and Training Center, Parsons, Kansas, 1957), (Mimeographed).

⁵⁵ Ibid.

distributed, and assigned programs in accordance with their respective sex, age, I.Q., adaptive behavior level,⁵⁶ and individual needs.

Sample Population

Those characteristics common to the sample population used in this study are as follows:

1. They must have a measured I.Q. of at least 50 and not more than 85.
2. They must have adaptive behavior levels of 0, I, or II.
3. They must all be males.
4. They must be between the ages of 15 and 21.
5. They must be free of observable anomalies.
6. Their auditory and communication deficits, if any, must not be severe enough to interfere to an obvious extent with the test procedures.

The total population of those in special education classrooms in Shawnee County who could meet the above

⁵⁶"Adaptive Behavior refers primarily to the effectiveness with which the individual copes with the natural and social demands of his environment. It has two major facets: (1) the degree to which the individual is able to function and maintain himself independently, and (2) the degree to which he meets satisfactorily the culturally-imposed demands of personal and social responsibility. . . . The Adaptive Behavior dimension is categorized in terms of five levels. These levels are scaled from mile (but apparent and significant) negative deviation from population norms in adaptive behavior at Level-I to complete lack of adaption at the extreme lower limit of Level-V." H. Leland, (Ed.), Conference on Measurement of Adaptive Behavior, Parsons State Hospital and Training Center, Parsons, Kansas (1964), pp. 6-14.

criteria were chosen to participate in this study. From a total population of seventeen, three did not participate because of absenteeism and personal refusal. The remaining fourteen were tested.

After the fourteen retardates were obtained from the community, a matched group was selected among the population at the Parsons State Hospital and Training Center. Matching was made in accordance with verbal IQ as measured on the Weschsler Intelligence Scale for Children or the Weschsler Adult Intelligence Scale and chronological age.

In the following table, Table II, similar letters are used to refer to a matched pair. Subscripts one(₁) and two (₂) are used to denote the community retardate and the institutional retardate respectively.

Materials

From the review of literature, it was discovered that tests currently in use to measure spontaneous semantic flexibility were designed for the intellectually average, above average and superior individual. Also, the item or stimulus demand from these tests evoked responses of an inanimate nature with little or no emotional loading. These findings resulted in the development of a test by the examiner which would be applicable to retardates. In addition, questions were devised to probe interpersonal functioning. Since previously cited research seems to equate, to some extent,

TABLE II
MATCHED INSTITUTIONAL COMMUNITY SUBJECTS

Subject	Verbal IQ	Birthdate
A ₁	62	5-16-47
A ₂	61	1-4-47
B ₁	76	8-9-48
B ₂	75	3-23-48
C ₁	74	9-22-47
C ₂	74	11-3-47
D ₁	77	3-2-49
D ₂	76	9-28-50
E ₁	77	2-21-48
E ₂	79	10-29-47
F ₁	85	11-29-49
F ₂	85	11-13-47
G ₁	69	11-11-46
G ₂	69	12-4-46
H ₁	66	3-20-48
H ₂	66	5-13-49
I ₁	66	1-5-47
I ₂	67	12-23-47
J ₁	82	1-31-49
J ₂	82	12-29-47
K ₁	72	6-17-49
K ₂	73	11-16-48
L ₁	65	10-27-46
L ₂	64	8-18-47
M ₁	68	8-2-46
M ₂	69	5-28-46
N ₁	72	6-13-50
N ₂	72	3-3-49

flexibility with successful interpersonal functioning it was felt by the examiner that questions involving human interaction would be valuable and should be included in the questionnaire.

The questionnaire used in this study was designed to closely resemble tests currently in use. The following list are examples of three tests used to measure flexibility:⁵⁷

1. Brick Uses. List as many different uses as possible for a common brick. Score is number of times the class of use is changed.
2. Object Naming. Write as many objects as possible belonging to a certain class. Score is number of different types of objects in the list.

Sample item:

You are given a class defined as mineral.

You might write down: iron
uranium
granite
copper

3. Unusual Uses. List other uses for a common object for which a standard use is given.

Sample item:

Given: A newspaper (used for reading), you might think of the following other uses for a newspaper.

1. to start a fire
2. to wrap garbage in
3. to swat flies
4. stuffing to pack boxes
5. to make up a kidnap note

The questionnaire in this study is similar to these tests in that:

1. Test items involve an unstructured stimulus demand.
2. Multiple responses are requested.
3. Scoring is accomplished with the use of "shifts and "classes".

The essential differences in the questionnaire used in this study and the three previously described tests is that the test items in the questionnaire are more unstructured. This modification was made to successfully accommodate retarded individuals. And secondly, the questionnaire is much longer. The greater length was devised to provide for increased discrimination between subjects.

Questions

What could it mean if:

1. you see dark clouds in the sky?
2. someone laughs at you?
3. you see someone running?
4. someone throws water on you?
5. you see a dog growling at you?
6. you see smoke?
7. you hear someone yell for help?
8. you hear a bell?
9. someone shakes your hand?
10. you want to buy something but you have no money?
11. you see someone fall?

12. you get a bad sunburn?
13. you're in bed and your alarm clock rings?
14. you see a light?
15. you see a car with the windows rolled up?
16. an adult is angry with you?

Directions:

Say--"I'm going to ask you some questions. All of the questions have more than one answer. For each question give as many answers as you can. When you're finished, tell me and I'll go on to the next question." Read each question to the subject. It is always permissible to repeat the question. If the subject does not answer the first question successfully, answer it for him, thus: "It could mean that it is about to rain, that there might be a tornado, or it could be smoke for a bomb, etc." After this, no further help is given.

Testing

In the special education classes in Shawnee County, the examiner was introduced to both classes as a person in the education field who was involved in a research project. It was told to the classes that the examiner was visiting with a number of students in the Topeka area. The examiner then mentioned that a list of questions would be asked and answers recorded. It was mentioned, too, that responses would not be graded and would not have a bearing on their

classwork. In conclusion it was mentioned that their cooperation would be appreciated. The classes were then given an opportunity to ask questions.

Vacant rooms were provided for the testing sessions. Subjects were seen singly and during classtime. Since more than one session was required for completion of the testing, measures were taken to discourage the negative effects of prompting. After the completion of the test battery, the examiner talked with the subject for about fifteen minutes. Also, subsequent sessions were held in each school only after a week had lapsed from the previous session. It was hoped that these precautions would alleviate the contaminating effect of prompting.

Testing in the institution was much more simplified and routine. Each subject was scheduled for testing at a particular time during the day. Each scheduling was done independently of the remaining thirteen. A private testing room was provided in the Adaptive Behavior Project area. Comparable instructions were given individually to these subjects. Because some of the subjects were on home visit, the testing sessions were sporadic and continued for better than two weeks.

Scoring

Responses to each question were scored for "shift" and "class." To accomplish this, two raters were chosen to

evaluate responses. Both raters were college graduates and unfamiliar with the study. Directions were verbally presented to both raters simultaneously. The raters scored responses at the same time but independently of one another. The order of scoring each subject's responses was determined by random selections. The directions and criterion for scoring are as follows:

Directions

Scores for "shift" and "class" need to be obtained for subjects' responses to a question. A "shift" refers to a change in theme or an alteration of thought in a sequence of responses. "Class" refers to one or a sequence of responses, all having the same theme. For example, in response to the first question, "What could it mean if you see dark clouds in the sky?" a subject might reply, "snow, rain, hail, and smoke from a bomb." In these four responses it can be noted that the first three responses are of the same theme while the last response seems somewhat divorced from the previous three. In this example, one shift score is given for the break in thought between response three and response four. Two class scores are given for that area pertaining to weather and the other area concerning bombs. In another example of responses to the same question, the subject might respond, "snow, fire, rain, and smoke from a train." Three shift scores would be given for the break in

thought between response one and two, two and three, three and four. Two class scores would be given for responses concerning weather and responses concerning fire. If, however, the rater feels that the content area of "smoke" is different than that of "fire", three class scores would be given. For simplification in scoring procedure the first example may be written AAAB which symbolically represents the response content and sequence. The second example may be scored either ABAB or ABAC. No further explanation is given.

