

DOCUMENT RESUME

ED 051 285

TN 000 601

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**TITLE** The Development of a Questionnaire Method of Measuring Exploration Preferences.  
**SPONS AGENCY** National Inst. of Mental Health (DHEW), Bethesda, Md.; Public Health Service (DHEW), Washington, D.C.  
**PUB DATE** 70  
**NOTE** 9p.; From symposium, "Copying Styles and the High School," at the Annual Meeting of the American Educational Research Association, New York, New York, February 1971

**EDRS PRICE** EDRS Price MF-\$0.65 HC-\$3.29  
**DESCRIPTORS** Environmental Influences, Grade 8, Grade 9, Grade 11, High School Students, \*Individual Differences, \*Interpersonal Competence, Item Analysis, \*Measurement, Peer Relationship, \*Questionnaires, Self Concept, Social Change, \*Socialization, Student Behavior, Suburban Schools, Test Reliability, Test Validity, Urban Schools  
**IDENTIFIERS** \*Exploration Questionnaire

**ABSTRACT**

The development of one instrument from a multi-method battery to assess exploration preferences, a questionnaire of individual preferences, is described. The objectives of the study in which it was employed and the concept of exploration are briefly outlined. Over 1000 questionnaire items relevant to high school students' social desirability were initially developed. Based on an item analysis, 153 items were selected to form the first version of the questionnaire. Extensive validity and reliability studies were conducted and three revisions were made on the basis of further item analyses. The questionnaire was administered to eighth, ninth, and eleventh graders to obtain standardization information. The present and final form consists of two 30-item parallel forms, matched for content and psychometric properties. The items cover a wide range of preferences from social participation to risk taking and change activities, and are grouped into four content categories labeled self, classes, adults, and jobs. Results of different studies confirm the validity and reliability of the instrument. They also indicate that the questionnaire has high discriminating power among individuals in the suburban schools, but less so in urban schools.  
(LR)

## The Development of a Questionnaire Method of Measuring Exploration Preferences<sup>1</sup>

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I am going to report on the development of the exploration questionnaire, a major instrument for the assessment of individual preferences, in the major study. It is one measure of a multimethod battery to assess exploration preferences. First I want to briefly outline the major study and our conception of exploration.

The objectives of the major study are threefold. First, it will specify the conditions which lead to various adaptive behaviors in varied environments. Secondly, it will define the process of adaptation in male high school students attending four very different high schools. Third, a theory of preventive interventions will be developed which specifies the types of interventions relevant for different settings.

The objectives will be carried out by studying the socialization of adolescents in the different high schools. Organizational and social structures of the varied environments will be related to individual preferences for different modes of coping with environmental demands and opportunities. The exploration questionnaire is one method of a multimethod battery of tapping individual coping preferences. This report focuses on the development of this measure of preferences. I will not attend to organizational or social factors, nor will I focus on adaptive roles developed by adolescents.

Exploratory behavior is seen as the joint outcome of a person's preferences for exploration and the degree to which the environment facilitates or restricts these preferences. I conceive of exploration preferences as relatively stable and enduring response dispositions to seek new social experiences, and to be open to, or to implement social change. A person with high exploratory preferences will not engage in exploratory behavior if there are strong environmental constraints on this type of behavior. Exploratory preferences are not traits. They do not indicate certain behavioral patterns which will occur regardless of environmental consequences. Exploratory preferences are not need states which fluctuate in the manner of a physiological drive and they do not necessarily have any specific goal event. Exploration preferences refer to an intrapsychic parameter or response disposition; they do not describe behavior.

### Development of the Questionnaire

The exploration questionnaire was developed to measure individual preferences on a continuum from low to high. Exploration was chosen as the designation since it is relatively free from undesirable trait-like connotations. It was also chosen since the degree to which a person is open to and seeks out new experiences should be related to the range of possible adaptations from which an individual can select. Thus, high and low exploration preferences should be related to the diversity and flexibility of adaptive roles adopted by high school students.

<sup>1</sup>Paper prepared for symposium on Coping Styles and the High School at the Annual Convention of the American Psychological Association, Miami Beach, 1970.

<sup>2</sup>This paper was supported by a Grant (MH-5606-03) from NIMH, PHS and by a Health Training Grant in Clinical Psychology (MH-05115-23).

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A questionnaire format was chosen in this instance for several reasons. First, we wanted an instrument that was easy to administer and which would utilize little subject time. Second, a questionnaire is easily scored, highly structured, and relatively unambiguous in interpretation. Third, questionnaire items of a true-false nature can easily be written which are relevant to high school students' social participation.

