NATIONAL LONGITUDINAL STUDY
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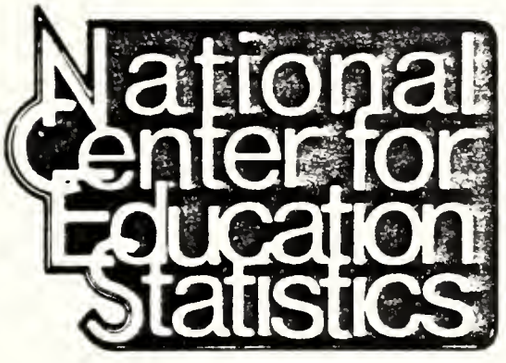
THIRD FOLLOW-UP SURVEY COMPOSITE VARIABLES

Technical Report



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THIRD FOLLOW-UP SURVEY COMPOSITE VARIABLES

Technical Report

by

Samuel S. Peng

Applied Management Sciences, Inc.
Silver Spring, Maryland
(currently with Westat, Inc.,
Rockville, Maryland)

Jay Jaffe

Center for Educational Research
and Evaluation
Research Triangle Institute
Research Triangle Park, North Carolina

Prepared for
National Center for Education Statistics
Education Division
U.S. Department of Health, Education, and Welfare

William B. Fetters, Project Officer

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Patricia Roberts Harris, *Secretary*

Education Division
Mary F. Berry, *Assistant Secretary for Education*

National Center for Education Statistics
Marie D. Eldridge, *Administrator*

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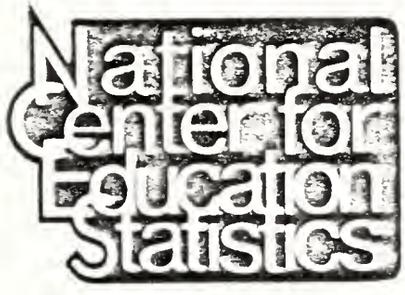

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March 1980

FOREWORD

Data from the National Longitudinal Study are continually being used by researchers in the social sciences and education. In order that researchers may more parsimoniously analyze certain response groups, and in order that future NLS instrumentation may be improved, the construction of composite variables (linear combinations of specified related questionnaire responses) was undertaken in this research.

Fourteen composite variables were generated as a result of this activity, and their composition and statistical characteristics are the subject of this report. The composites derived stem from the seven general areas from the NLS: satisfaction with education and training, satisfaction with work, voluntary participation or "activism", consumerism, perceived quality of life, political participation, and factors in choosing a graduate school. With a few exceptions, the composite variables produced reliability and discriminant validity favorable to their use in social science and educational research. We hope that researchers will take advantage of composite variables which correspond to their interests, and that future survey efforts will be enhanced by our findings.

Absalom Simms, Acting Director
Division of Multilevel Education
Statistics
NCES

Elmer F. Collins, Chief
Longitudinal Studies Branch
NCES

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Ms. Cecille Stafford assisted in various ways with editing and checking the manuscript through various stages of revisions to completion. Ms. Linda Hoffman, past NLS project secretary, ably prepared the first draft of this report and early revisions. Ms. Shirley Patterson and Ms. Pam Rigsbee produced the final revisions.

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I. INTRODUCTION

A. Purpose of the Study

The primary purpose of this study is to develop composite variables[1] for several sets of items included in the Second and Third Follow-Up Questionnaires of the National Longitudinal Study of the High School Class of 1972 (NLS). The need for this study is derived from the following considerations: (1) reduction of data dimensions, and (2) provision of reliable measures of some psychological traits and social behaviors. In addition, we need empirical data for improving future NLS instrumentation. Each of these considerations is further discussed below.

Reduction of data dimensions is an important initial step in analyzing survey data. It is generally more manageable to work with a small number of variables than with a large number of variables, provided that the fewer variables adequately represent what is to be measured. In other words, composite variables rather than their individual components are generally used in analyses. In the NLS survey, a number of items of a similar nature are included in the questionnaire, and thus composite variables measuring underlying constructs or concepts involved in these items need to be derived.

Related to data reduction is measurement reliability. A composite variable is generally more reliable than any single component item (see Nunnally, 1978). Since a high degree of reliability is critical in assessing behavioral concepts, item sets underlying such concepts should be formed into composites.

While some explorations of composite variables were made using field test data, the actual survey data provide a more adequate base for developing the final composites. These analyses should enhance understanding of the items studied, and they may suggest deletion or addition of items to increase reliability. We need such empirical data to aid in the design of future NLS follow-up instruments.

Composite variable analyses have already been conducted on some items in the first follow-up survey. For example, self-esteem, locus of control,

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[1] Composite variables are defined as linear combinations of a number of related variables.

life goal orientation, socioeconomic status, and general academic ability composites were developed using the base year and the first follow-up data (see Dunteman, Peng & Holt, 1974). Many additional items were included in the second and third follow-ups, however, and it is the primary purpose of this study to continue the development of psychometrically sound composites that can be included in the data files. This will facilitate the use of NLS data by obviating the need for much composite development by individual users.

More specifically, this study was designed to achieve the following objectives:

(1) To determine the structure of composites that measure some theoretical concepts (e.g., traits and attitudes);

(2) To examine the reliability and validity of the derived composites; and

(3) To recommend modifications to future questionnaire development.

B. Item Sets Involved in the Study

The analyses were performed on the item sets listed in Table 1, which were included in the second and/or third follow-up survey. The actual items as used in the questionnaire are presented in Appendix A. Several other item sets were initially examined but proved to be unsatisfactory candidates for composite development because of low response frequencies and/or difficulties in obtaining appropriate tetrachoric correlations for dichotomous variables. They are, therefore, not reported herein. Of the ten item sets listed in Table 1, factor analyses on three (#7, #9, and #10) were suggestive of possible measurement artifacts and composites based on these items are considered inappropriate for indiscriminant usage. The nature of the potential confounding, and results of analyses for these item sets, is the subject of Appendix E.

C. Methods

A common approach for examining the structure of a set of items is factor analysis, which can reveal underlying patterns of item relationships.

Data may then be reduced to a relatively small set of "factors" which serve to account for the observed relationships among items. This technique generally requires four steps: (1) preparation of a correlation matrix of items; (2) extraction of the initial factors; (3) rotation to a terminal solution--the search for simple and interpretable factors; and (4) computation of factor scores for each case in the sample.

Table 1.--Item sets, with their data sources, for the second and third third follow-up surveys

Item sets	Data source	
	Second follow-up	Third follow-up
1. Satisfaction with education		Q.50
2. Satisfaction with work		Q.21
3. Voluntary participation		Q.147
4. Consumerism	Q.133	
5. Quality of life	Q.135	
6. Political participation		Q.153
7. Self-insight scale	Q.153	
8. Factors in choosing a graduate school		Q.107
9. Sex-role orientation		Q.150
10. Feeling about high school		Q.157

The term "factor analysis" subsumes a fairly large variety of procedures of factoring (see Harman, 1967). The primary procedure used in this study is alpha factor analysis, which so far has not been widely used in

composite variable development. A more commonly used procedure is principal axes factor analysis. However, alpha factoring was considered more meaningful for the development of composite variables because its psychometric goal of generalizability (related to traditional concepts of reliability) focuses primarily on the sample of items from a larger domain of possible items rather than on the sample of persons as does principal axes factoring. One seeks to make inferences about the universe of items from a sample of items by extracting factors with maximum generalizability. Assuming the variables measured by the sample items are observed over a given population of individuals, the analytical procedure determines that each of the uncorrelated common factors successively has maximum generalizability; that is, the obtained common factors have maximum correlation with corresponding universe common factors (e.g., underlying traits). A more detailed technical description is given by Kaiser & Caffrey (1965). For comparison purposes, results from the principal axes procedure are included in Appendix B. As can be seen, the results from these two factoring procedures in this study are very similar, and the same conclusions can be drawn from either analysis. Although both methods give approximately the same result, the outcome of the alpha factor analysis remains preferable on theoretical grounds as the basis for forming composite variables.

Factor analyses were conducted on a random subsample of about 2,000 cases from the NLS sample for reasons of cost efficiency, since this is more than enough to obtain the stable correlation matrix for factor analysis. In addition, analyses were repeated on subgroups defined by sex and race. If the factor structure differed substantially among subgroups, this would mean that the groups could not be compared on the factors; however, the different factor structures would be a provocative finding in itself. To check on the suitability of factors from the total sample for the major subgroups, each analysis was repeated separately for groups defined by race and sex. As shown later, separate factors were not required for any subgroup.

Factors with eigenvalues greater than or equal to one were retained. This criterion is essential in alpha factor analysis to obtain positive generalizability (see Kaiser & Caffrey, 1965).[2] The initial factor matrix was orthogonally rotated (varimax method) to facilitate psychologically meaningful interpretations.

In general, composite variables were developed for each factor by summing those items with loadings of about .40 or higher on the factor. To prevent spurious correlations between factors, in no case was any single item included in more than one factor. Scoring factors in terms of the salient (high-loading) items provides a simpler and more easily described composite than does an exact factor score, and the composite can be included in future questionnaires by including only the salient items. Moreover, this procedure allows the factor scores to be moderately correlated in a way similar to what would be obtained by oblique rotation. The sum of salient items was divided by the number of included items so that the composite would have meaning as the average item response on the original item scale. Details of this method are given in Appendix C.

According to many psychometricians, a minimal criterion for psychometric acceptability of a derived composite is adequate internal consistency. Thus, the computation of internal consistency as indicated by coefficient alpha is an integral part of the composite analysis.[3] We also attempted to validate the composite measures by comparing group means.

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[2] The "eigenvalues" (g) associated with an initial (unrotated) set of factors have a different interpretation for the principal axes and the alpha factoring methods, although in both instances their magnitude varies with the proportion of variance accounted for by the obtained factors. In the principal axes method, each eigenvalue equals the sum of squared factor loadings on the associated factor; it will be greater than this sum in the alpha method. While in the former method

$$\sum_{i=1}^{n} \lambda_i = n \quad ,$$

where n is the number of variables included. In alpha factor analysis values of $\lambda_i < 0$ appear and the solution is constrained such that the sum of eigenvalues of rejected factors approaches zero and

$$\sum_{i=1}^{r} \lambda_i = n \quad ,$$

where r is the number of factors retained in the solution.

[3] Computational procedures can be found in most measurement textbooks (e.g., Nunnally, 1978).

Most of these measures would be expected to vary by level of academic ability and family background (socioeconomic status), for example. Therefore, we determined whether groups of respondents classified on the basis of sex, race, socioeconomic background (SES), and academic ability differed in expected ways on the new composite measures. Corroboration of predictable differences by the new measures can be taken as evidence for scale validity, in a sense, somewhat akin to "convergent validity" as used by Campbell and Fiske (1959).