Empirical Validity of the Questionnaire

The original subtests that were first developed by Guilford, et. al., measured something that seemed to be different than what was being measured by other tests of mental abilities. Due to the nature and content of these subtests and the responses made to them, the thing being measured was described as spontaneous semantic flexibility. The construct being measured, then, is a variety of verbal responses made to particular stimulus demands. Whether there is a behavioral correlate to these verbalizations is not known. It would seem important, though, to know the extent to which semantic flexibility, as measured from verbal responses, correlates with behavioral flexibility, as measured from observable behavior. Using Guilford's subtests as a criterion, an attempt was made to demonstrate content validity in the questionnaire to be used in this study.

A further attempt will be made to demonstrate the degree of concurrent validity that the questionnaire has with a behavioral criterion.

To accomplish this, the content of the questionnaire was first analyzed. As a result of this effort, four themes were isolated as representing the questionnaire in terms of possible behavioral correlates.

1. The extent to which flexibility is demonstrated in essentially negative social interactions.
2. The extent to which flexibility is demonstrated in essentially positive social interactions.
3. The extent to which flexibility is demonstrated in non-social situations.
4. The extent to which flexibility is demonstrated in singular situations.

In accordance with these four themes, four questions were devised.

1. He can shift his thinking to successfully meet the demands of criticism and practical jokes from others.
2. He can shift his thinking to successfully participate in changes made by a group of which he is a part (i.e. if the group wants to quit doing something and do something else he will go along with it).
3. When working by himself he can shift his thinking to meet the demands of new situations (i.e. he is drawing a picture and is asked to begin work on arithmetic).
4. When attempting to solve a particular problem his thinking is flexible enough to shift from one approach to another.

In response to these four questions, four raters who were acquainted with the subjects were asked to rate the

institutional group on a five point continuum. Appendix C illustrates the format used and the ratings that were recorded. Correlations were then made between the rater's scores for each question and between the total scores derived from behavioral observations and total scores derived from verbal responses to the questionnaire.

CHAPTER IV

RESULTS AND DISCUSSION

This study was designed to discover the possibility of an appreciable difference in flexibility between institutional and community retardates. Both groups of subjects were tested. Their responses were scored for "shift" and "class" by two raters working independently of one another. Statistics and supplementary comments pertaining to comparisons between the institutional and community groups will be presented under two headings: measures of reliability and testing the hypothesis. A third heading, empirical validation of the questionnaire, will be presented in the final portion of the chapter.

Measures of Reliability

The Product-Moment Correlation Coefficient was selected as the appropriate statistic to be used to determine inter-rater agreement between sets of dependent variables. The usage of this statistic assures linearity, homoscedasticity, normality, and interval or ratio data. A discussion of the assumptions for the Product-Moment Correlation Coefficient is presented by Edwards.⁵⁸ Inter-rater

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A. Edwards, Statistical Methods for the Behavioral Sciences, New York: Rinehart and Co., Inc., 1960, pp. 145-155.

reliability for the total test was estimated from the split-half reliability coefficient by means of the Spearman-Brown Prophecy Formula. The assumptions for the utilization of this test are completely contingent upon a legitimate and accurate correlation coefficient. A measure of inter-rater reliability for the total test was necessary since a test for significance (to be presented under Testing the Hypothesis) was employed in this study and was calculated from sets of total scores. As evidenced from Table III inter-rater

TABLE III
RELIABILITY MEASURES FOR SETS OF SHIFT AND CLASS SCORES

Statistic	Shift Scores	Class Scores
Pearson r	.96	.96
Spearman-Brown	.98	.98

agreement between sets of "shift" scores and sets of "class" scores is extremely high. As well, total test reliability between sets of "shift" scores and sets of "class" scores is also extremely high. These statistics can be explained in terms of a simplified and relatively concrete scoring procedure and a lack of extensive variation in response patterns.

Subjective evaluation of responses involved only two considerations: a change in thought sequence which constitutes a "shift" and the determination of "class"

relationship. With regard to these two considerations, it should be noted that many responses were of the following type: For example, in response to the question, "What could it mean if you see dark clouds in the sky?", a subject replied, "either it rains or tornado . . . storm weather . . . is getting bad . . . snow or getting cold." Obviously, all of these responses are an extension of a similar thought pattern and, therefore, a "shift" does not occur and only one class is scored. Where "shifts" did occur, there was generally an obvious break, and both "shift" and "class" relationships seemed easy to establish. For example, in response to previously mentioned question, the following response was recorded, "rain . . . turning night . . . bad storm." Here again, the first and third responses are obviously of the same class. The second response, however, does not pertain to a weather condition and seemingly has nothing to do with either the first or third response. The second response, then, constitutes another class. Symbolically represented, the three responses are described as A - B - A, and subsequently scored for two "shifts" and two "classes."

The total variation on all response patterns as evidenced from scores by both raters reveal only minor numerical differentiation. The greatest number of shifts in any response sequence was four and the largest number of classes in any response sequence was five. It should

be mentioned, too, that roughly five of every nine response patterns constituted scores for "shift" and "class" of zero and one, respectively. While this leveling of responses and decreased variability contributed to higher reliability figures, it also negatively affected the degree to which the test instrument could be utilized as a sensitive discriminator of slight variations in flexibility between subjects.

Since the reliability measures between raters, as revealed in Table III were high, a correlation between two sets of dependent variables, namely "shift" and "class," was obtained to determine the extent to which "shift" and "class" scores were measuring essentially the same attribute. Table IV indicates that the correlation between "shift" and "class" scores was extremely high.

TABLE IV
CORRELATION BETWEEN SHIFT AND CLASS SCORES

Statistic	Shift and Class
Pearson r	.99

Essentially, then, "shift" and "class" scores are measuring the same entity. For the purposes of this study, significance levels will be obtained through an analysis of the two groups from similar sets of scores. To this end, inter-rater reliability measures between sets of "shift" scores and

reliability measures between sets of "class" scores are critical statistics in this study.

In conclusion, the testing instrument seems substantially reliable. A refinement of the instrument, however, for more sensitized discrimination is seemingly needed.

Testing the Hypothesis

The "t" test for means of independent samples was used in this study as the appropriate statistic for determining the extent to which flexibility in a sample of community retardates is significantly different from flexibility in a sample of institutional retardates. To use this statistic, we are in effect presuming normality for the sample population and common, or equal variances between the two groups being compared. A more complete explanation of assumptions can be found in McNemar's Psychological Statistics.⁵⁹

For the group of retardates in a community setting, responses were scored for "shift" and "class." The same testing and scoring procedure was used for the group of institutional retardates. Means for "shift" and "class" were calculated for each group. A "t" test of difference was computed for the determination of significance between

⁵⁹ Q. McNemar, Psychological Statistics, New York: John Wiley & Son, Inc., 1955, pp. 104-114.

means for "shift" in both groups and means for "class" in both groups. The results of these tests are illustrated in Table V.

TABLE V
RESULTS OF "t" TEST

Between Groups 1 and 2 for:	"t" test
shifts	2.96
classes	2.91

The "t" test for shifts ($t = 2.96$ with 26 degrees of freedom) was found to be significant at the .01 level of confidence. The "t" test for classes ($t = 2.91$ with 26 degrees of freedom) was also found to be significant at the .01 level of confidence.

In conclusion, these results would support the hypothesis that a sample of adolescent male retardates in a community setting are more flexible than a matched group of retardates in an institutional setting.

Empirical Validation of the Questionnaire

In an attempt to empirically validate the questionnaire, four questions were devised to represent in behavioral terms those questions that were developed on the questionnaire.