Over 1000 items were written in April of 1968. Items were written for persons with high and low preferences and to fill 19 content areas to assure broad coverage and relevance to high school students. Judging for social desirability, matched keying to control for acquiescence, and selection of items based on an item analysis resulted in the First Michigan version of the exploration questionnaire. This version contained 153 items.

In the past two years extensive validity and reliability studies have been carried out. The exploration questionnaire has been revised three times on the basis of item analyses. The questionnaire has been administered to large groups of eighth, ninth and eleventh graders to obtain standardization information. The present and final form of the questionnaire is the Fourth Michigan Version which consists of two 30 item parallel forms. These two forms are matched for content and psychometric properties. Keying is balanced to control for acquiescence response bias. The 60 items which remain in the questionnaire cover a broad range of preferences, from social participation to risk-taking and change activities. The items in the two parallel forms are grouped into four content categories labeled self, classes, adults and jobs.

Examples of items under the self category are:

1. I'm good at cheering people up.
2. I go out of my way to take part in different activities.
3. I enjoy getting kids from different groups to work together.

Examples from the section on classes are:

1. Teachers with different ideas than mine make school confusing.
2. I suggest new ways of doing things in class.

Examples from the adult and job sections respectively are:

1. Adults can be convinced of the value of my ideas.
2. My boss usually takes my suggestions.

The above items ask for response to newness, for responses to possible social change, and for responses to self-perceived social competence. These diverse items have been grouped under the general heading of social exploration. The total score of an individual should represent the degree to which he values new experiences, is willing to take part in a variety of activities, and the extent to which he prefers to be a change agent in his environment.

### Reliability of the Exploration Questionnaire

Table 1 in the handout summarizes the results of different reliability studies carried out over the past two years. Internal consistency, as measured by Kuder-Richardson Formula 20, is high, with values averaging .85. Parallel form reliability is .77 and can be taken as a direct estimate of common variance between the forms. Test-re-test reliability after a two week lapse is .823. The average test-re-test reliability after one year is .671. The exploration questionnaire has very good reliability for a research instrument measuring personal preferences.

### Validity of the Questionnaire

Convergent validity has been estimated by comparing this questionnaire with two other measures of exploration. The peer-nomination instrument is a pencil-and-paper measure to assess exploration preferences on a sociometric basis. This instrument is given to the entire class of boys under consideration and asks subjects to rate the boys they know along a dimension of exploration from low to high. This instrument has the advantage of providing an exploration measure which is independent of an individual's questionnaire score since the rating is determined by how his acquaintances perceive him. Dick Roistacher will present detailed information of the peer nomination measure.

In a study of selected eleventh graders (N=120) at the four high schools there were significant differences between the questionnaire scores of high and low nomination groups at three of the four schools. Table 2 summarizes the Analyses of Variance that were carried out. The peer nomination categories of high and low accounted for 30% to 70% of the variance in questionnaire scores at the three schools. Peer nominations and exploration scores were not related at the urban, high exchange, black high school (Type 1).

A replication of this study was made with eighth graders (N=1096). Again there was a significant overall relationship between peer nominations and questionnaire scores. Separate analysis of urban and suburban schools showed this significant result to be entirely due to the suburban schools. There was no significant relationship between peer nominations and questionnaire scores in the urban schools.

Table 3 in the handout summarizes the results of correlational studies between the questionnaire and other measures which have been carried out in the past two years. The thematic instrument is a semi-projective measure of social exploration which presents a situation and asks the subject to choose between several multiple choice alternatives. It has the advantage over the questionnaire of being tied to specific situations and forcing response to the various alternatives. The average correlation between the themes and the exploration questionnaire is .48. This correlation is lowest in the suburban low exchange, white schools (.27), and highest in the urban, high exchange, black schools (.65). This is a reversal of the cross validation trends with the nomination instrument. Dick Rice will present a more detailed review of the thematic instrument shortly.

These concurrent and criterion validity studies have shown the questionnaire to be valid in the white suburban schools. The questionnaire, for the most part, fails to discriminate as well between individuals in the urban settings.

Divergent validity has been estimated through correlational studies between the questionnaire and more than 15 common personality and achievement measures. Table 3 shows the highest correlation to be .355 with the Lorge-Thorndike I.Q. equivalent. It is hard to evaluate these low but significant correlations. For the most part, they indicate a very slight relationship between the questionnaire and other measures. The exploration questionnaire has good indications of divergent validity.

### Stability

Figure 1 in the handout shows the relationship between the mean scores of eighth, ninth and eleventh graders at the four high schools. In the eighth grade there is an almost linear relationship between SES and/or population turnover and mean questionnaire scores. In the ninth grade all schools are equivalent. The three lowest scoring schools now having means equal to the high SES, low exchange suburban school. This equivalence of school means is found to hold for the eleventh graders. There are definite maturation effects from year to year.