D. Overview of Findings

Fourteen composite variables were constructed on the basis of factor analysis. In general, the composites are meaningful and of adequate reliability. With two exceptions, validity was demonstrable according to our criteria. The composite variables are listed below. Their components and measurement properties are discussed in the following sections.

For the item sets measuring self-insight, sex-role orientation, and feelings about high school, factor analyses suggested possible measurement artifacts, calling into question any attempt at composite development using the methods we have chosen. Discussion of these item sets and methodological implications is postponed to Appendix E.

Question Descriptor/Stem[4]	Composite Variable
Satisfaction with Education and Training	1. Quality of academic program and instruction
	2. Extracurricular opportunities and facilities
Satisfaction with Work	3. Job satisfaction in general
Voluntary Participation	4. General activism
Consumerism	5. General consumerism
	6. High consumer activism[5]
	7. Moderate consumer activism[5]
Quality of Life	8. Freedom from constraints
	9. Personal growth
Political Participation	10. Participation in election campaign
	11. Discussion of public problems with friends and relatives
Factors in Choosing a Graduate School	12. Academic quality
	13. Location
	14. Cost of attending

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[4] See Appendix A for complete text of items

[5] A further breakdown of the general consumerism

II. ANALYSES AND RESULTS

A. Satisfaction with Education and Training

Respondents were asked to rate eleven aspects of their education and training on a five-point scale, ranging from "very satisfied" (assigned a value of 1) to "very dissatisfied" (assigned a value of 5). The average ratings, shown in Table 2, reveal that the majority of respondents reported that they were satisfied with almost every aspect of their education and training.

Alpha factor analysis yielded two factors with eigenvalues greater than or equal to one. The rotated factor pattern for these two factors is presented in Table 3. Separate analyses for men and women and for blacks and whites yielded similar results (i.e., two factors with similar factor patterns were obtained). This basic two-factor solution was also found in the principal axis analysis (see Appendix B, Tables B-1 and B-2). It was concluded that the solution shown in Table 3 is applicable to subgroups defined by sex and by race.

Two composite variables may be constructed on the basis of these results. They are labeled as (1) the quality of academic programs and instruction, and (2) extracurricular opportunities and facilities. The selected components of the two composites are listed as follows:

Quality of Academic Program and Instruction

(1) The ability, knowledge, and personal quality of most teachers.
(2) Development of my work skills.
(3) My intellectual growth.
(4) Course curriculum.
(5) The quality of instruction.

Extracurricular Opportunities and Facilities

(1) The buildings, library, equipment, etc.
(2) Cultural activities, music, art, drama, etc.
(3) The intellectual life of the school.
(4) Sports and recreation facilities.

Both composites were adequately reliable. The internal consistency coefficients were .82 and .74, respectively, for academic programs and facilities.

Table 2.--Means, standard deviations, and item correlations of items regarding satisfaction with education and training (N-1859)

Item	Mean[1]	S.D.	Correlations[2]									
			a	b	c	d	e	f	g	h	i	j
a. The ability, knowledge, and personal qualities of most teachers	2.10	1.00										
b. The social life	2.15	1.01	24									
c. Development of my work skills	2.20	1.05	38	26								
d. My intellectual growth	2.01	0.93	39	25	58							
e. Counseling or job placement	2.97	1.17	33	19	39	33						
f. The buildings, library, equipment, etc.	2.02	0.98	32	16	22	25	29					
g. Cultural activities, music, art, drama, etc.	2.45	1.03	26	26	19	27	25	44				
h. The intellectual life of the school	2.47	1.04	44	32	34	45	35	43	49			
i. Course curriculum	2.35	1.11	46	24	40	42	39	43	36	54		
j. The quality of instruction	2.24	1.06	71	24	40	43	36	36	32	51	59	
k. Sports and recreation facilities	2.22	1.08	21	28	17	17	23	38	43	36	31	29

[1] Lower scores indicate greater satisfaction.

[2] Decimal points are removed.

Table 3.--Rotated factor pattern for satisfaction with education and training (N=1859)

Item	Factor pattern[1]	
	I	II
a. The ability, knowledge, and personal qualities of most teachers	.62	.26
b. The social life	.27	.29
c. Development of my work skills	.70	.10
d. My intellectual growth	.66	.17
e. Counseling or job placement	.45	.26
f. The buildings, library, equipment, etc.	.26	.54
g. Cultural activities, music, art, drama, etc.	.18	.67
h. The intellectual life of the school	.48	.57
i. Course curriculum	.57	.42
j. The quality of instruction	.66	.34
k. Sports and recreation facilities	.12	.64

[1] The factors are interpreted as follows:
I - Academic program and instruction
II - Extracurricular opportunities and facilities
Eigenvalues based on the unrotated pattern were $\lambda_1 = 9.41$ and $\lambda_2 = 1.59$, respectively.

As shown in Appendix D, groups defined by race and sex did not differ greatly in reported satisfaction with facilities; however, women and blacks reported greater satisfaction with academic program and instruction than did men and the other racial/ethnic groups. Both composites were positively related to ability and SES (i.e., higher ability and SES groups reported greater satisfaction).

B. Satisfaction with Work

NLS respondents were asked to indicate their satisfaction with eleven aspects of their jobs using a five-point scale, ranging from "very satisfied" (assigned a value of 1) to "very dissatisfied" (assigned a value of 5). As shown in Table 4, respondents on the average reported that they were rather satisfied with various aspects of their job.

Alpha factor analysis of the correlation matrix shown in Table 4 provided one factor with eigenvalue greater than or equal to 1, and thus only one factor was extracted. This result indicates the reasonableness of postulating a single domain of job satisfaction for the total group.

Results for subgroups were not all identical. Among men and whites, only one factor was extracted, but among women and blacks, two factors could be retained. However, comparing the unrotated factor patterns among the subgroups shown in Table 5 revealed that the first factor from each analysis was very similar. The second factor had a small eigenvalue and included only two or three items with factor loadings of .30 or above. It thus seems reasonable to conclude that a general job satisfaction composite consisting of all eleven items is applicable to all subgroups. The extra factor in the two subgroups seems to be due to small differences among the eigenvalues near the arbitrary cut-off point of 1.0.

If one chooses to retain two factors for women and blacks, one may define the second factor, on the basis of the varimax rotated factor pattern, as satisfaction with working conditions and supervisor(s). The coefficient alpha of this composite was .64. A similar solution was obtained from principal axes factor analysis (see Appendix B, Tables B-3 and B-4).

Based on the one-factor solution, a composite derived from all eleven items was highly reliable (coefficient alpha = .90). Some group differences

Table 4.--Means, standard deviations, item correlations, and factor pattern of items regarding job satisfaction (N=1420)

Item	Mean	S.D.	Item correlations[1]										Factor pattern[2]
			a	b	c	d	e	f	g	h	i	j	
a. Pay and fringe benefits	2.12	0.80											.53
b. Importance and challenge	2.10	0.84	40										.77
c. Working conditions	1.98	0.73	29	42									.58
d. Opportunity for promotion and advancement with this employer	2.30	0.89	49	52	39								.73
e. Opportunity for promotion and advancement with this line of work	2.23	0.88	39	56	34	74							.71
f. Opportunity to use past training and education	2.21	0.89	25	56	34	40	49						.63
g. Security and permanence	1.97	0.81	37	38	35	42	38	35					.58
h. Supervisor(s)	1.94	0.78	27	35	47	34	32	29	33				.53
i. Opportunity for developing new skills	2.09	0.86	29	62	38	48	53	57	38	36			.71
j. Job as a whole	1.96	0.74	47	64	52	56	55	50	48	50	61		.84
k. The pride and respect I received from my family and friends by being in this line of work	1.83	0.72	34	56	36	43	47	51	40	31	51	58	.67

[1] Decimal points are removed.

[2] The eigenvalue of this factor is 11. This factor is interpreted as the general job satisfaction.

Table 5.--Unrotated factor pattern of job satisfaction items

Item	All persons	Men	Women		Blacks		Whites
			I	II	I	II	
a. Pay and fringe benefits	.53	.51	.54	-.01	.54	.03	.54
b. Importance and challenge	.77	.79	.74	-.14	.67	-.07	.78
c. Working conditions	.58	.62	.54	.42	.46	.34	.58
d. Opportunity for promotion and advancement with this employer	.73	.76	.70	-.15	.80	.09	.73
e. Opportunity for promotion and advancement in this line of work	.71	.73	.72	-.28	.78	-.03	.71
f. Opportunity to use past training and education	.63	.63	.65	-.16	.64	-.33	.65
g. Security and permanence	.58	.60	.54	.10	.59	-.08	.57
h. Supervisor(s)	.53	.57	.48	.40	.50	.40	.53
i. Opportunity for developing new skills	.71	.72	.70	-.15	.68	-.22	.71
j. Job as a whole	.84	.85	.83	.11	.80	.16	.85
k. The pride and respect received by being in this line of work	.67	.69	.65	-.07	.50	-.21	.69
λ	11.00	11.00	9.84	1.16	9.73	1.28	11.00
N	1420	735	685		151		1132

in this measure of job satisfaction are evident. For example, blacks tended to report less satisfaction with their job than did whites and Hispanics. Low SES respondents also expressed less satisfaction with work than did others (see Appendix D).

C. Voluntary Participation Activism

NLS participants were asked to indicate the extent of their voluntary participation in 13 activity groups on a three-point scale, ranging from "active participant" (assigned a value of 1) to "not at all" (assigned a value of 3). Item means in Table 6 show that NLS participants were not very active in these voluntary activities.

Alpha factor analysis provided four factors with eigenvalues greater than or equal to 1. Inspection of the varimax-rotated factor pattern reveals that only a few items have substantial loadings ($\geq .40$) on any factor (see Table 7). A similar pattern is also shown in separate analyses among men, women, blacks, or whites. It is thus concluded that no significant factor can be drawn from these item sets; voluntary participation in each type of activity group seems rather discrete. However, in view of the large eigenvalue of the first factor, and relatively similar loadings of all items on the factor, it is suggested that an index of general activism can be developed by averaging the 13-item scores. Principal axes analysis results are presented in Appendix B, Tables B-5 and B-6.

The internal consistency of the composite derived from a linear combination of 13 items was .67. The relatively low reliability reflects the fact that these component items were not highly correlated to each other, although, as shown in Table 6, all correlations were positive. Men reported more activism than women, blacks more than whites, with Hispanics least, and participation varied positively with ability and SES (see Appendix D).

D. Consumerism

NLS participants were asked about ways of assuring a good buy for their money. Responses to the six items were given on a three-point scale, ranging from "regularly" (value of 1) to "never" (value of 3); thus, the lower scores indicate more frequent "smart shopper" behavior.