Four raters working independently of one another were asked to rate each subject of the institutional group on each question. The raters, referred to as A, B, C, and D, are all employees of the Parsons State Hospital and Training Center. Rater A is an instructor in Vocational Training. Rater B is a recreation therapist. Raters C and D are aides. A five point continuum was constructed and implemented in the rating. The five point scale read as follows: very flexible; somewhat flexible; average; somewhat inflexible; very inflexible. Raw data from the ratings may be seen in Appendix C. For each question correlations were calculated for all possible combinations of raters. The Pearson Product Moment Correlation Coefficient was designated as the appropriate statistic. Estimates of reliability between the raters for each question was then determined. The Spearman-Brown Prophecy Formula was used in the estimation of reliability. The Pearson r was then used to determine the degree of correlation between scores for each question and the scores obtained from the questionnaire. Finally, a correlation was made between total scores for each subject on all four questions and scores obtained from the questionnaire. In Table VI a summary of the findings are presented. The figures in Table VI seemingly indicate that the general reliability of the raters on all four questions is sufficient. A reliability figure of .37 on Question II is hardly adequate; however, when this figure is

TABLE VI
RESULTS OF EMPIRICAL VALIDATION

Question I		Question II		Question III		Question IV	
raters	corr.	raters	corr.	raters	corr.	raters	corr.
A & B	.13	A & B	0	A & B	.49	A & B	.49
A & C	.14	A & C	.33	A & C	.33	A & C	.37
A & D	.17	A & D	.45	A & D	.33	A & D	.14
B & C	.23	B & C	.36	B & C	.16	B & C	.40
B & D	.38	B & D	.15	B & D	.24	B & D	.30
C & D	.21	C & D	-.54	C & D	.25	C & D	.30
<hr/>							
S-B* =	.52	S-B =	.37	S-B =	.63	S-B =	.70
1/Q** =	.54	2/Q =	.30	3/Q =	.61	4/Q =	.56

*S-B refers to an estimate of reliability.

**1/Q refers to the correlation between the total scores on question I (¹) and the total scores on the questionnaire (Q).

taken into consideration with the reliability figures from the other three questions, the overall impression of reliability seems adequate. Correlations between each of the questions and the questionnaire also appears to be respectable. The poorer figures on Question II might reflect some possible inadequacy in the content of the question or in the phrasing. The similarity, however, between this question and the other three would possibly indicate other-

wise. A more feasible explanation might be found in the negative correlation ($-.54$) between raters C & D. The reasons for this correlation are unknown. It was observed, though, that many ratings on this question were ties and only a few were conflicting. The small number of ratings or rater error could be possible explanations.

Finally, a correlation of $.63$ was obtained between total scores for each subject on all four questions and total scores on the questionnaire. This figure would seemingly denote substantial empirical validation of the questionnaire.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was undertaken for the purpose of investigating the possibility of an appreciable difference in flexibility between institutional and community male adolescent retardates. The property of flexibility was chosen for investigation since the development of this attribute seems to be critical to occupational success in terms of satisfactory inter-personal relationships. While pre-vocational training programs for retarded children are instigated for both sexes and available to both pre- and post-pubescent groups, there appears to be, nevertheless, greater emphasis in this area on male adolescents. This would almost be expected. For this reason male adolescents were chosen as subjects for the study. A representative sample to represent the community group was taken from the two Shawnee County special education classrooms. All the male adolescents in these two classes were approached. Those subjects who were used in the study volunteered. A matched institutional group was also chosen from the total population at the Parsons State Hospital and Training Center. The subjects were matched specifically for chronological age and verbal IQ as measured from the Wechsler Intelligence Scale

for Children. The sample population used in the study was drawn from a group who were conveniently at the disposal of the examiner. A test was devised to measure flexibility. A discussion of content validity for the newly developed instrument was presented. In addition, an attempt was made to establish concurrent validity with the instrument and some empirical criterion. The correlation between both total tests was .63. The new test was given to both groups of subjects. The results were scored for "class" and "shift" by two raters working independently of one another. Measures of inter-rater agreement and reliability for the total test were computed for both "shift" and "class" scores. Both reliability measures were .98. Tests of significance between both groups on measures of "shift" and "class" were then computed. It was found that at the .01 level of confidence the community group displayed a significantly higher degree of flexibility than the institutional group on both measures of "shift" and "class."

Conclusions

It was presumably demonstrated in this study that a sample population of community retardates have significantly greater flexibility than a matched sample of institutional retardates. The extent to which this conclusion can be legitimately discussed is dependent upon a number of factors. Limitations of the study are as follows:

1. The total N of 28 that was used in this study is somewhat small. Samples of 14 each were used to represent the community and institutional groups.
2. No consideration in terms of controls was given to background, cause of retardation, reasons for institutionalization, length of exposure to institutional and community settings, and extent of emotional maladjustment.
3. The sample was drawn from two areas which are obviously not representative of environments for the total population.
4. The content of the stimulus demand in the test battery was arbitrarily selected.
5. Validity of the questionnaire was not adequately demonstrated.

These five factors seemingly constitute major limitations. For these reasons, no specific inferences will be drawn from the results of the study. However, a more tenuous but also a more constructive interpretation of the findings seems warranted.

Whether or not the questionnaire used in this study measures something called "semantic spontaneous flexibility" is admittedly questionable. In view of the content and concurrent validity measures, a safe assumption would be, it seems, that some form of flexibility was being measured, be it semantic, behavioral or otherwise. It should be noted,

too, that a matched sample of community and institutional groups were found to be significantly different in an attribute measured from their performances on a test. A possible explanation for this difference might be found in a comparison of the group's adaptive behaviors. In the institutional group, without exception, every subject had a social history of negative community involvement. Due to the obscure nature of social histories it was impossible to obtain specific explanations of the infractions. Letters from welfare agencies, juvenile courts and a variety of professional organizations would simply mention that the individuals were "frequently in trouble," "a burden to the community," etc. In an interview with personnel in the Records Department of the Parsons State Hospital and Training Center, possible causal explanations for the community pressure were suggested. These included: "immoral behavior," stealing, fighting, property destruction, and an inability of parents to handle their family problems. There were no subjects in the community group that had histories of delinquent behavior.

It would almost seem obvious, then, that those retardates who are institutionalized lack the coping behaviors that enable the community group to remain in the community. And as a result of this study it is reasonable to assume that the rigidity-flexibility dimension is a critical factor in the more generic concept of "coping."

It would seem that the possible causal relationship between rigidity of thinking and subsequent institutional placement constitutes a potentially crucial factor in a comprehensive understanding of the problems surrounding the mentally retarded.

Recommendations

This study was proposed initially to point out an area which is seemingly important enough for major research. It is hoped that this pilot study will serve to induce further investigation in this area.

With respect to the current study, further investigation of the testing instrument is needed. There is a good possibility that the projective material found in the responses of the subjects to the stimulus demand is valuable for discriminating critical adjustment patterns, social orientation and conscious points of view. For example, in response to the last question, "What could it mean if an adult is angry with you?", one subject replied, "You did something wrong . . . you might have made them mad . . . you might be late for school . . . late to your job . . . an adult might not understand you . . . they might be cranky people . . . they could be nervous and can't take what other people can take . . . younger people are more understanding than older people." This subject, although retarded, seems to display constructive insight into human behavior. This

first response by this subject, incidently, is quite typical of most responses to this question. In contrast, however, is another response to the same question by another subject who said, "They're drinking or something, they're taking it out on you . . . they got in a fight and want to get even and they take it out on you." These responses might denote complete detachment on the part of the subject of any responsibility for this type of involvement. If this is true, this individual might encounter great difficulty in his relations with others, particularly with a supervisor since he is not amenable to criticism, constructive or otherwise. It is interesting to note, as well, how some questions can elicit a response that seemingly has a direct bearing on an individual's conception of appropriate. For example, in response to the question, "What could it mean if your alarm clock rings," a subject replied, "You're supposed to get up, eat and clean up and go to work and be there five minutes early, ready to go." While the previous response denotes the possibility of successful pre-vocational training, other responses given by subjects reflect the possibility of prospective pathology in social functioning. For example, in response to the question, "What could it mean if you want to buy something but you have no money," a subject replied, "Steal it . . . swipe it." The value of this information is for the most part, unknown. Future studies concerning content analysis could possibly probe this area in an attempt to

determine a contribution, if any, that this instrument can make in a differential diagnosis of the subject.