### Summary

What can be concluded from these studies? We have a reliable and valid instrument which has high discriminating power for the suburban schools and we can assess maturation effects over time with reliability equal or better than most measures of personality characteristics. At this time it is not known how the questionnaire scores will relate to various adaptive roles or to actual behavior in the high schools. This is a primary objective of the major study.

Individual differences in exploration preferences will be used as a tracer variable to help uncover the network of empirical relations between personal preferences, environmental incentives, and the resultant behavior. We hope the questionnaire will fruitfully guide our researches but we haven't put all our eggs in one basket.

Our selection of samples for the longitudinal study illustrates both our faith and our doubts about the utility of the questionnaire and the exploration variable. One group of subjects is a random sample of 60 boys who will be followed for three years. The second sample is a stratified group of 30 subjects who scored low, moderate or high on the questionnaire. If the questionnaire scores seem to be irrelevant to the adaptive roles developed we will have an unbiased random sample to fall back on.

A longitudinal case study of selected low, moderate and high scorers will start this fall. It will provide detailed information on many aspects of adaptation in high school.

A second research strategy to add to our knowledge of adolescent socialization is the carrying out of specific studies on special socialization issues within the schools. Reinhard Fatke, Dave Todd and Phil McBee will be reporting on the first of these studies to be carried out.

We are mainly interested in the social and emotional development of high school students and how individual style interacts with environmental factors resulting in different adaptations.

We hope the exploration variable will guide us to increased understanding. At the present it shows promise.

Is the exploration variable relevant and will it have utility? Only time and future studies can truly say. The following papers will shed more light on the relevance of exploration, on the problems with the concept, and on alternative approaches.

TABLE 1  
RELIABILITY ESTIMATES FOR THE EXPLORATION QUESTIONNAIRE

VERSION & FORM	No. OF ITEMS	SIZE SAMPLE	MEAN ITEM DIFFICULTY	MEAN PT-BI-SERIAL	KR-20	PARALLEL FORM	TEST-RETEST
MICH. #3 ELEVENTH GRADE		570					
FORM A	34		.637	.xxx	.774	.761	not determined
FORM B	34		.645	.xxx	.741	to	
FORM C	34		.623	.xxx	.752	.791	
A & B & C	102		.635	.xxx	-		
MICH. #3 EIGHTH GRADE		753					
FORM A	34		.xxx	.xxx	.723	.650	not determined
FORM B	34		.xxx	.xxx	.682	to	
FORM C	34		.xxx	.xxx	.668	.683	
A & B & C	102		.xxx	.xxx	.874		
MICH. #4 EIGHTH GRADE		753					
FORM D	30		.564	.336	.753	.774	.671 (1 yr. time lapse n=219)
FORM E	30		.570	.342	.745		
D & E	60		.567	.339	.854		
MICH. #4 NINTH GRADE		332					
FORM D	30		.xxx	.xxx	.xxx	.774	.823 (2 week time lapse n=79)
FORM E	30		.xxx	.xxx	.xxx		
D & E	60		.xxx	.xxx	.xxx		

TABLE 2

## CRITERION VALIDITY ESTIMATES

ANALYSES OF VARIANCE WITH PEER NOMINATION CATEGORIES (HIGH, MED., & LOW)  
AND SCHOOLS AS INDEPENDENT VARIABLES

ELEVENTH GRADERS  
(MICH. #2, C & D & I-60 ITEM SCALE)

TABLE OF F TESTS (PEER NOMINATIONS - HIGH & LOW GROUPS ONLY)

SCHOOL	F	DF.	P	$\omega^2$
TYPE 1	3.245	1,20	N.S.	.096
TYPE 2	7.312	1,27	<.025	.178
TYPE 3	11.082	1,28	<.01	.251
TYPE 4	29.616	1,27	<.001	.496

EIGHTH GRADERS  
(MICH. #3, A & B & C-102 ITEM SCALE)

TABLE OF F TESTS (SEVEN PEER NOMINATION CATEGORIES)

SAMPLE	F	DF.	P	ETA.
TOTAL	4.437	6,1089	<.01	.154
SUBURBAN	13.05	5,544	<.01	.324
URBAN	1.18	5,530	N.S.	.104



TABLE 3

SUMMARY OF DIVERGENT VALIDITY ESTIMATES -  
CORRELATION COEFFICIENTS BETWEEN THE  
EXPLORATION QUESTIONNAIRE AND OTHER MEASURES