Table 6.--Means, standard deviations, item correlations of items measuring voluntary participation (N=1848)

Item	Mean[1]	S.D.	Item correlations[2]											
			a	b	c	d	e	f	g	h	i	j	k	l
a. Youth organizations--such as Little League coach, scouting, etc.	2.83	.54												
b. Union, farm, trade or professional association	2.75	.55	07											
c. Political clubs or organizations	2.88	.42	09	10										
d. Church or church-related activities (not counting worship services)	2.49	.75	20	03	09									
e. Community centers, neighborhood improvement, or social-action associations or groups	2.84	.51	28	08	20	16								
f. Organized volunteer work--such as in a hospital	2.88	.47	11	07	13	05	29							
g. A social, hobby, garden, or card playing group	2.59	.77	11	06	13	10	15	13						
h. Sport teams or sport clubs	2.46	.86	25	10	13	07	19	09	21					
i. A literary, art, discussion, music, or study group	2.82	.56	06	12	11	11	13	15	17	11				
j. Educational organizations--such as PTA or an academic group	2.89	.43	13	15	11	10	16	11	08	09	15			
k. Service organizations--such as Rotary, Junior Chamber of Commerce, Veterans, etc.	2.93	.33	04	06	11	03	08	14	09	07	12	08		
l. A student government, newspaper, journal, or annual staff	2.92	.37	11	05	14	11	14	08	09	14	16	15	12	
m. Another voluntary group in which I participate	2.79	.59	11	08	13	10	25	23	10	12	18	15	16	21

[1] Higher scores indicate less participation

[2] Decimal points are removed

Table 7.--Varimax rotated alpha factor pattern of items measuring voluntary participation (N=1848)

Item	Factor pattern[1]			
	I	II	III	IV
a. Youth organizations--such as Little League coach, scouting, etc.	.02	.58	.08	.18
b. Union, farm, trade or professional association	.06	.03	.25	.10
c. Political clubs or organizations	.22	.11	.18	.19
d. Church or church-related activities (not counting worship services)	.07	.28	.12	.06
e. Community centers, neighborhood improvement, or social-action associations or groups	.39	.44	.06	.13
f. Organized volunteer work--such as in a hospital	.44	.09	.05	.11
g. A social, hobby, garden, or card playing group	.15	.10	.08	.40
h. Sport teams or sport clubs	.07	.21	.12	.41
i. A literary, art, discussion, music, or study group	.23	.05	.29	.19
j. Educational organizations--such as PTA or an academic group	.11	.16	.44	-.00
k. Service organizations--such as Rotary, Junior Chamber of Commerce, Veterans, etc.	.28	-.03	.14	.10
l. A student government, newspaper, journal, or annual staff	.22	.14	.23	.10
m. Another voluntary group in which I participate	.46	.14	.20	.03

[1]Eigenvalues of the initial factor matrix were 9.06, 1.71, 1.18, and 1.05, respectively.

As shown in Table 8, most NLS participants frequently compared prices, returned unsatisfactory merchandise, and relied on brands or companies. They seldom followed leads in consumer reports, checked a company's reputation, or made complaints to manufacturers.

The analysis using the total group provided one factor with an eigenvalue greater than 1 (see Table 8), and thus only one factor was retained. Among the six items included in the analysis, the item of "I rely on brands or companies I know well even if they cost more" had a low loading of .14, and thus was not included in the composite of general consumerism.

Although two factors can be retained from the analyses for men, women, and blacks (see Table 9), the first factor from each analysis has a similar pattern and accounts for most of the variance. It seems reasonable to suggest that one factor reflecting general consumerism be retained. However, if one chooses to retain a two-factor solution for subgroups, one may find that based upon the rotated-factor solution one factor is composed primarily of two items: "compare prices" and "return unsatisfactory goods" (labeled moderate consumer activism); and another factor, three items: "follow leads in articles," "check company's reputation," and "write to manufacturers" (high consumerism activism). A similar solution was obtained through principal axes procedures (see Appendix B, Tables B-7 and B-8).

For the purpose of comparison, three composite variables were developed--one based on the one-factor solution, and the other two, based on the two-factor solution. None of them proved to be satisfactory in terms of reliability. Internal consistency coefficients for measures of general consumerism, moderate consumer activism, and high consumer activism were .62, .46, and .57, respectively. The low reliability, particularly of the latter two composites, indicates that some additional items are needed to increase composite reliability.

Men reported more high consumer activist behavior, while women reported more moderate activity; the sexes did not differ substantially on the general consumerism measure. Whites reported more moderate activism than did blacks, and blacks did more than Hispanics. This was reflected in the general measure; however, the races did not differ on high consumer activism. In general, consumerism varied positively with academic ability and SES.

Table 8.--Means, standard deviations, item correlations, and alpha factor pattern of items regarding consumerism (N=1888)

Item	Mean[1]	S.D.	Item correlations[2]					Factor pattern
			a	b	c	d	e	
a. I compare prices and label information of similar products or services	1.49	0.57						.39
b. I return merchandise that is unsatisfactory to the store where I bought it	1.64	0.61	30					.55
c. I rely on brands or companies I know well even if they cost more	1.83	0.61	04	10				.14
d. I follow leads in articles from Consumer Reports, Changing Times, or other such magazines	2.42	0.67	24	23	10			.56
e. I check a company's reputation with the Better Business Bureau or consumer protection agency before agreeing to an expensive service or repair	2.68	0.57	16	18	06	30		.49
f. I write to the manufacturer about the quality of the product if I'm unsatisfied	2.64	0.59	19	24	06	23	38	.51

[1] Higher scores indicate less frequent behavior.

[2] Decimal points are removed.

Table 9.--Unrotated alpha factor pattern for items of consumerism

Item	All persons	Men		Women		Blacks		Whites
		I	II	I	II	I	II	
a. I compare prices and label information of similar products or services	.39	.48	.19	.48	-.36	.54	-.46	.35
b. I return merchandise that is unsatisfactory to the store where I bought it	.55	.58	.25	.45	-.07	.43	-.21	.56
c. I rely on brands or companies I know well even if they cost more	.14	.21	.08	.10	.21	.29	-.04	.09
d. I follow leads in articles from Consumer Reports, Changing Times, or other such magazines	.56	.51	-.08	.51	.14	.76	.10	.56
e. I check a company's reputation with the Better Business Bureau or consumer protection agency before agreeing to an expensive service or repair	.49	.50	-.56	.55	.03	.60	.41	.49
f. I write to the manufacturer about the quality of the product if I'm unsatisfied	.51	.48	-.22	.52	-.06	.37	.21	.52
λ	6.00	4.82	1.18	4.73	1.28	4.81	1.20	6.00
N	1888	894		994		229		1470

E. Quality of Life

Eleven statements regarding "quality of life" were included in the Second Follow-Up Questionnaire. Participants were asked to indicate how well each statement matches personal interpretations of quality of life. A five-point scale was used, ranging from "exactly" (assigned a value of 1) to "not very well" (assigned a value of 5). The average score for each statement is presented in Table 10. Item scores were all low, and all items appear to express equally well the quality of life.

Factor analysis for the total subsample revealed a two-factor solution which was basically consistent among subgroups. The factor pattern is included in Table 10. (Similar results are also obtained from principal axes procedures. See Appendix B, Tables B-9 and B-10).

Based on these results, two composites were constructed. The first one, interpreted as personal growth, includes the following items:

(1) Having a chance to do the kind of work I really want to do in life.

(2) Having sustained personal relationships--loving and being loved.

(3) Living a life of honesty and moral integrity--doing what I think is right to do.

(4) Having the opportunity to read, think, and discuss important questions about life values, etc.

(5) Having the chance to get a good education.

The second composite seems to reflect freedom from constraints, and consists of the following items:

(1) Having enough money--to buy sufficient food, to dress as needed, and to have adequate shelter.

(2) Having healthful living patterns--eating a balanced diet, getting plenty of exercise and regular sleep.

(3) Living where the air is clean, the water is fresh, and where people really try to protect their natural resources.

(4) Having time and money for some of the "extras" of life--vacations, hobby time and equipment, entertainment opportunities.

(5) Feeling free--not tied down by many personal or work responsibilities.

(6) Feeling personally safe from violence, injustice, or fraud.

Table 10.--Means, standard deviations, item correlations, and varimax rotated alpha factor pattern of items measuring "quality of life" (N=1,881)

Item	Mean[1]	S.D.	Item correlations[2]										Factor pattern[3]	
			a	b	c	d	e	f	g	h	i	j	I	II
a. Having enough money--to buy sufficient food, to dress as needed, and to have adequate shelter	2.31	1.22											.32	.51
b. Having healthful living patterns--eating a balanced diet, getting plenty of exercise and regular sleep	2.11	1.07	58										.49	.50
c. Living where the air is clean, the water is fresh, and where people really try to protect their natural resources	2.04	1.08	41	57									.45	.49
d. Having time and money for some of the "extras" of life--vacations, hobby time and equipment, entertainment opportunities	2.33	1.17	47	41	41								.21	.73
e. Feeling free--not tied down by many personal or work responsibilities	2.95	1.44	21	21	24	40							.09	.46
f. Feeling personally safe from violence, injustice, or fraud	2.17	1.16	39	45	45	43	36						.40	.57
g. Having a chance to do the kind of work I really want to do in life	1.78	0.97	30	38	41	40	27	48					.58	.37
h. Having sustained personal relationships--loving and being loved	1.58	0.84	29	38	40	34	16	42	52				.61	.24
i. Living a life of honesty and moral integrity--doing what I think is right to do	1.65	0.87	31	41	39	28	12	39	48	54			.74	.14
j. Having the opportunity to read, think and discuss important questions about life values, etc.	1.97	1.03	33	44	41	32	20	40	46	42	56		.68	.25
k. Having the change to get a good education	2.00	1.09	33	44	37	31	17	34	46	35	39	54	.56	.27

[1]Lower scores indicate better expression of quality of life.

[2]Decimal points are removed.

[3]The two factors are interpreted as follows: I - personal growth; II - freedom from constraints. The solution is applicable to men, women, blacks, and whites.

Eigenvalues associated with the initial factor loadings were 9.57 and 1.43, respectively.

The internal consistency coefficients were .82 and .80, respectively, for personal growth and freedom from constraints, indicating that the two composites were adequately reliable. Differences between groups were highly significant on most comparisons, except that men and women did not differ on freedom from constraints; personal growth was more important to women than to men in defining quality of life. Details are given in Appendix D.

F. Political Participation

There were ten items concerning political participation to which responses were given on a three-point scale, ranging from "frequently" (assigned a value of 1) to "never" (assigned a value of 3), with lower scores indicating higher frequencies of political participation. As shown in Table 11, NLS respondents were generally not active in political participation.

Factor analysis revealed two factors which have distinct loadings on specific items as shown in Table 11. This factor pattern was basically consistent among men and women, and among blacks and whites (see also Appendix B, Tables B-11 and B-12).

Based on this result, two composite variables were constructed. The first one, labeled "participation in election campaigns," consists of the following items:

(1) Did you ever talk about public problems with elected government officials or people in politics, such as Democratic or Republican leaders?