In the conclusions, mention was made of a possible inverse relationship between verbal flexibility and the rigidity of thinking which directly influences behavioral patterns. An empirical confirmation of this hypothesis and the subsequent development of a diagnostic instrument would seem extremely worthwhile.

Finally, a more sophisticated empirical validation of the construct "flexibility" is needed.

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APPENDICES

APPENDIX A
RESPONSES TO QUESTIONNAIRE

A₁

1. Either it rains or tornado . . . Storm weather is getting bad . . . A snow or getting cold.
2. Maybe they're making fun of the way I dress or they are jealous of the way I dress or they're cracked.
3. To get home fast, because they are in a track meet, or they could be running from the law, or they could be running for exercise.
4. Maybe they think you need a bath or that you stink or they might make a mistake . . . they didn't mean to . . . a girl might be mad at you.
5. The dog is afraid of you or it is trained to watch a car or house. . . . The dog could be mad or the dog is sick or the dog is hurt.
6. Fire . . . Factory that burns stuff . . . A dump that burns trash . . . It could be smoke from racing.
7. They could be drowning . . . Woman getting her purse stolen . . . An accident occurred and someone is trying to get help . . . A woman is getting molested.
8. Could be a door bell . . . A school bell . . . A fire bell . . . A burglar alarm.
9. They are friendly . . . They want to get associated with you or you might be getting a job . . . Someone being smart.
10. Can't buy it . . . You aren't eligible to buy it because you have no money . . . You could steal it . . . You might get credit.
11. Falling from a high building . . . A person tripped somebody . . . Fall off an apparatus like in gym . . . or a person might be sick and they fall.
12. It will hurt . . . It would be sore and burn . . . Might be irritating if you put your back against something . . . It could make you sick too . . . Teach you not to get a bad sunburn again.
13. Supposed to get up . . . Get dressed . . . Eat breakfast . . . It could mean morning . . . Keeps you from getting late.
14. Police . . . Ambulance . . . A light in a house . . . A falling star . . . Light on the streets . . . Flashlight . . . Trouble light.
15. It's cold or it might be hot if the guy has air conditioning . . . He might not want to hear horns and stuff . . . He might want to keep the wind out . . . Might be raining . . . He might be going down a dusty road or something.
16. You did something wrong . . . You might have made them mad . . . You might be late for school . . . Late to your job . . . An adult might not understand you . . . They might be cranky people . . . They could be nervous and can't take what other people can take . . . Younger people are more understanding than older people.

B₁

1. It's going to rain . . . Factory smoke . . . It's going to be dark.
2. You might have done something funny . . . They could be laughing at you for meanness . . . Something you are doing.
3. They're in a hurry . . . They are running from something . . . They might be out for track . . . They might be taking exercises.
4. Trying to wake you up . . . Playing in the backyard.
5. A dog might bite you . . . He could be trained to growl . . . The dog is hurt . . . Owner of the dog might have sicked him on you.
6. Might be a fire . . . Some from a factory . . . Something might be real hot.
7. They might be in danger . . . They might need some help from somebody else.
8. School's out . . . Fire truck is passing . . . They're in a church.
9. They're your friend . . . You made a deal with them . . . Someone is congratulating you.
10. You're broke . . . You can window shop.
11. They lost their balance . . . Someone bumped them . . . Someone pushed them.
12. Pain . . . It will blister.
13. Time to get up . . . Time to go to work.
14. Someone is in the room . . . Someone left the light on.
15. It is chilly outside . . . Nobody is in it . . . It is going to rain.
16. You've done something wrong.

C₁

1. Raining . . . Cloudy weather . . . Snow . . . Fog . . . Bad weather.
2. Making fun at you . . . You've done something funny . . . They're friendly type people.
3. Would be doing exercise . . . Running for the heck of it . . . Running from someone.
4. Looking for trouble . . . They're mean . . . They don't like you very well . . . They could be playing with you.
5. He is mean . . . He doesn't like you . . . He might be protecting something . . . He could have rabies.
6. Fire . . . Someone could be smoking . . . Burning trash.
7. They're in trouble . . . They could be drowning . . . Could be hurt . . . Want someone to help them do a job.
8. School bell rings . . . Church bell . . . Kid might have a bell on his bicycle . . . Ice cream wagon.
9. Meeting you . . . You've been introduced to him . . . He is a friendly person.

10. You have to go to work to get the money . . . You might have to borrow it . . . Ask for the money from someone . . . You're broke.
11. Falling out a tree.
12. You have been out in the sun too long . . . You'll have to have medicine for the sunburn . . . You'll be real sore . . . You're skin will be peeling soon.
13. Time to get up.
14. Someone is around . . . A light in a store.
15. Someone cold in the car . . . They don't like the wind blowing on them.
16. They're disgusted with you for what you have done . . . Correct you from right from wrong . . . They're tired and cranky..

D₁

1. Thunderstorm . . . Clouds going by.
2. Something on that was funny . . . or said a funny joke.
3. Someone is after them . . . Playing chase . . . Running for exercise.
4. Playing a game.
5. Wants to bite you . . . You're a stranger and he's afraid of you . . . One dog starts growling and the others growl too.
6. Someone burning trash . . . House on fire . . . Barbecue . . . Burning pasture.
7. They're in danger . . . They could be drowning . . . Dog could be chasing someone.
8. Time to go to class . . . Door bell.
9. Glad to meet you.
10. You don't get it . . . Go ask for some money.
11. Get hurt.
12. Sore for awhile.
13. Time to get up.
14. Fire in the house . . . Sun shining in.
15. Cold . . . Air conditioning . . . On a dusty road.
16. Did something wrong . . . Told you to do something and you didn't do it.

E₁

1. Rain . . . snow . . . hail.
2. They think you are funny . . . You might look funny.
3. Scared . . . Playing . . . Exercise.
4. Playing . . . Teasing you . . . Having fun . . . Having a water fight.
5. He don't like you . . . He's protecting a place.

6. House on fire . . . Car on fire . . . Field or barn on fire . . . Burning some wood . . . Food burning.
7. They're hurt . . . Drowning in water.
8. Change classes . . . Church bell . . . Bell in a band.
9. Gld to meet you.
10. You're broke . . . Haven't been working.
11. They slipped . . . They are clumsy . . . They trip over something.
12. Been out in the sun too long . . . Sun stroke . . . Pain.
13. Time to get up . . . It's the time you set it for.
14. Some people have lights on their house . . . A car . . . A street light . . . Yard light . . . Trouble light.
15. Cold out . . . Windy . . . Snowing or raining out.
16. You did something wrong . . . you didn't do something right.

F₁

1. Snow . . . Rain . . . Storm . . . Tornado . . . Hail . . . High wind.
2. You done something funny . . . You told a joke.
3. Running for track . . . Football . . . Baseball . . . Running for help . . . Someone after them.
4. You're unconscious . . . Sleeping.
5. He's mad at you . . . He has rabies . . . you made him mad at you . . . He's mad at another dog . . . He might be getting after coyotes . . . After cats.
6. Someone's smoking a cigarette . . . Someone burning trash . . . Someone burning wood for heat . . . Burning fire for a hayrack ride.
7. Drowning . . . They need help for their car . . . Someone is hurt.
8. Church bell for church . . . School is taking up . . . Five minute break . . . Class is over.
9. They are a good friend of yours . . . Like when your pastor shakes your hand when you go to church . . . Haven't seen your aunt and uncle in a long time.
10. Charge it . . . Borrow some money from somebody . . . Work to get the money.
11. They tripped over something . . . They fell from a heart attack . . . Slipped on ice.
12. You're out in the sun too long . . . Around a pond where the sun reflects off the pond and burns you.
13. Time to get up . . . Time to take medicine . . . Time to go to work.
14. Reading light . . . Flash light . . . Light from a fire . . . Yard light.
15. Cold outside . . . snowing . . . Raining.
16. You done something wrong . . . You didn't do what they said.