MEASURE \ GROUP	404 ELEVENTH GRADE BOYS MICH. #3 A&B&C	1170 EIGHTH GRADE BOYS MICH. #3 A&B&C	344 NINTH GRADE BOYS MICH. #3 A&B&C	344 NINTH GRADE BOYS MICH. #4 D&E
1 THEMATIC MEASURE OF EXPLORATION	---	.48	.55	.46
2 MARLOWE-CROWNE SOCIAL DESIRABILITY	.206	---	.156	.206
3 ROTTER'S I-E SCALE	-.310	---	-.286	-.307
4 ROSENBERG SELF-ESTEEM	-.347	.xxx	---	---
5 CPI -ACH. VIA INDEP.	.265	---	---	---
6 CPI- FLEXIBILITY	.096	---	---	---
7 DUNCAN SES	.208	.139	---	---
8 GRADE POINT AVERAGE	---	.236	---	---
9 IOWA VOCABULARY	---	.332	---	---
10 IOWA READING	---	.337	---	---
11 IOWA ARITHMETIC	---	.168	---	---
12 CALIF. S.F. M.I.S. - I.Q.	---	.334	---	---
13 LORGE- THORNDIKE I.Q.	---	.355	---	---
14 RAVEN PROGRESSIVE MATRICES	---	.232	.126	.128
15 DAYS ABSENT FROM SCHOOL	---	-.055	---	---

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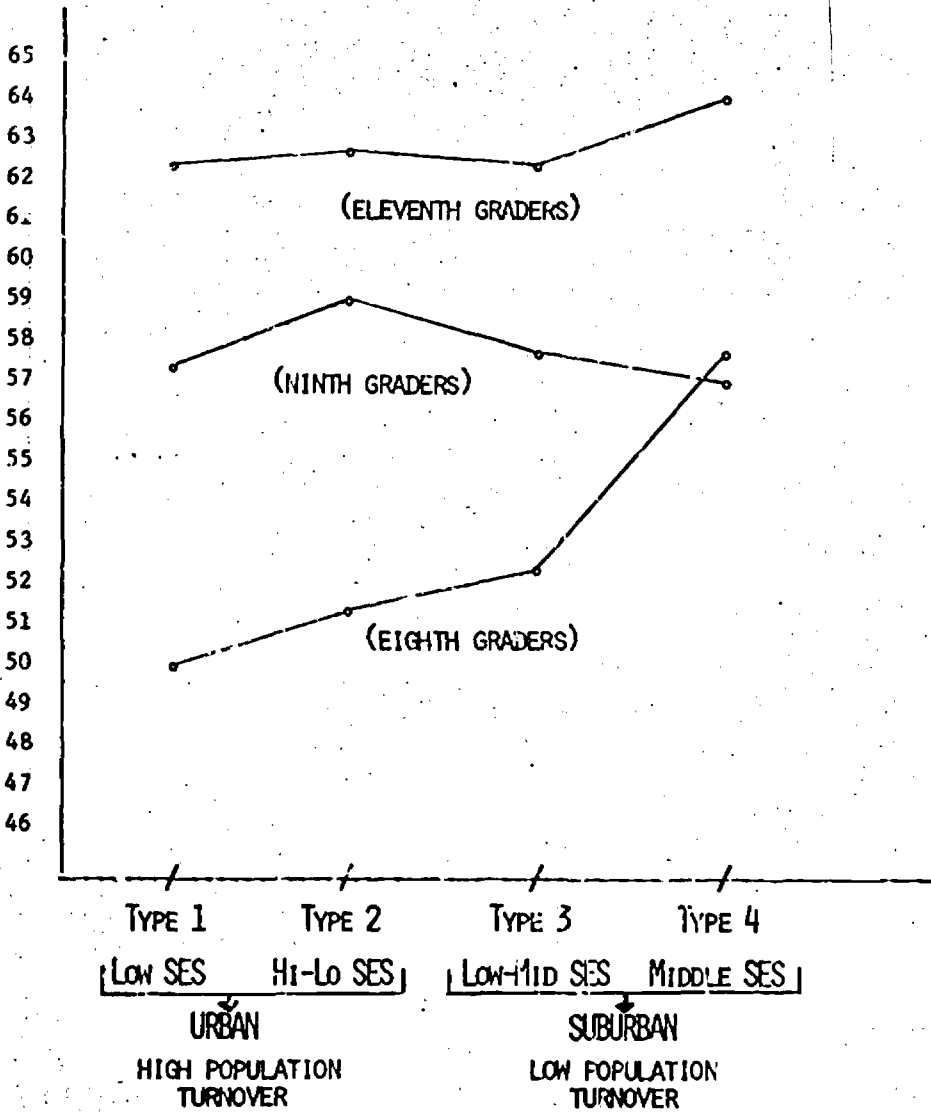


FIGURE 1  
MEAN EXPLORATION SCORES  
(MICH #3)