(2) Did you ever talk to people to try to get them to vote for or against a candidate?

(3) Did you ever give any money or buy tickets to help someone who was trying to win an election?

(4) Did you ever go to any political meetings, rallies, barbecues, fish fries, or things like that in connection with an election?

(5) Did you ever do any work to help a candidate in his campaign?

The second composite variable, labeled "discussion of public problems," includes the following items:

Table 11.--Means, standard deviations, item correlations, and varimax rotated alpha factor pattern of items measuring political participation (N=1,863)

Item	Mean[1]	S.D.	Correlations[2]									Factor pattern[3]	
			a	b	c	d	e	f	g	h	i	I	II
a. When you talked with your friends, did you ever talk about public problems--that is, what's happening in the country or in your community?	1.69	.55										.13	.71
b. Did you ever talk about public problems with any of the following people?													
1. Your family	1.76	.57	55									.10	.67
2. People where you work	1.86	.63	54	48								.06	.72
3. Community leaders, such as club or church leaders	2.52	.63	31	30	35							.35	.44
c. Did you ever talk about public problems with elected government officials or people in politics, such as Democratic or Republican leaders?	2.64	.60	23	22	25	42						.42	.33
d. Did you ever talk to people to try to get them to vote for or against a candidate?	2.54	.63	31	29	26	27	33					.45	.34
e. Did you ever give any money or buy tickets to help someone who was trying to win an election?	2.81	.45	19	16	15	24	27	39				.67	.11
f. Did you ever go to any political meetings, rallies, barbecues, fish fries, or things like that in connection with an election?	2.76	.50	23	19	19	31	31	38	51			.71	.18
g. Did you ever do any work to help a candidate in his campaign?	2.80	.47	21	19	17	28	21	42	50	61		.74	.14
h. Did you ever hold an office in a political party or get elected to a government job?	2.98	.17	04	03	00	09	11	09	18	16	18	.24	.00

[1] High scores indicate low level of participation.

[2] Decimal points are removed.

[3] Eigenvalues for the two factors are 7.53 and 2.47, respectively. The factors are interpreted as follows: I--participation in election campaign; and II--discussion of public problems. This two-factor pattern is applicable to men, women, blacks, and whites.

(1) When you talked with your friends, did you ever talk about public problems--that is, what's happening in the country or in your community?

(2) Did you ever talk about public problems with any of the following people?

(a) Your family?

(b) People where you work?

(c) Community leaders, such as club or church leaders?

Of the items included in the questionniare, the item "Did you ever hold an office in a political party or get elected to a government job?" does not load substantially on either factor. The high mean and small standard deviation for this item indicate that only a few respondents reported ever holding such an office.

The internal consistency coefficients were .77 and .74, respectively, for participation and discussion. Men reported greater participation on both measures than did women. Blacks reported participation more than did either whites or Hispanics, and both participation in election campaigns and discussion of public issues varied positively with SES and academic ability.

G. Factors in Choosing a Graduate School

NLS participants who were attending a graduate or professional school in the fall-winter of 1976 were asked to indicate variables important to them in choosing their school. Nine possible variables were listed, and for each one respondents could check one of the responses: "determining factor," "important," "not important," and "did not consider." The answers were coded 1, 2, 3, and 4, respectively.

Descriptive statistics are presented in Table 12. It can be seen that location had a low mean score, indicating a greater number of respondents reporting it as an important consideration in choosing a school. Proximity to spouse's school/work and presence of a particular professor were less important or not considered.

A three-factor pattern was obtained, interpreted as (1) academic quality, (2) location, and (3) cost of attending (see Table 12). This

Table 12.--Means, standard deviations, item correlations, and varimax rotated alpha factor patterns of items measuring reasons for choosing a graduate school (N=559)

Item	Mean[1]	S.D.	Item correlations[2]								Factor pattern[3]		
			a	b	c	d	e	f	g	h	I	II	III
a. Cost of attending	2.27	.97									.01	.31	.40
b. Availability of financial aid	2.72	1.03	36								.11	.00	.71
c. Recommendation of undergraduate professor	2.81	1.00	17	41							.53	.07	.48
d. Presence of a particular professor at the institution	3.04	.97	15	31	48						.43	.05	.43
e. Quality of a particular department	2.09	.97	07	17	43	36					.81	.03	.07
f. Reputation of the institution	2.02	.89	06	13	40	29	69				.79	.05	.00
g. Location	1.92	.88	19	-02	09	00	13	17			.13	.68	-.08
h. Library facilities	2.72	.97	17	22	38	36	38	36	15		.45	.18	.28
i. Proximity to spouse's school/work	3.25	.98	16	06	12	13	02	-01	22	11	.01	.34	.14

[1] Lower scores indicate greater importance.

[2] Decimal points are removed.

[3] Factors are interpreted as follows:
I - Academic quality
II - Location
III - Cost of attending

Eigenvalues for the three unrotated factors were 5.48, 2.11, and 1.42, respectively.

three-factor pattern was also obtained in separate analyses for men, women, and whites. Analyses for blacks did not yield the same factor pattern. However, the number of blacks responding (82) was very small, and the factor pattern cannot be interpreted with confidence. It would seem advisable to adopt the three-factor pattern for blacks if composites are to be used in analyses. Principal axes analyses provided similar results (see Appendix B, Tables B-15 and B-16).

Three composite variables and their components are listed as follows:

Academic Quality

(1) Recommendation of undergraduate professor
(2) Presence of a particular professor at the institution
(3) Quality of a particular department
(4) Reputation of the institution
(5) Library facilities

Location

(1) Location
(2) Proximity to spouse's school/work

Cost of Attending

(1) Cost of attending
(2) Availability of financial aid

Internal consistency coefficients for the three composite variables were .78, .36, and .53, respectively. The importance of cost of attending was rated differently by various race, SES, and ability groups in predictable directions (see Appendix D). In a few cases, comparisons revealed groups to differ significantly ($p<.05$) in reported importance of academic quality or location as a determinant of choice. Women reported location to be more important than men, the importance of location appears to vary inversely with ability, and race and SES showed effects on academic quality. In only one instance (sex on location scale) did the difference attain the .01 level of significance. This weak pattern contrasts with a more robust picture of between-group discrimination characteristic of other composites. A larger response rate (see Table C-1; of course, the population of students entering graduate school must be small) would probably have uncovered "more significant" differences. We have decided not to omit these two composites concerning graduate school choice. NLS researchers may judge for themselves whether or not to make use of these composites.

III. SUMMARY AND DISCUSSION

Fourteen composite variables were developed on the basis of alpha factor analysis. Their component items and internal consistency coefficients are summarized in Table 13. Most of the composite variables have satisfactory reliability for statistical analyses, particularly in view of the fact that some composite variables are composed of only a few items. Ideally, all composites should have reliabilities of about .80 or above. Those with reliabilities less than .80 could be improved by adding additional items in future surveys or by improving item content. To estimate the length of a scale for a predetermined reliability, the following Spearman-Brown formula can be used:

$$\Upsilon_n = \frac{n\Upsilon}{1 + (n-1)\Upsilon} \quad ,$$

where

Υ is the computed reliability of a given scale of length s; and

Υ_n is the estimated reliability of a scale of length ns.

For example, the reliability of general consumerism is .62. The reliability of a scale composed of comparable items but twice as long would be $(2 \times .62)/(1 + .62) = .77$.

Of course, the desirability of undertaking such a modification must be balanced by the relative importance of the item content to research on the NLS data base. Development of a ten-item consumerism scale, or a 15-item "location of graduate school" scale, is not necessarily wise.

With the exception of composites 12 and 13, which were characterized by a smaller number of responses (see above p. 25), the other composites generally show differences to be highly significant between groups, with only a few exceptions. Inspection of group means revealed differences to be in meaningful directions, which establishes a sort of corroborative validity of the composite measures formed from empirically-determined factors.

The following courses could be taken for the improvement of future NLS questionnaires:

Table 13.--Composite title, components, and reliabilities

Question descriptor/stem[1]	Composite title	Components[1]	Internal consistency coefficient
Satisfaction with education and training	1. Quality of academic program and instruction	a, c, d, i, j	.82
	2. Extracurricular opportunities and facilities	f, g, h, k	.74
Satisfaction with work	3. Job satisfaction in general	a, b, c, d, e, f, g, h, i, j, k	.90
Voluntary participation	4. General activism	a, b, c, d, e, f, g, h, i, j, k, l, m	.67
Consumerism	5. General consumerism	a, b, d, e, f	.62
	6. High consumer activism	d, e, f	.57
	7. Moderate consumer activism	a, b	.46
Quality of life	8. Freedom from constraints	a, b, c, d, e, f	.80
	9. Personal growth	g, h, i, j, k	.82
Political participation	10. Participation in election campaign	c, d, e, f, g	.77
	11. Discussion of public problems with friends and relatives	a, b1, b2, b3	.74
Factors in choosing a graduate school	12. Academic quality	c, d, e, f, h	.78
	13. Location	g, i	.36
	14. Cost of attending	a, b	.53

[1] See Appendix A

Additional items would be useful in improving the reliability of measures in the areas of consumerism and factors in choosing a graduate school. As noted above, however, such a change in items may not be prudent for practical purposes.

Some items do not fit well in the factor analysis solutions and thus should not be included as composite variable components. For example, two items measuring satisfaction with education and training do not fit well in a two-factor solution. These items (i.e., social life and counseling and job placement) have important content that is not reflected in the factors. Additional related items should be included to obtain reliable measures if this content is to be studied in the future. Counseling services may include those for personal problems, academic difficulty, career choice, and financial assistance. Social life may include interactions with faculty members, community residents, and peers. Similar problems also occur for the item "A working mother of preschool children can be just as good a mother as the woman who doesn't work" in measuring sex-role orientation, and the items of "I rely on brands or companies I know well even if they cost more" in measuring consumerism.

The scoring scheme currently used for some item responses is confusing. In many cases, contrary to a logical or conventional fashion, positive answers (e.g., high, favorable, agreeable, frequent) were scored with low values. Wherever possible in future instrumentation, responses should be labeled in an immediately meaningful fashion. As described in Appendix C, the direction of scoring was reversed in computing the composites to make them more readily understandable, and the NLS data user should consider the implications of this convention in working with the existing data base.

Direction of scoring is especially crucial when the content of items is not affectively similar with question sets. Three question sets analyzed during the present investigation were intractable for composite development by statistical methods, due to possible response bias artifacts associated with this type of question construction (see Appendix E). While many psychologists feel that it is good to include polarity reversals within items, due to response perservation tendencies, for that same reason it may be argued that the purposes of the NLS effort would better be served by consistent effective

polarity of items within questions, as well as a more natural direction of response scale values for all questions. Some work may be undertaken in methodological studies on existing data, such as an investigation of a partition of cases into those which do and do not show evidence of routine perseveration (determined by decision rules based, for example, on within-question response range).