G₁

1. Rain . . . Snow . . . Blizzard . . . Tornado. Cyclone.
2. They're making fun at you . . . Something funny happened.
3. Track . . . Running away from the law . . . Trying to get out of the rain . . . Running to school.
4. They played a trick on you.
5. He could bite you . . . Someone has been teasing him . . . He is sick . . . He has been run over by a car.
6. House is on fire . . . smoke coming from a fireplace . . . Smoking a cigarette.
7. They could be trapped in a car . . . They have their leg broken . . . They need help to get away from a robber.
8. Christmas bells . . . Bell in a church . . . Fire bell.
9. You won a game . . . Person hasn't seen you for a long time . . . Saying goodbye.
10. You would have to work for it . . . Borrow it . . . Wait till you get the money to buy it.
11. Someone is having a heart attack . . . Slip on ice and fall . . . Fall off a ladder . . . Fall out of bed.
12. You would have to go to the doctor . . . You would get infection in it.
13. Time to get up . . . Going on a trip and had to get up at a certain time . . . You get up to get your wife off to work . . . Go to school inttime.
14. Light on in a house . . . Car light . . . Flashing red light . . . Signal on railroad.
15. Cold . . . Air conditioning on.
16. He could fight you . . . You made him angry . . . Someone hit him and made him lose his temper.

H₁

1. Going to rain . . . We're going to have a storm.
2. They're making fun at you . . . They're joking around with you . . . You're doing silly things.
3. They like to run . . . They want to get in shape.
4. They want you to get wet.
5. He wants to keep you away from his house . . . He doesn't want you to mess around with him.
6. House is on fire . . . Pasture on fire . . . Someone is burning trash.
7. They want you to help them.
8. Church bells ring in the morning . . . School bell.
9. They're proud of you . . . They want to be friends with you.
10. Wait until you get some money . . . Go out and get a job and earn some money, then you can buy it.
11. They need help.

12. It's going to hurt . . . Your skin is going to be a lot darker.
13. It is time to get up.
14. No response.
15. They have air conditioning . . . So people won't take stuff out of the car.
16. You did something wrong.

I₁

1. It's going to rain.
2. You're funny . . . They just like to laugh at you.
3. Out for track . . . Running away from something . . . Scared of something.
4. He's playing around with you . . . You like water.
5. He is going to bite you . . . He just doesn't like you . . . He don't want you to come near him.
6. Something is on fire.
7. Something fell on him . . . Snake bit him . . . He had an accident . . . He is sick.
8. Class is over . . . Church bell.
9. He is glad to know you.
10. He should work to get money to buy it . . . Borrow some money.
11. You should help him . . . Catch him.
12. It will hurt . . . Put medicine on it.
13. You should get up and shut it off.
14. It could be bright.
15. Cold outside . . . Air conditioning inside . . . It might be raining.
16. You did something wrong . . . You went without their permission.

J₁

1. Could rain . . . Could hail . . . Possible snow . . . Could be a tornado.
2. You're funny . . . You've done something that isn't right.
3. Could be in danger . . . Could be running away from something . . . Running for help.
4. He did it for fun . . . For a joke.
5. He doesn't like you . . . He may be a mean dog . . . You've done something to him to make him do it.
6. House is on fire . . . Someone burning trash . . . They may be burning a field off.
7. They could be drowning . . . In danger of a fire . . . They may be playing a joke on you.

8. Bell that tells people what time it is . . . Could mean that Christmas is near.
9. Welcome you to their house . . . A way of saying thanks . . . Welcoming at a social event.
10. Couldn't buy it . . . Might ask for a loan.
11. They could be hurt . . . They could have broken some bones . . . Could have cut and bruised themselves real bad.
12. You would have pain . . . Could get skin cancer . . . You could treat it to help it.
13. Time to get up . . . Time to go to work . . . Time to get up and get dressed . . . Time to eat breakfast.
14. Someone in a room . . . Somebody reading a book . . . Someone left the light on.
15. It could have air conditioning . . . It could be cold outside . . . Someone trying to get in and someone on the inside needs help.
16. You've done something wrong . . . You're a pest . . . They might have a problem they can't solve and will take it out on somebody else.

K₁

1. Rain . . . Thunder . . . Storm . . . Tornado.
2. I'm funny to look at . . . It's not polite . . . Not good manners.
3. Running for help . . . Track . . . Football.
4. Not very funny . . . Shows little manners.
5. He's protecting something.
6. Fire . . . Someone in need of help . . . Called the fire department.
7. Try to find where he is . . . Help him.
8. Church bell . . . Bells for rest breaks . . . Bells at end of classes . . . Cow bells . . . Bells on a Christmas tree.
9. Congratulations . . . Thanks . . . Friends.
10. You have to work to get some money . . . Could borrow money and repay him.
11. He needs help . . . Call an ambulance . . . Keep people away.
12. You'll have to take care of it . . . Don't be out in the sun much.
13. Time to get up . . . Time to do chores.
14. Investigate.
15. Nothing.
16. You're in trouble . . . You did something wrong . . . Time to be quiet and let him do all the talking.

L₁

1. Tornado . . . Rain . . . Snow . . . Fog.
2. Someone might have told a funny joke or made funny sounds.
3. Something happened to him . . . Going to get help . . .
Being in a hurry.
4. Your body might be on fire . . . Just teasing you.
5. He might be warning you.
6. Fire . . . Someone camping somewhere.
7. He could be in trouble . . . Calling for help . . . To
help someone else.
8. Could be a warning bell in a shipyard . . . Warning to
ships that there are rocks.
9. Friendly . . . He wants to meet you.
10. No response.
11. Lost their balance . . . Someone might have hit them.
12. It would hurt.
13. Time to get up . . . Someone playing a joke on you.
14. Car might be coming . . . Could be a warning light . . .
Could be a search light.
15. Cold . . . Air conditioning . . . Keep the heat in.
16. Mad because you've done something wrong . . . You lost
something of theirs.

M₁

1. Rain . . . Cold . . . Windy . . . Snow . . . What the
weather is going to be during the night.
2. Making fun of you . . . Laughing with you . . . Laughing
at somebody else.
3. Playing a game . . . Running away from somebody . . .
Taking someone's stuff that doesn't belong to him . . .
and Running . . . Running a race like track.
4. Getting even for throwing water on them . . . Joking with
you . . . Doing it for a purpose like someone dared them
to throw water on you.
5. Bad dog . . . It bites . . . You teased the dog . . .
You kicked the dog.
6. Somebody is smoking . . . House on fire . . . Burning
trash . . . Burning leaves . . . Car on fire . . . Some-
one is on fire like getting gasoline poured on you.
7. Somebody fell into water and needs help . . . Someone
has taken pocketbooks from women . . . Someone in danger.
8. Time to get up . . . Fire bell to get out of school . . .
Bell to eat dinner . . . Bell to change classes . . .
Bell to go home.

9. You did a good deed . . . You haven't seen them for a long time . . . Meet new people . . . Meet parents.
10. Find a job so you can have money to buy it . . . Shouldn't steal it.
11. Someone got hurt . . . Hunting accident . . . Fell down stairs . . . Got pushed down.
12. It burns . . . Can't sleep . . . Can hardly bend your back . . . Can't lay on your back . . . If someone hits it hurts . . . Shirt hurts.
13. Time to get up . . . Time to go to school . . . Time to go to work . . . Time to do chores . . . Time to get the children up.
14. Car light in your yard . . . Someone prowling around the house with a flashlight . . . Bright moonlight.
15. Cold out . . . Someone is sleeping . . . They don't want anyone to break in.
16. They love you . . . They want you to do better . . . Don't want you to do wrong.