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Appendix A

QUESTIONNAIRE ITEMS

Note: The data sources for these items are listed earlier in Table 1. Where an item set was represented in both the second and third follow-up instruments, and if the two were not identical, the third follow-up question was used.

1: TQ50

With regard to your education and training during the last year you were in school, how satisfied as a whole were you with the following?

(Circle one number on each line.)

		Very Satisfied	Somewhat Satisfied	Neutral or No Opinion	Somewhat Dissatisfied	Very Dissatisfied
a	The ability, knowledge, and personal qualities of most teachers	1	2	3	4	5
b	The social life	1	2	3	4	5
c	Development of my work skills	1	2	3	4	5
d	My intellectual growth	1	2	3	4	5
e	Counseling or job placement	1	2	3	4	5
f	The buildings, library, equipment, etc.	1	2	3	4	5
g	Cultural activities, music, art, drama, etc.	1	2	3	4	5
h	The intellectual life of the school	1	2	3	4	5
i	Course curriculum	1	2	3	4	5
j	The quality of instruction	1	2	3	4	5
k	Sports and recreation facilities	1	2	3	4	5

2: TQ21

How satisfied were you with the following aspects of this job?

(Circle one number on each line.)

		Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
a	Pay and fringe benefits	1	2	3	4
b	Importance and challenge	1	2	3	4
c	Working conditions	1	2	3	4
d	Opportunity for promotion and advancement with this employer	1	2	3	4
e	Opportunity for promotion and advancement in this line of work	1	2	3	4
f	Opportunity to use past training and education	1	2	3	4
g	Security and permanence	1	2	3	4
h	Supervisors	1	2	3	4
i	Opportunity for developing new skills	1	2	3	4
j	Job as a whole	1	2	3	4
k	The pride and respect I received from my family and friends by being in this line of work	1	2	3	4

3: TQ147

To what extent have you voluntarily participated in the following groups during the two-year period from October 1974 through October 1976? (By voluntarily, we mean you are not an employee of the group; by active participant, we mean that you attend the meetings or events; by member only, we mean that you are on a mailing or telephone list so that you are kept informed of meetings and events.)

(Circle one number on each line.)

		Active Participant	Member Only	Not At All
a.	Youth organizations—such as Little League coach, scouting etc	1	2	3
b.	Union, farm, trade or professional association	1	2	3
c.	Political clubs or organizations	1	2	3
d.	Church or church-related activities (not counting worship services)	1	2	3
e.	Community centers, neighborhood improvement, or social-action associations or groups	1	2	3
f.	Organized volunteer work—such as in a hospital	1	2	3
g.	A social, hobby, garden, or card playing group	1	2	3
h.	Sport teams or sport clubs	1	2	3
i.	A literary, art, discussion, music, or study group	1	2	3
j.	Educational organizations—such as PTA or an academic group	1	2	3
k.	Service organizations—such as Rotary, Junior Chamber of Commerce, Veterans, etc.	1	2	3
l.	A student government, newspaper, journal, or annual staff	1	2	3
m.	Another voluntary group in which I participate	1	2	3

4: SQ133

What ways do you assure yourself of a good buy for your money?

(Circle one number on each line.)

		Regularly	Sometimes	Never
a.	I compare prices and label information of similar products or services	1	2	3
b.	I return merchandise that is unsatisfactory to the store where I bought it	1	2	3
c.	I rely on brands or companies I know well even if they cost more	1	2	3
d.	I follow leads in articles from Consumer Reports, Changing Times, or other such magazines	1	2	3
e.	I check a company's reputation with the Better Business Bureau or consumer protection agency before agreeing to an expensive service or repair	1	2	3
f.	I write to the manufacturer about the quality of the product if I'm unsatisfied	1	2	3

5: SQ135

People often use the term "quality of life" to mean different things. How well does each of the following statements express what "quality of life" means to YOU?

(Circle one number on each line.)

	Exactly	Extremely Well	Very Well	Fairly Well	Not Very Well
a. Having enough money—to buy sufficient food, to dress as needed, and to have adequate shelter	1	2	3	4	5
b. Having healthful living patterns—eating a balanced diet, getting plenty of exercise and regular sleep	1	2	3	4	5
c. Living where the air is clean, the water is fresh, and where people really try to protect their natural resources	1	2	3	4	5
d Having time and money for some of the "extras" of life—vacations, hobby time and equipment, entertainment opportunities	1	2	3	4	5
e Feeling free—not tied down by many personal or work responsibilities	1	2	3	4	5
f Feeling personally safe from violence, injustice, or fraud	1	2	3	4	5
g. Having a chance to do the kind of work I really want to do in life	1	2	3	4	5
h. Having sustained personal relationships—loving and being loved	1	2	3	4	5
i. Living a life of honesty and moral integrity—doing what I think is right to do	1	2	3	4	5
j Having the opportunity to read, think and discuss important questions about life values, etc.	1	2	3	4	5
k Having the chance to get a good education	1	2	3	4	5

6: TQ153

The following questions ask about your political participation. Considering the period from October 1974 to October 1976,

(Circle one number on each line.)

	Frequently	Sometimes	Never
When you talked with your friends, did you ever talk about public problems—that is, what's happening in the country or in your community?	1	2	3
Did you ever talk about public proolems with any of the following people?			
Your family	1	2	3
People where you work	1	2	3
Community leaders, such as club or church leaders	1	2	3
Did you ever talk about public problems with elected government officials or people in politics such as Democratic or Republican leaders?	1	2	3
Did you ever talk to people to try to get them to vote for or against a candidate?	1	2	3
Did you ever give any money or buy tickets to help someone who was trying to win an election?	1	2	3
Did you ever go to any political meetings, rallies, barbecues, fish fries, or things like that in connection with an election?	1	2	3
Did you ever do any work to help a candidate in his campaign?	1	2	3
Did you ever hold an office in a political party or get elected to a government job?	1	2	3

7: SQ153*

The following items give you a chance to rate yourself on the degree to which you possess one of each pair of traits. For ratings on this scale, 1-4 refers to the trait on the far left side while 5-8 refers to the trait on the far right side. Let's take an example to show what you are saying when you circle a number from 1-8.

Cheerful								Sad
(1)	2	3	4	5	6	7	8	

CIRCLE the ONE NUMBER that comes closest to saying how you would rate yourself.

(1) . . cheerful just about all the time
2 . . . cheerful most of the time
3 . . . often cheerful.
4 . . . more often cheerful than sad
5 . . . more often sad than cheerful
6 . . . often sad.
7 . . . sad most of the time.
8 . . . sad just about all the time.

(Circle one number on each line.)

a.	**Inactive** I lack drive, energy, vitality; I tend to be passive, and am without strong interests.	1	2	3	4	5	6	7	8	**Energetic** I have unlimited energy, high drive, vitality. I need to be constantly active and interested in many activities
b.	**Understanding of Others** I am sympathetic about the feelings and problems of other persons people come to me for advice when in trouble.	1	2	3	4	5	6	7	8	**Not Understanding of Others** I am unaware of and uninterested in the feelings and problems of others. other persons do not come to me for advice
c.	**Do Not Think Far Ahead** I act impulsively without thinking of the consequences and frequently I am caught short because I have not foreseen the outcomes.	1	2	3	4	5	6	7	8	**Think Ahead** I consider future possibilities and outcomes of my decisions before acting
d.	**Self-Concerned** I talk a lot about myself, think more about myself and what I want than about other people I frequently am unaware of the rights and needs of other people.	1	2	3	4	5	6	7	8	**Other-Concerned** I think of others and what they want, try to consider others' points of view, can compromise or adjust to demands of others
e.	**Enthusiastic** I am interested and excited about new events, get involved in activities easily and have strong interests.	1	2	3	4	5	6	7	8	**Unenthusiastic** I do not get deeply involved or excited. I am mild not much excites me
f.	**Practical** I have good judgment and common sense; I make practical and appropriate comments and decisions.	1	2	3	4	5	6	7	8	**Impractical** I make impractical, inappropriate suggestions that don't consider all aspects of a problem
g.	**Vague Thinking** My thinking is vague, illogical, indefinite.	1	2	3	4	5	6	7	8	**Clear Thinking** My thinking is clear, precise, and logical
h.	**Personally Warm** I tend to be sincere, friendly, emotionally responsive, sympathetic to others, affectionate, and enjoy other people.	1	2	3	4	5	6	7	8	**Personally Cold** I tend to be distant, aloof, austere, and undemonstrative with others I do not like to express affection or feelings and am more comfortable in impersonal situations
i.	**Ambitious** I set high goals for myself and am dissatisfied when I do not accomplish all of them When I finish one thing, I begin another right away	1	2	3	4	5	6	7	8	**Unambitious** I am unambitious and am easily satisfied with what I can accomplish

* See Appendix E

8: TQ107

How important was each of the following reasons in your choosing the institution in which you are (were) enrolled for your graduate or professional study?

(Circle one number on each line.)

		Determining Factor	Important	Not Important	Did NOT Consider
a	Cost of attending	1	2	3	4
b	Availability of financial aid	1	2	3	4
c	Recommendation of undergraduate professor	1	2	3	4
d	Presence of a particular professor at the institution	1	2	3	4
e	Quality of a particular department	1	2	3	4
f	Reputation of the institution	1	2	3	4
g	Location	1	2	3	4
h	Library facilities	1	2	3	4
i	Proximity to spouse's school/work	1	2	3	4
j	Other (specify) _____	1	2	3	4

9: TQ150*

How do you feel about each of the following statements?

Circle one number on each line.

		Agree Strongly	Agree	Disagree	Disagree Strongly
a	A working mother of pre-school children can be just as good a mother as the woman who doesn't work	1	2	3	4
b	It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	1	2	3	4
c.	Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	1	2	3	4
d	Most women are just not interested in having big and important jobs	1	2	3	4
e	Many qualified women can't get good jobs, men with the same skills have much less trouble	1	2	3	4
f	Most women are happiest when they are making a home and caring for children	1	2	3	4
g	High school counselors should urge young women to train for jobs which are now held mainly by men	1	2	3	4
h.	It is more important for a wife to help her husband than to have a career herself	1	2	3	4
i	Schools teach women to want the less important jobs	1	2	3	4
j	Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	1	2	3	4

* See Appendix E

10: TQ157*

What are your feelings about the high school you graduated from?

(Circle one number on each line.)

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	Does not Apply
School should have placed more emphasis on basic academic subjects (math, science, English, etc.)	1	2	3	4	5
School did not offer enough practical work experience	1	2	3	4	5
School should have placed more emphasis on vocational and technical programs	1	2	3	4	5
School provided me with counseling that helped me find employment	1	2	3	4	5
School should have given more attention to my needs as an individual	1	2	3	4	5
School provided me with counseling that helped me continue my education	1	2	3	4	5

Other comments about your high school _____

* See Appendix E

Appendix B

PRINCIPAL AXES FACTOR ANALYSES: INITIAL AND VARIMAX ROTATED FACTOR PATTERNS

Table B.1--Initial principal axes factor patterns of items measuring a satisfaction with education and training

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. The ability, knowledge, and personal qualities of most teachers	.70	-.26	.69	-.34	.70	-.21	.61	.16	.71	-.26
b. The social life	.45	.12	.48	.17	.43	.10	.50	.16	.44	.16
c. Development of my work skills	.62	-.47	.63	-.37	.59	-.53	.64	.32	.61	-.47
d. My intellectual growth	.65	-.38	.67	-.25	.64	-.45	.64	.43	.65	-.37
e. Counseling or job placement	.58	-.16	.62	-.20	.53	-.13	.64	-.12	.56	-.20
f. The buildings, library, equipment, etc.	.61	.39	.60	.33	.61	.42	.70	-.40	.58	.41
g. Cultural activities, music, art, drama, etc.	.59	.51	.57	.50	.61	.53	.69	-.44	.56	.53
h. The intellectual life of the school	.76	.15	.76	.16	.76	.13	.78	.01	.76	.16
i. Course curriculum	.75	-.05	.76	-.06	.74	-.06	.77	.23	.75	-.05
j. The quality of instruction	.77	-.19	.75	-.24	.78	-.17	.74	.19	.77	-.18
k. Sports and recreation facilities	.52	.56	.54	.56	.50	.56	.65	-.46	.49	.58
λ	4.55	1.26	4.67	1.15	4.43	1.38	5.00	1.01	4.43	1.32
N	1859		887		972		215		1465	

Table B.2--Varimax rotated principal axes factor patterns for items measuring satisfaction with education and training

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. The ability, knowledge, and personal qualities of most teachers	.71	.23	.76	.16	.67	.28	.57	-.28	.72	.23
b. The social life	.28	.38	.28	.43	.27	.35	.48	-.21	.26	.39
c. Development of my work skills	.78	.02	.73	.10	.80	-.04	.69	-.18	.77	.00
d. My intellectual growth	.75	.11	.69	.21	.78	.06	.76	-.10	.74	.11
e. Counseling or job placement	.55	.24	.61	.23	.49	.23	.40	-.51	.57	.19
f. The buildings, library, equipment, etc.	.23	.68	.27	.63	.20	.71	.26	-.77	.21	.68
g. Cultural activities, music, art, drama, etc.	.14	.77	.14	.75	.14	.80	.23	-.79	.12	.76
h. The intellectual life of the school	.50	.59	.49	.60	.51	.58	.58	-.52	.50	.59
i. Course curriculum	.62	.43	.64	.42	.61	.42	.73	-.33	.63	.42
j. The quality of instruction	.72	.33	.74	.28	.71	.36	.68	-.35	.72	.32
k. Sports and recreation facilities	.05	.76	.08	.78	.03	.75	.18	-.78	.03	.75
N	1859		887		972		215		1465	

Table B.3--Initial principal axes factor patterns of items measuring job satisfaction

	All persons	Men	Women		Blacks		Whites
			I	II	I	II	
a. Pay and fringe benefits	.58	.56	.60	.03	.60	.08	.59
b. Importance and challenge	.79	.81	.78	.16	.71	-.10	.81
c. Working conditions	.62	.66	.57	.58	.51	.57	.62
d. Opportunity for promotion and advancement with this employer	.76	.78	.73	-.19	.82	.08	.75
e. Opportunity for promotion and advancement in this line of work	.76	.77	.75	-.31	.82	-.05	.75
f. Opportunity to use past training and education	.69	.69	.69	-.22	.68	-.41	.70
g. Security and permanence	.62	.64	.59	.20	.62	-.09	.60
h. Supervisor(s)	.57	.62	.51	.66	.53	.58	.57
i. Opportunity for developing new skills	.75	.76	.75	-.18	.72	-.28	.75
j. Job as a whole	.84	.85	.83	.11	.80	.17	.85
k. The pride and respect I received from my family and friends by being in this line of work	.72	.73	.70	-.09	.54	-.37	.73
λ	5.45	5.68	5.19	1.07	5.05	1.11	5.50
N	1420	735	685		151		1132

Table B.4--Varimax rotated principal axes factor patterns of items measuring job satisfaction

	All persons	Men	Women		Blacks		Whites
			I	II	I	II	
a. Pay and fringe benefits	.58	.56	.53	.27	.45	.41	.59
b. Importance and challenge	.79	.81	.75	.25	.64	.32	.81
c. Working conditions	.62	.66	.20	.78	.09	.76	.62
d. Opportunity for promotion and advancement with this employer	.76	.78	.73	.20	.62	.54	.75
e. Opportunity for promotion and advancement in this line of work	.76	.77	.80	.10	.70	.43	.75
f. Opportunity to use past training and education	.69	.69	.71	.15	.79	.05	.70
g. Security and permanence	.62	.64	.41	.47	.56	.28	.60
h. Supervisor(s)	.57	.62	.11	.82	.10	.78	.57
i. Opportunity for developing new skills	.75	.76	.74	.21	.75	.19	.75
j. Job as a whole	.84	.85	.66	.51	.56	.60	.85
k. The pride and respect I received from my family and friends by being in this line of work	.72	.73	.65	.26	.65	.01	.73
N	1420	735	685		151		1132

Table B.5--Initial principal axes factor patterns of items measuring voluntary participation of various types of groups

	All persons				Men					Women				Blacks				Whites			
	I	II	III	IV	I	II	III	IV	V	I	II	III	IV	I	II	III	IV	I	II	III	IV
a. Youth organizations--such as Little League coach, scouting, etc.	.47	-.57	-.04	-.13	.50	.29	-.54	.01	.16	.44	-.38	.24	.38	.46	-.61	-.10	.23	.44	-.60	-.13	-.11
b. Union, farm, trade, or professional association	.28	.13	.62	.58	.26	-.01	.31	.38	.64	.30	.25	.66	-.10	.10	.51	-.16	.48	.35	-.05	.09	.42
c. Political clubs or organizations	.43	.08	.00	.16	.45	-.19	.22	-.15	-.19	.41	-.10	.10	-.18	.48	-.13	-.29	-.33	.40	.22	.13	.06
d. Church or church-related activities (not counting worship services)	.35	-.38	.08	-.38	.36	.42	-.26	-.21	-.10	.35	-.32	.10	.48	.40	-.36	-.04	.16	.31	-.35	.03	.21
e. Community centers, neighborhood improvement, or social-action associations or groups	.60	-.18	-.32	-.17	.67	-.18	-.30	.13	-.02	.54	-.31	.03	-.36	.74	-.16	-.18	-.27	.52	-.17	-.41	-.17
f. Organized volunteer work--such as in a hospital	.47	.24	-.48	.05	.41	-.57	-.18	.12	.06	.53	.10	-.19	-.38	.48	.35	-.11	-.37	.41	.29	-.49	-.24
g. A social, hobby, garden, or card playing group	.41	-.12	-.02	.61	.37	-.22	.21	-.64	.31	.44	-.31	.21	.25	.53	.15	-.31	.42	.38	.26	.44	-.42
h. Sport teams or sport clubs	.46	-.37	.08	.44	.49	.28	-.13	-.40	.25	.44	-.36	-.27	-.15	.63	-.09	.02	.13	.44	-.35	.31	-.40
i. A literary, art, discussion, music, or study group	.45	.28	.23	.13	.38	.09	.53	.16	.15	.51	.11	-.29	.19	.38	.44	-.25	.34	.44	.23	.28	.16
j. Educational organizations--such as PTA or an academic group	.42	.01	.41	.35	.37	.26	.34	.32	-.17	.47	.30	.52	.14	.51	.20	.24	-.19	.44	-.11	-.05	.53
k. Service organizations--such as Rotary, Junior Chamber of Commerce, Veterans, etc.	.31	.46	-.12	.13	.33	-.49	.11	-.15	-.20	.34	.49	-.19	.53	.21	.25	.68	.11	.34	.49	.04	-.20
l. A student government, newspaper, journal, or annual staff	.44	.14	.18	.13	.41	.36	.27	-.17	-.48	.47	.39	-.08	-.10	.42	-.31	.55	.12	.43	.18	.16	.23
m. Another voluntary group in which I participate	.53	.10	-.20	.22	.54	-.19	-.06	.20	-.19	.53	.37	.35	-.24	.53	.37	.26	.28	.51	.24	-.36	.01
λ	2.54	1.15	1.03	1.01	2.50	1.21	1.18	1.04	1.00	2.63	1.21	1.08	1.02	2.97	1.48	1.21	1.16	2.30	1.18	1.07	1.06

Table B.6--Varimax rotated principal axes factor patterns of items measuring voluntary participation in various types of groups

	All persons				Men					Women				Blacks				Whites			
	I	II	III	IV	I	II	III	IV	V	I	II	III	IV	I	II	III	IV	I	II	III	IV
a. Youth organizations--such as Little League coach, scouting, etc.	-.03	-.70	-.02	.27	.78	.11	-.06	.18	.00	.27	-.07	.26	.53	-.04	-.80	-.05	.01	-.05	-.72	-.17	-.22
b. Union, farm, trade, or professional association	.12	.04	-.66	.15	.07	.03	-.10	.06	.84	.06	.07	.76	-.07	.69	.17	.07	.10	.50	-.25	.01	.11
c. Political clubs or organizations	-.29	-.06	-.20	.30	-.06	.43	.33	.22	.02	.39	.12	.21	.11	-.05	-.31	-.26	-.53	.48	.08	-.05	-.29
d. Church or church-related activities (not counting worship services)	-.01	-.62	-.17	-.05	.60	-.03	.25	-.09	.02	.01	.01	.11	.67	.03	-.56	.02	-.07	.21	-.47	.03	-.02
e. Community centers, neighborhood improvement, or social-action associations or groups	-.48	-.51	.01	.17	.48	.59	.04	.06	.09	.69	.06	.14	.15	.01	-.50	-.09	-.65	-.00	-.41	-.56	-.09
f. Organized volunteer work--such as in a hospital	-.70	-.09	.08	.09	.08	.69	-.21	-.01	.11	.48	.43	.04	-.03	.15	.07	-.01	-.69	.00	.04	-.74	-.02
g. A social, hobby, garden, or card playing group	-.13	.03	-.04	.73	-.07	.11	.04	.82	.09	.24	.17	-.12	.54	.63	-.38	-.04	-.17	.15	.02	-.04	-.70
h. Sport teams or sport clubs	.01	-.25	-.09	.69	.42	.02	.08	.61	.04	.54	.11	-.18	.28	.21	-.49	.18	-.32	.02	-.37	-.03	-.66
i. A literary, art, discussion, music, or study group	-.27	.08	-.46	.24	-.07	.10	.40	.13	.54	.13	.53	-.07	.30	.69	-.05	.01	-.20	.54	.04	-.09	-.21
j. Educational organizations--such as PTA or an academic group	-.11	-.26	-.61	-.12	.14	.06	.56	-.13	.32	.07	.16	.65	.26	.06	-.09	.34	-.52	.53	-.37	-.09	.23
k. Service organizations--such as Rotary, Junior Chamber of Commerce, Veterans, etc.	-.50	.25	-.18	.12	-.19	.59	.10	.14	-.08	-.37	.67	.05	.27	.04	.07	.75	-.10	.26	.34	-.39	-.26
l. A student government, newspaper, journal, or annual staff	-.25	-.15	-.42	.05	.12	.04	.75	.18	-.15	.17	.57	.19	-.06	-.05	-.53	.62	.05	.52	-.03	-.13	-.08
m. Another voluntary group in which I participate	-.62	-.15	-.22	-.04	.24	.54	.23	-.07	.09	.31	.60	.14	-.13	.10	.05	.37	-.64	.26	-.07	-.62	.03
N	1848				872					967				204				1461			