N₁

1. Rain . . . Turning night . . . Bad storm.
2. You're funny . . . You did something wrong . . . You're embarrassed.
3. Scared . . . Running a race . . . Catch someone.
4. You're taking a bath.
5. It's mean . . . Don't like you . . . Might have rabies.
6. There's a fire.
7. Danger . . . Someone might be hurt . . . There is a fire . . . Someone might be robbing her.
8. Music . . . Church . . . Christmas . . . School . . . Fire.
9. Friendship . . . Happiness (They are happy to meet you).
10. Poorness.
11. Danger . . . They are clumsy.
12. Aches.
13. Time to get up , . . It is morning . . . You have to shut it off.
14. It is getting dark because people are turning on their lights . . . Help.
15. Air conditioned . . . They don't want to hear all the noise going down town . . . Cold.
16. They are mad at you because you didn't do something right.

A₂

1. Rain . . . Snow.
2. They're making fun at you . . . You did something funny . . . You did something wrong.
3. Could be running off . . . A fugitive running off from something . . . An athlete . . . Running from the law.
4. A joke . . . They done it on purpose to make you angry.
5. Could be mad at you . . . Probably don't want you to set near him.
6. Fire . . . Somebody smoking . . . Cooking . . . Smoke coming out of a chimney . . . Out of a car . . . Forest Fire . . . Burnt oil . . . Grass . . . Leaves.
7. Could be drowning . . . Murdered . . . Raped.
8. School bell . . . Fire bell . . . Dinner . . . Cow bell . . . Bell on a phone.
9. Thankful for what you have . . . They want to be friends, you done something for them . . . Meet a businessman and say hello.
10. Got to work for it and earn the money . . . Take it.
11. Go up and try to save them . . . Could be falling off a cliff . . . a high building.
12. You lay out in the sun too long.
13. Get up . . . Get ready to go to work.
14. Light in T.V. room . . . dining room . . . Kitchen . . . In the refrigerator . . . In the store . . . Freezer . . . Attic . . . Basement . . . Outside on the porch . . . Street light . . . Office light . . . Car light.
15. Could have his air conditioner on . . . Cold . . . Snow . . . Rain . . . Hail.
16. They're drinking or something and they're taking it out on you . . . They got in a fight, want to get even and take it out on you.

B₂

1. Rain . . . Storm . . . Tornado.
2. Making fun of you . . . Tease you.
3. Playing . . . run to get help.
- 4.
5. Mad . . . Someone is teasing her . . . He was frightened.
6. Fire . . . Campfire . . . Forest fire.
7. They was in trouble . . . If you got caught in a trap you need help.
8. Dinner bell . . . Church bell . . . Cowbell.
9. They want to be friends . . . They would like to be nice to you . . . Friendly.
10. Have to do without . . . Could get a job and get some money then get what you want.

11. Could of got dizzy . . . Tripped and fell . . . Slipped and fell.
12. Painful . . . Hurt it . . . Someone touched you.
13. Time to get up . . . You could go back to sleep instead of getting up.
14. Warning light . . . Danger light.
15. Asleep in the car . . . Gone hunting . . . Gone fishing.
16. Mad at you for something you did . . . They wouldn't let you go noplac.

C₂

1. Rain . . . tornado.
2. They think you're funny . . . you're stupid.
3. Running a race . . . running off . . . Running to get to a meal . . . Run to the canteen . . . Run to the show.
4. They're playing . . . You said something.
5. He don't like you . . . You're on private property and he's supposed to keep you off . . . Some dogs growl at you for the fun of it . . . You took his food and he growls.
6. Fire . . . Someone smoking a pipe . . . Lightning struck the house.
7. They're drowning . . . They're getting beat up . . . Got in a car wreck and someone is looking for help.
8. Fire truck . . . School bell . . . Cow bell . . . On a farm and they get you by clinging a bell.
9. They're congratulating you for college . . . Introduced to a new friend . . . Your sister brings her boyfriend home and you shake his hand.
10. You want to steal it . . . Could borrow some money to buy it.
11. They get hurt.
12. You peel and get blisters . . . You get brown.
13. Time to get up . . . Time to go to work.
14. Somebody lives in the house.
15. Nobody wants you in their car . . . Keep water out if it is raining . . . or the snow.
16. Maybe you did something wrong and he wants to get even.

D₂

1. Thunderstorm . . . Tornado.
2. You're funny.
3. Going someplace.
4. Playing.
5. He has rabies or he's mad.
6. Something is burning.

7. He is in trouble.
8. Church.
9. Friends.
10. Borrow some.
11. Faint.
- 12.
13. Time to get up.
14. Car coming.
15. Windy
16. Mad.

E₂

1. Rain . . . Thunderstorm . . . Tornado.
2. Someone told a joke about you . . . They didn't like you.
3. Running in a track meet . . . Running downtown . . . To school . . . For exercise.
4. Wake you up . . . Make you feel better . . . Playing with you.
5. Dog don't like you . . . He might be mean.
6. Somebody burning trash . . . Burning lawn off . . . House on fire . . . Fireplace.
7. Somebody could be drowning . . . Caught in fire . . . Car wreck.
8. School bell . . . Fire bell . . . Bell on a cow.
9. They're your friend . . . They like to know you.
10. Go out and earn the money to buy it when you have the money.
11. Trip over a sidewalk.
12. It will burn and hurt . . . Skin will peel off . . . Have to put on medicine.
13. Time to get up.
14. Light in a house . . . Light outside . . . Street light . . . Car light.
15. Keep other people out . . . Keep it from raining in.
16. He don't like you . . . You did something wrong and he chewed you out.

F₂

1. Rain . . . Or bad weather.
2. They're making a fool of themselves . . . Something is funny.
3. They did something . . . Someone chasing them.
4. Playing . . . Mad at you.
5. It's mad as will like you.
6. Fire.

7. Somebody is hurt . . . They need some help lifting something.
8. Fire . . . Break time.
9. Someone just introduced them to you . . . You haven't seen them in a long time.
10. Can't buy it.
11. They're liable to hurt themselves.
12. Liable to get sunstroke.
13. Get up.
14. It will give you light where it is dark.
15. Cold . . . Air-conditioner.
16. You did something you aren't supposed to.

G₂

1. Rain . . . Tornado.
2. Making fun of you . . . They're just not showing friendliness towards you.
3. Running just for the exercise . . . Running out of jail . . . Running away from the institution . . . Just run away from home.
4. They want to fight . . . They just don't like you.
5. Growling because you are a stranger . . . He's going to bite you.
6. House is on fire . . . Someone is smoking.
7. They're being attacked by somebody . . . They're being attacked by a dog.
8. Time to go to church . . . Time to go to school . . . Ice cream man is coming down the street.
9. They're trying to make friends with you . . . They like you for a friend.
10. Means you wish you could have it but you don't have the cash to buy it with . . . Try to get the money to get it . . . Try to put it on layaway.
11. They hurt themselves . . . Could break a bone.
12. You stayed out in the sun too long.
13. Time to get up and go to work.
14. Getting dark.
15. There is an air-conditioner in it . . . Winter time and it is cold outside.
16. He isn't pleased with you . . . Parents are mad at you cause you got in late that evening . . . You got in trouble and your parents are sore at you.

H
2

1. Lightning . . . Tornado.
2. They're making fun of you . . . They tease you.
3. Track . . . Broad jumps . . . Fire alarm . . . Run to a button.
4. Catch a cold.
5. He is going to like me . . . Or jump on me.
6. House on fire . . . Trees . . . Grass.
7. They're drowning . . . They broke their leg . . . Broken arm . . . Broken rib . . . Sprained foot . . . Snake bit them.
8. Telephone . . . Alarm on a clock . . . Fire alarm.
9. They like you . . . Want to make friends . . . They give me stuff.
10. Earn for it . . . Work.
11. Try to run and help them.
12. Go inside and lay down . . . put something on it . . . lay down . . . Don't go out in the sun anymore.
13. Time to get up . . . Go to work . . . Take the kids to school.
14. Thunder . . . Come in a room and turn lights on . . . Open car door.
15. The rain won't get in it.
16. Like he don't like you anymore . . . Wants you to get out of his sight . . . Tells you to leave and never comes back . . . He don't want to speak to you anymore.

I
2

1. Rain.
2. You tell a joke and he thought it was funny.
3. Maybe he was running after a ball . . . In a hurry to get to the store before it closes . . . Running in a track field.
4. He was doing it for the fun of it . . . he was having fun with you.
5. He was a mean dog . . . Gross dog . . . He was unfriendly.
6. Somebody burning trash . . . House on fire . . . Somebody's car on fire.
7. They're in danger . . . They're hurt . . . Need a doctor . . . Couldn't get around.
8. Church bell . . . School bell . . . Fire bell.
9. Friendliness . . . Congratulate you . . . Introduce somebody.
10. Steal it . . . Swipe it.
11. They might need some help . . . They might not be able to get around.

12. Been out in the sun too long . . . You'd been working too hard.
13. Time to get up . . . You forgot to shut it off.
14. Car light . . . Light on your bed room . . . stairway light.
15. Uncomfortable . . . Maybe he forgot to roll them down.
16. He was trying to help you . . . He would tell you how you did it if you did something wrong.

J
2

1. Rain and bad weather.
2. Teasing you . . . just for fun.
3. Running away from something . . . Getting out of wet weather.
4. You could have fun . . . Or no fun.
5. He could be mad at you . . . He don't want you to take something away from him.
6. Something burning . . . Grass fire . . . House . . . Someone smoking.
7. They're in danger.
8. Fire . . . School . . . Church . . . Warning.
9. You've a friend . . . They greet you . . . Meet you.
10. You have to save your money and go back and buy it.
11. You try to prevent it.
12. Sore . . . burn . . . Peel . . . Turn your skin dark.
13. Supposed to wake up the time you set it . . . Some people put it out and go back to sleep.
14. You can see by it.
- 15.
16. It's for your own good cause you done something wrong.

K
2

1. Rain . . . Thunder . . . Lightning.
2. Acting silly.
3. He could stop running and walk . . . He is in a hurry.
4. Get you soaking wet.
5. Tell the dog to shut up.
6. Fire . . . Grass fire . . . Forest fire . . . Building fire.
7. Go help them . . . If they're drowning jump in and save their life.
8. Church bell . . . Door bell . . . Wedding bell . . . School bell.
9. He's glad to know you.
10. Don't buy it.

11. Go tell 'em don't fall off.
12. Put lotion on it.
13. Time to get up . . . Shut off the alarm.
14. Turn the light off.
15. Must be hot inside . . . Turn on the air-conditioner.
16. Spank you.

L₂

1. Tornado . . . Clouds are getting too dark and there is fog.
2. You're telling a joke and they laugh.
3. They're trying to get away from a car they don't want to get hit.
4. They're trying to wake you up . . . You're in trouble.
5. He doesn't want you stealing his bone.
6. House is on fire . . . They're trying to burn down trees . . . Cigarette got on a stove and the stove got on fire . . . You could get burned.
7. Some burglars are coming in to steal money . . . someone drowning in water . . . Someone broke his leg.
8. Have to go to church . . . Fire engines are trying to find the house on fire.
9. They're trying to be nice to you . . . Start of a wrestling match.
10. You couldn't go . . . Cost too much.
11. Someone is going crazy and they fell off the house . . . House is on fire and someone jumps.
12. You've been out in the sun too long . . . You're trying to get over it and someone grabs your arm and cuts it open.
13. You got to get up.
14. Girl is trying to change clothes.
15. It is raining outside . . . You just want them rolled up.
16. You stole some candy and she didn't like it . . . She's cussing you out for something I didn't do . . . I stole some of her money.

M₂

1. Tornado . . . Cyclone.
2. They think I'm funny.
3. They're in trouble . . . They're running away from school . . . Running down town.
4. They're playing in a pool . . . they just wanted to get you wet.

5. He's angry and he might bite . . . He might be barking to let other people know you're coming.
6. The house is on fire . . . They're burning trash.
7. They're in trouble . . . They might have gotten shot.
8. Door bell . . . Fire bell . . . Honking in a car.
9. They're glad that you're at home . . . They're glad to know you.
10. Wouldn't buy it.
11. You would have to go and call for help . . . You could help yourself.
12. You been out in the sun too long . . . There is some medicine to put on it.
13. It's time for you to get up.
14. These people are up in their house . . . A car light.
15. It might be going to rain . . . People put their window up so it wouldn't rain inside.
16. You could go back and get friendly . . . Say that you are sorry that you made them angry.

N₂

1. Rain . . . Hail . . . Thunder . . . Lightning . . . Tornado warning.
2. They would think you are crazy . . . You wouldn't be acting right.
3. They are scared of somebody . . . Kid was probably picking on the guy that was running.
4. If he wanted to pick a fight . . . He thought he was smart . . . I'd get up and bust them one.
5. I'd probably been teasing him.
6. Oil factory burning . . . Trash . . . Smoking a cigarette.
7. They could be drowning . . . Getting raped . . . Woman in a house on fire yelling for help.
8. Telephone . . . A holiday . . . Church . . . Fire alert.
9. They're glad to meet you . . . Congratulations . . . You won a trophy for racing.
10. You couldn't buy it . . . it costs too much.
11. They could be having a heart attack . . . Someone shot them . . . Someone knocked the wind out of them.
12. A second or third degree burn . . . Someone could scratch it and make a boil out of it.
13. You're supposed to get up, eat and clean up and go to work and be there 5 minutes early ready to go.
14. Them guys could be home.
15. They locked up their car . . . Start to rain . . . A brand new car, on a car lot.
16. You did something wrong and they're trying to explain to you why you did it.

APPENDIX B
RAW DATA FROM QUESTIONNAIRE

RATER I -- COMMUNITY GROUP

Name	1*	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	St Ct												
S**	G***	S	G	S	G	S	G	S	G	S	G	S	G	S	G	S	G												
A ₁	0	1	1	2	3	4	2	3	0	1	3	4	2	3	0	1	4	5	2	3	3	2	4	6					
B ₁	2	3	2	2	3	4	1	2	3	0	1	2	3	1	2	0	1	1	2	2	3	0	1	2	4	0			
C ₁	0	1	2	3	2	3	1	2	2	3	1	2	2	3	0	1	1	2	0	1	1	2	1	8	3	4			
D ₁	0	1	0	1	2	3	0	1	2	3	1	2	0	1	0	1	1	2	2	3	0	1	1	2	2	7			
E ₁	0	1	0	1	2	3	0	1	1	2	0	1	0	1	1	2	0	1	2	3	0	1	1	0	1	2	6		
F ₁	0	1	0	1	2	3	0	1	3	3	3	4	2	3	1	2	1	2	0	1	2	2	1	2	0	1	2	9	
G ₁	0	1	1	2	3	4	0	1	2	3	2	3	1	2	1	2	2	1	2	0	1	1	2	0	1	1	7	3	2
H ₁	0	1	0	1	0	1	1	2	0	1	0	1	0	1	0	1	0	0	1	2	0	1	1	2	0	1	3	1	8
I ₁	0	1	0	1	1	2	0	1	0	1	1	2	0	1	0	1	0	1	2	3	0	1	7	2	3				
J ₁	0	1	1	2	0	1	1	2	0	1	0	1	1	2	0	1	0	1	2	3	1	2	8	2	4				
K ₁	0	1	1	2	0	1	0	1	0	1	0	1	1	2	0	1	0	1	0	0	0	1	3	1	8				
L ₁	0	1	0	1	1	2	0	1	0	1	0	1	0	0	1	2	0	1	2	3	0	1	6	2	0				
M ₁	1	2	1	2	2	3	1	2	4	4	2	2	1	2	1	2	0	1	2	3	0	1	2	1	3	5			
N ₁	2	2	1	2	0	1	1	2	0	1	0	1	1	2	0	1	1	2	1	2	2	3	0	1	1	2	6		

the number of shifts recorded for question

*1 refers to question 1 in questionnaire; **S refers to number of "shifts" recorded for question 1; ***C refers to number of "classes" recorded for question 1.