Table B.7--Initial principal axes factor patterns of items measuring consumerism

	All persons	Men		Women		Blacks		Whites
		I	II	I	II	I	II	
a. I compare prices and label information of similar products or services	.57	.57	.42	.60	-.32	.57	.56	.56
b. I return merchandise that is unsatisfactory to the store where I bought it	.61	.62	.37	.60	-.11	.58	.50	.60
c. I rely on brands or companies I know well even if they cost more	.22	.30	.55	.12	.94	.46	.13	.16
d. I follow leads in articles from Consumer Reports, Changing Times, or other such magazines	.64	.66	-.11	.61	.16	.74	-.11	.62
e. I check a company's reputation with the Better Business Bureau or consumer protection agency before agreeing to an expensive service or repair	.65	.61	.54	.68	.08	.64	-.46	.65
f. I write to the manufacturer about the quality of the product if I'm unsatisfied	.66	.65	.37	.67	.01	.57	-.52	.67
λ	2.01	2.03	1.05	2.01	1.02	2.15	1.07	1.96
N	1888	894		994		229		1470

Table B.8--Varimax rotated principal axes factor patterns of items measuring consumerism

	All persons	Men		Women		Blacks		Whites
		I	II	I	II	I	II	
a. I compare prices and label information of similar products or services	.57	.19	.68	.62	-.27	.03	.80	.56
b. I return merchandise that is unsatisfactory to the store where I bought it	.60	.25	.67	.61	-.06	.08	.76	.60
c. I rely on brands or companies I know well even if they cost more	.22	-.10	.62	.05	.94	.25	.41	.16
d. I follow leads in articles from Consumer Reports, Changing Times, or other such magazines	.64	.59	.33	.60	.21	.62	.43	.62
e. I check a company's reputation with the Better Business Bureau or consumer protection agency before agreeing to an expensive service or repair	.63	.81	-.05	.67	.13	.77	.11	.65
f. I write to the manufacturer about the quality of the product if I'm unsatisfied	.66	.74	.11	.67	.04	.77	.01	.67
N	1888	894		994		229		1470

Table B.9--Initial principal axes factor patterns of items measuring "Quality of Life"

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. Having enough money--to buy sufficient food, to dress as needed, and to have adequate shelter	.63	.30	.64	.23	.63	.39	.68	.22	.64	.29
b. Having healthful living patterns--eating a balanced diet, getting plenty of exercise and regular sleep	.73	.10	.71	.02	.75	.19	.82	.08	.73	.09
c. Living where the air is clean, the water is fresh, and where people really try to protect their natural resources	.71	.11	.71	.06	.70	.14	.74	.15	.70	.13
d. Having time and money for some of the "extras" of life--vacations, hobby time and equipment, entertainment opportunities	.65	.44	.65	.43	.65	.42	.66	.47	.65	.43
e. Feeling free--not tied down by many personal or work responsibilities	.41	.60	.39	.67	.45	.49	.56	.53	.38	.61
f. Feeling personally safe from violence, injustice, or fraud	.70	.18	.70	.23	.71	.16	.74	.15	.69	.20
g. Having a chance to do the kind of work I really want to do in life	.72	-.16	.69	-.10	.74	-.23	.77	-.22	.70	-.14
h. Having sustained personal relationships--loving and being loved	.67	-.31	.67	-.22	.67	-.36	.77	-.30	.66	-.33
i. Living a life of honest and moral integrity--doing what I think is right to do	.68	-.44	.65	-.42	.71	-.43	.74	-.45	.67	.42
j. Having the opportunity to read, think and discuss important questions about life values, etc.	.71	-.32	.68	-.35	.73	-.32	.72	.30	.71	-.31
k. Having the chance to get a good education	.65	-.24	.61	-.29	.69	-.21	.68	.15	.65	-.27
λ	4.87	1.17	4.68	1.18	5.09	1.17	5.68	1.07	4.75	1.17
N	1881		894		987		230		1462	

Table B.10--Varimax rotated principal axes factor patterns of items measuring "Quality of Life"

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. Having enough money--to buy sufficient food, to dress as needed, and to have adequate shelter	.63	.30	.37	.57	.22	.70	.38	.61	.32	.62
b. Having healthful living patterns--eating a balanced diet, getting plenty of exercise and regular sleep	.73	.10	.55	.45	.45	.63	.57	.59	.51	.52
c. Living where the air is clean, the water is fresh, and where people really try to protect their natural resources	.71	.11	.53	.48	.44	.56	.47	.59	.47	.54
d. Having time and money for some of the "extras" of life--vacations, hobby time and equipment, entertainment opportunities	.65	.44	.26	.74	.22	.75	.20	.79	.24	.74
e. Feeling free--not tied down by many personal or work responsibilities	.41	.60	-.10	.77	.02	.67	.08	.77	-.09	.72
f. Feeling personally safe from violence, injustice, or fraud	.70	.18	.41	.61	.43	.58	.47	.60	.42	.59
g. Having a chance to do the kind of work I really want to do in life	.72	-.16	.61	.34	.71	.31	.73	.33	.63	.32
h. Having sustained personal relationships--loving and being loved	.67	-.31	.67	.24	.74	.16	.77	.26	.72	.16
i. Living a life of honest and moral integrity--doing what I think is right to do	.68	-.44	.78	.06	.82	.13	.85	.13	.78	.09
j. Having the opportunity to read, think and discuss important questions about life values, etc.	.71	-.32	.75	.14	.76	.23	.75	.24	.75	.20
k. Having the chance to get a good education	.65	-.24	.66	.14	.66	.29	.62	.32	.67	.20
N	1884		894		987		220		1462	

Table B.11 Initial principal axes factor patterns of items measuring political participation

	All persons		Men		Women		Blacks			Whites	
	I	II	I	II	I	II	I	II	III	I	II
a. When you talked with your friends, did you ever talk about public problems--that is, what's happening in the country or in your community?	.62	-.52	.62	-.54	.61	.49	.70	-.45	.21	.61	-.53
b. Did you ever talk about public problems with any of the following people?											
1. Your family	.58	-.53	.58	-.56	.59	.51	.60	-.51	.19	.58	-.53
2. People where you work	.58	-.55	.57	-.59	.58	.52	.70	-.36	.16	.56	-.57
3. Community leaders, such as club or church leaders	.61	-.13	.61	-.07	.61	.21	.64	-.10	-.13	.60	-.14
c. Did you ever talk about public problems with elected government officials or people in politics, such as Democratic or Republican leaders?	.59	.05	.62	.08	.56	.01	.50	-.02	-.67	.58	.06
d. Did you ever talk to people to try to get them to vote for or against a candidate?	.65	.10	.64	.37	.66	-.19	.47	-.01	-.58	.67	.11
e. Did you ever give any money or buy tickets to help someone who was trying to win an election?	.61	.44	.64	.42	.57	-.46	.60	.55	.11	.62	.42
f. Did you ever go to any political meetings, rallies, barbecues, fish fries, or things like that in connection with an election?	.69	.42	.70	.38	.68	-.46	.62	.49	.08	.69	.40
g. Did you ever do any work to help a candidate in his campaign?	.68	.45	.70	.43	.66	-.49	.57	.56	.30	.68	.45
h. Did you ever hold an office in a political party or get elected to a government job?	.22	.33	.31	.45	.13	-.10	.09	-.15	.33	.23	.38
λ	3.55	1.57	3.69	1.67	3.41	1.53	3.32	1.47	1.12	3.55	1.60

Table B.12--Varimax rotated principal axes factor patterns of items measuring political participation

	All persons		Men		Women		Blacks			Whites	
	I	II	I	II	I	II	I	II	III	I	II
a. When you talked with your friends, did you ever talk about public problems--that is, what's happening in the country or in your community?	.09	-.80	.11	.82	.10	.78	.84	.14	.10	.09	-.80
b. Did you ever talk about public problems with any of the following people?											
1. Your family	.05	-.79	.07	.80	.07	.78	.80	-.02	-.08	.07	-.79
2. People where you work	.03	-.80	.04	.82	.05	.78	.77	-.19	-.14	.02	-.80
3. Community leaders, such as club or church leaders	.35	-.52	.41	.46	.29	.58	.47	-.28	-.38	.34	-.51
c. Did you ever talk about public problems with elected government officials or people in politics, such as Democratic or Republican leaders?	.47	-.37	.52	.34	.40	.40	.15	-.11	-.81	.47	-.35
d. Did you ever talk to people to try to get them to vote for or against a candidate?	.54	-.37	.51	.39	.60	.32	.15	-.13	-.72	.57	-.38
e. Did you ever give any money or buy tickets to help someone who was trying to win an election?	.74	-.11	.76	.11	.74	.07	.09	-.80	-.14	.73	-.11
f. Did you ever go to any political meetings, rallies, barbecues, fish fries, or things like that in connection with an election?	.79	-.17	.77	.17	.81	.14	.14	-.77	-.18	.78	-.17
g. Did you ever do any work to help a candidate in his campaign?	.80	-.14	.81	.13	.81	.11	.12	-.85	.04	.81	-.14
h. Did you ever hold an office in a political party or get elected to a government job?	.38	.08	.53	.14	.16	.01	.27	-.03	.27	.42	.12
N	1863		884		979		211			1458	

Table B.13--Initial principal axes factor patterns of items measuring self-insight