RATER I -- INSTITUTIONAL GROUP

Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	S _t	G _t
A ₂	01	12	22	12	01	44	01	01	33	12	01	01	01	12	12	01	14	27
B ₂	01	01	12	00	12	01	01	01	01	12	01	01	01	01	12	12	5	20
C ₂	01	12	12	01	33	23	12	12	12	12	01	01	01	01	12	01	12	27
D ₂	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	0	16
E ₂	01	01	12	12	01	23	01	01	01	01	01	01	01	12	12	12	7	23
F ₂	01	12	01	12	01	01	12	12	12	01	01	01	01	01	12	01	6	22
G ₂	01	12	23	01	01	12	01	12	01	12	01	01	01	01	12	01	7	23
H ₂	12	01	12	01	01	01	12	01	12	01	01	01	01	12	01	01	5	21
I ₂	01	01	23	01	01	12	01	01	23	01	01	01	12	12	12	01	8	24
J ₂	01	01	01	01	12	12	01	01	01	01	01	01	01	01	00	01	2	17
K ₂	01	01	01	01	01	01	01	01	01	01	01	01	12	01	01	01	1	17
L ₂	01	01	01	12	01	23	12	12	12	01	12	12	01	01	12	01	9	25
M ₂	01	01	23	01	01	1	2	01	12	12	01	01	12	01	12	01	7	23
N ₂	12	01	01	01	01	12	01	34	12	01	12	01	01	01	23	01	9	25

RATER II -- COMMUNITY GROUP

Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	S _t	C _t
A ₁	0 1	1 2	3 4	2 3	2 3	1 2	3 3	0 1	2 3	2 3	3 4	2 3	1 2	4 5	4 5	3 4	33	48
B ₁	2 3	2 2	3 4	1 2	3 4	2 3	0 1	2 3	2 3	1 2	1 2	1 2	0 1	1 2	2 3	0 1	23	38
C ₁	0 1	1 2	2 3	1 2	2 3	2 3	1 2	1 2	1 2	1 2	0 1	1 2	0 1	1 2	1 2	1 2	16	32
D ₁	0 1	0 1	1 2	0 1	1 2	3 3	1 2	1 2	0 1	1 2	0 1	0 1	0 1	1 2	1 2	0 1	10	25
E ₁	0 1	0 1	2 3	0 1	1 2	1 2	0 1	1 2	0 1	1 2	1 2	1 2	1 2	1 2	0 1	0 1	9	25
F ₁	0 1	0 1	2 3	1 2	3 4	2 3	2 3	1 2	1 2	0 1	2 2	1 2	0 1	0 1	0 1	0 1	15	30
G ₁	0 1	0 1	3 4	0 1	2 3	2 3	1 2	0 1	2 3	0 1	1 2	0 1	1 2	1 2	1 2	1 2	15	31
H ₁	0 1	0 1	0 1	0 1	0 1	1 2	0 1	0 1	0 1	0 1	0 1	1 2	0 1	0 0	1 2	0 1	3	18
I ₁	0 1	0 1	1 2	1 2	0 1	0 1	2 3	0 1	0 1	0 1	0 1	0 1	0 1	0 1	1 2	0 1	5	21
J ₁	0 1	1 2	1 2	0 1	1 2	2 3	2 3	1 2	2 3	1 2	0 1	1 2	0 1	1 2	1 2	1 2	15	30
K ₁	0 1	1 2	1 2	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	1 2	0 1	0 1	0 0	1 2	4	19
L ₁	0 1	0 1	1 2	1 2	0 1	0 1	1 2	0 1	0 1	0 0	1 2	0 1	1 2	1 2	2 3	0 1	8	23
M ₁	1 2	1 2	2 3	2 3	0 1	4 4	1 2	1 2	3 4	1 2	1 2	0 1	0 1	1 2	2 3	0 1	30	35
N ₁	0 1	2 3	2 3	0 1	1 2	0 1	2 3	0 1	0 1	0 1	0 1	0 1	1 2	1 2	2 3	0 1	11	27

RATER II -- INSTITUTIONAL GROUP

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Name	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
A ₂	01	12	22	12	01	54	01	01	33	12	12	01	01	01	01	13
B ₂	01	01	12	00	12	01	01	01	01	12	01	01	12	01	12	01
C ₂	01	01	01	12	23	12	01	01	12	12	01	01	01	01	12	01
D ₂	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
E ₂	01	01	01	12	01	23	01	01	12	01	01	01	01	01	12	01
F ₂	01	12	01	12	01	01	12	12	12	01	01	01	01	01	12	01
G ₂	01	01	23	01	01	12	01	12	01	12	01	01	01	01	12	01
H ₂	01	01	12	01	01	01	23	01	01	01	01	01	01	12	01	01
I ₂	01	01	23	01	01	12	01	01	23	01	01	01	12	01	01	01
J ₂	01	01	12	01	01	12	01	12	12	01	01	01	01	01	00	01
K ₂	01	01	12	01	01	01	01	01	01	01	01	01	12	01	01	01
L ₂	01	01	01	01	01	34	23	12	12	01	12	12	01	01	12	01
M ₂	01	01	12	01	12	12	01	12	01	01	12	12	01	12	01	01
N ₂	12	01	01	01	01	12	01	34	01	01	01	12	01	01	23	01

APPENDIX C
RAW DATA FOR EMPIRICAL VALIDATION
OF QUESTIONNAIRE

QUESTION I

He can shift his thinking to successfully meet the demands of criticism and practical jokes from others.

Name	Very flexible	Somewhat flexible	Average	Somewhat inflexible	Very inflexible
A ₂	b		a c d		
B ₂			b d	a c	
C ₂		a	b d	c	
D ₂			a b c	d	
E ₂			a c	b d	
F ₂			a b	c d	
G ₂		b	a c d		
H ₂			b c d	a	
I ₂		b	a c d		
J ₂		b	c d	a	
K ₂		b	c	a d	
L ₂	a	b c	d		
M ₂			a b c d		
N ₂		b	a c	d	

* a denotes the rating given to a particular subject by rater (a), (b), (c), and (d), refers to the other raters.

QUESTION II

He can shift his thinking to successfully participate in changes made by a group of which he is a part (i.e., if the group wants to quit doing something and do something else he will go along with it.)

Name	Very flexible	Somewhat flexible	Average	Somewhat inflexible	Very inflexible
A ₂		d	a b	c	
B ₂		d	b c	a	
C ₂	d	a	b	c	
D ₂			a c d	b	
E ₂			a d	b c	
F ₂			a b c	d	
G ₂		d	a b c		
H ₂		b c	a d		
I ₂			a b c d		
J ₂			b c d	a	
K ₂		d	b c	a	
L ₂		b c	a d		
M ₂			a b c d		
N ₂		c	a	b d	

QUESTION III

When he is working by himself, he can shift his thinking to meet the demands of new situations. (He is drawing a picture and is asked to begin work on arithmetic. i.e.)

Name	Very flexible	Somewhat flexible	Average	Somewhat inflexible	Very inflexible
A ₂		b c d	a		
B ₂		b	c d	a	
C ₂	b	a	c d		
D ₂		b	c	a d	
E ₂		b c	a	d	
F ₂			a b	d	c
G ₂	d	b c	a		
H ₂			c d	a b	
I ₂	b	c	a d		
J ₂				a b c d	
K ₂		b	a c d		
L ₂	c	a d	b		
M ₂		c	b d	a	
N ₂	d	b	a	c	

QUESTION IV

When attempting to solve a particular problem his thinking is flexible enough to shift from one approach to another.

Name	Very flexible	Somewhat flexible	Average	Somewhat inflexible	Very inflexible
A ₂		c	a b	d	
B ₂			b	a c d	
C ₂	b	a c		d	
D ₂			a c	b d	
E ₂		c	a b d		
F ₂			a	b c	d
G ₂			a c d	b	
H ₂		b	c	a d	
I ₂		b d	a c		
J ₂			b c	a d	
K ₂			b c d	a	
L ₂		a b	c d		
M ₂		d	a b c		
N ₂			a c	b d	