	All persons		Men		Women			Blacks		Whites		
	I	II	I	II	I	II	III	I	II	I	II	III
a. Inactive/energetic	-.64	.34	.66	.33	-.64	.31	-.35	-.65	.46	-.63	.31	-.26
b. Understanding of others/not understanding of others	.48	.47	-.45	.48	.51	.44	-.47	.61	.40	.46	.51	-.41
c. Do not think far ahead/think ahead	-.59	.52	.64	.50	-.55	.52	.07	-.50	.61	-.59	.53	.02
d. Self-concerned/other-concerned	-.51	.39	.47	.38	-.55	.46	.34	-.38	.60	-.53	.30	.58
e. Enthusiastic/unenthusiastic	.50	.47	-.45	.53	.54	.42	.39	.45	.40	.53	.46	.30
f. Practical/impractical	.57	.28	-.55	.29	.57	.31	-.10	.58	.47	.56	.22	.12
g. Vague thinking/clear thinking	-.66	.47	.68	.45	-.66	.46	.50	-.66	.54	-.65	.47	.03
h. Personally warm/personally cold	.48	.55	-.40	.58	.54	.49	-.32	.64	.43	.46	.57	.31
I. Ambitious/unambitious	.56	.26	-.55	.34	.56	.24	.52	.56	.39	.57	.20	.50
λ	2.80	1.66	2.70	1.76	2.94	1.55	1.00	2.89	2.11	2.80	1.58	1.02

Table B.14--Varimax rotated principal axes factor patterns of items measuring self-insight

	All persons		Men		Women			Blacks		Whites		
	I	II	I	II	I	II	III	I	II	I	II	III
a. Inactive/energetic	.70	-.19	.72	-.17	.05	-.59	-.52	-.20	.77	-.61	-.08	-.43
b. Understanding of others/not understanding of others	.03	.68	-.03	.66	.82	.08	.03	.72	-.09	.04	-.78	.15
c. Do not think far ahead/think ahead	-.78	-.03	.81	-.03	-.02	-.75	-.08	.01	.79	-.78	-.05	-.13
d. Self-concerned/other-concerned	-.64	-.06	.61	-.01	-.22	-.76	.12	.10	.71	-.69	.43	.24
e. Enthusiastic/unenthusiastic	.04	.69	.00	.69	.32	-.01	.72	.61	.02	-.01	-.33	.69
f. Practical/impractical	.22	.59	-.24	.58	.56	.16	.32	.75	-.02	.21	-.31	.49
g. Vague thinking/clear thinking	-.80	-.11	.81	-.09	-.11	-.78	-.17	-.15	.84	-.79	.02	-.17
h. Personally warm/personally cold	-.03	.72	.07	.70	.77	.05	.19	.76	-.08	-.03	-.76	.24
i. Ambitious/unambitious	.23	.57	-.20	.61	.14	.11	.78	.67	-.06	.16	-.05	.77
N	1801		858		943			218		1412		

Table B.15--Initial principal axes factor patterns of items measuring reasons for choosing a graduate school

	All persons			Men			Women			Blacks		Whites		
	I	II	III	I	II	III	I	II	III	I	II	I	II	III
a. Cost of attending	.36	.65	-.09	.42	.60	-.04	.29	.70	-.13	.37	.42	.31	.64	-.19
b. Availability of financial aid	.52	.18	-.52	.54	.42	-.49	.52	.39	-.51	.66	.49	.48	.34	-.62
c. Recommendation of undergraduate professor	.76	-.00	-.19	.77	.02	-.10	.75	-.01	-.25	.74	.19	.76	.05	-.19
d. Presence of a particular professor at the institution	.66	.01	-.26	.64	.14	-.31	.69	-.09	-.19	.60	.45	.66	.05	-.15
e. Quality of a particular department	.73	-.42	.18	.70	-.50	.11	.77	-.35	.21	.80	-.30	.76	-.36	.19
f. Reputation of the institution	.69	-.44	.25	.68	-.53	.19	.70	-.36	.28	.82	-.32	.73	-.35	.27
g. Location	.25	.32	.77	.22	.21	.74	.25	.38	.74	.61	-.61	.11	.51	.63
h. Library facilities	.66	-.01	.07	.67	-.03	.15	.64	-.02	.02	.71	.17	.64	-.01	.28
i. Proximity to spouse's school/work	.20	.55	.39	.18	.54	.51	.22	.52	.31	.46	-.28	.06	.63	.32
λ	2.96	1.35	1.19	2.94	1.42	1.22	2.99	1.32	1.15	3.87	1.35	2.86	1.42	1.28
N	559			283			276			82		433		

Table B.16--Varimax rotated principal axes factor patterns of items measuring reasons for choosing a graduate school

	All persons			Men			Women			Blacks		Whites		
	I	II	III	I	II	III	I	II	III	I	II	I	II	III
a. Cost of attending	-.06	-.62	.42	-.05	-.63	.37	-.05	-.66	.39	-.02	.57	-.03	-.79	-.62
b. Availability of financial aid	.42	-.82	-.05	.06	-.84	-.08	.23	.80	-.05	.16	.38	.09	.10	-.85
c. Recommendation of undergraduate professor	.59	-.51	.01	.56	-.53	.07	.65	-.44	-.06	.41	.64	.58	.03	-.53
d. Presence of a particular professor at the institution	.49	-.52	-.06	.34	-.63	-.06	.64	-.34	-.07	.14	.74	.50	.01	-.55
e. Quality of a particular department	.86	-.03	.02	.86	-.07	-.04	.86	.06	.10	.80	.32	.85	.10	-.05
f. Reputation of the institution	.86	.05	.05	.88	-.00	.09	.82	.14	.12	.82	.31	.85	.04	.02
g. Location	.20	.15	.80	.19	.13	.77	.15	.12	.85	.87	-.04	.12	-.80	.11
h. Library facilities	.57	-.29	.18	.56	-.31	.23	.58	-.24	.12	.41	.60	.65	-.22	-.11
i. Proximity to spouse's school/work	-.03	-.18	.68	-.08	.17	.74	.02	-.23	.60	.53	.10	-.07	-.68	-.14
N	559			283			276			82		433		

Table B.17--Initial principal axes factor patterns of items measuring sex-role orientations

	All persons		Men			Women		Blacks			Whites	
	I	II	I	II	III	I	II	I	II	III	I	II
a. A working mother of pre-school children can be just as good a mother as the women who doesn't work	-.49	.02	-.37	.14	.31	-.54	-.06	-.30	.20	.80	-.50	-.05
b. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	.74	.16	.73	.15	.05	.74	.16	.75	-.18	.00	.74	.17
c. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	-.41	.52	-.28	.57	.56	-.47	.52	.13	.71	-.20	-.44	.46
d. Most women are just not interested in having big and important jobs	.42	.43	.43	.38	.08	.41	.45	.42	.27	-.13	.44	.43
e. Many qualified women can't get good jobs, men with the same skills have much less trouble	-.25	.53	-.19	.53	-.61	-.27	.52	.28	.49	.07	.30	.52
f. Most women are happiest when they are making a home and caring for children	.68	.31	.66	.29	.10	.70	.31	.73	-.07	.17	.70	.30
g. High school counselors should urge young women to train for jobs which are now held mainly by men	-.54	.50	-.48	.51	.25	.57	.52	-.05	.78	.32	-.56	.46
h. It is more important for a wife to help her husband than to have a career herself	.75	.18	.76	.17	-.05	.74	.16	.73	.01	.21	.75	.16
i. Schools teach women to want the less important jobs	-.28	.54	-.31	.50	-.47	.27	.56	.04	.54	-.47	-.10	.58
j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	.71	.19	.67	.17	.05	.71	.22	.73	-.11	.07	.72	.17
λ	3.10	1.47	2.75	1.44	1.09	3.25	1.52	2.53	1.80	1.11	3.25	1.38

Note: 1. About 46 percent of variance is accounted for by the two-factor solution.

2. Alpha factor analysis has a similar two-factor solution.

Table B.18--Varimax rotated principal axes factor patterns of items measuring sex-role orientations

	All persons		Men			Women		Blacks			Whites	
	I	II	I	II	III	I	II	I	II	III	I	II
a. A working mother of pre-school children can be just as good a mother as the women who doesn't work	-.43	.24	-.22	-.44	.05	-.51	.19	-.13	.07	.87	-.47	.19
b. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	.74	-.19	.72	.18	.12	.74	-.19	.75	.04	-.18	.73	-.20
c. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	-.14	.65	.09	-.84	-.02	-.18	.67	-.01	-.74	-.00	-.17	.61
d. Most women are just not interested in having big and important jobs	.57	.20	.56	-.11	-.08	.57	.21	.35	-.37	-.12	.59	.17
e. Many qualified women can't get good jobs, men with the same skills have much less trouble	.02	.59	.01	.01	-.83	-.01	.59	.22	-.50	.16	-.02	.60
f. Most women are happiest when they are making a home and caring for children	.75	-.03	.72	.03	.05	.77	-.05	.75	-.03	.01	.76	-.06
g. High school counselors should urge young women to train for jobs which are now held mainly by men	-.26	.70	-.15	-.68	-.25	-.27	.72	-.08	-.64	.54	-.28	.67
h. It is more important for a wife to help her husband than to have a career herself	.75	-.17	.74	.25	.04	.74	-.19	.75	-.09	.07	.74	-.21
i. Schools teach women to want the less important jobs	-.01	.61	-.09	-.12	-.74	.02	.62	-.14	-.64	-.29	.00	.65
j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	.72	-.14	.67	.15	.09	.74	-.13	.74	-.01	-.09	.72	-.18
N	1831		865			966		212			1435	

Note: 1. About 46 percent of variance is accounted for by the two factor solution.

2. Alpha factor analysis has a similar two-factor solution.

Table B.19--Initial principal axes factor patterns of items measuring feelings about the high school respondent graduated from

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. School should have placed more emphasis on basic academic subjects	.43	.27	.42	.37	.45	.13	.71	.16	.36	.18
b. School did not offer enough practical work experience	.78	.24	.78	.18	.78	.28	.77	.14	.78	.27
c. School should have placed more emphasis on voc-tech programs	.68	.37	.70	.30	.66	.43	.64	.40	.68	.39
d. School provided me with counseling that helped me find employment	-.37	.79	-.33	.81	-.38	.77	-.29	.78	-.39	.78
e. School should have given more attention to my needs as an individual	.64	.12	.61	.15	.67	.09	.72	.05	.62	.16
f. School provided me with counseling that helped me continue my education	-.47	.72	-.46	.74	-.47	.70	-.38	.75	-.49	.70
λ	2.04	1.41	1.97	1.49	2.07	1.37	2.26	1.37	1.99	1.38
N	1838		876		962		187		1152	

Table B.20--Varimax rotated principal axes factor patterns of items measuring feelings about the high school respondent graduated from

	All persons		Men		Women		Blacks		Whites	
	I	II	I	II	I	II	I	II	I	II
a. School should have placed more emphasis on basic academic subjects	.50	.05	.54	.16	.46	-.09	.72	-.08	.41	.00
b. School did not offer enough practical work experience	.81	-.13	.79	-.16	.83	-.08	.78	-.12	.82	-.11
c. School should have placed more emphasis on voc-tech programs	.77	.03	.76	-.02	.78	.11	.74	.17	.79	.04
d. School provided me with counseling that helped me find employment	.01	.87	.04	.88	-.02	.86	-.02	.83	.01	.87
e. School should have given more attention to my needs as an individual	.63	-.17	.62	-.11	.65	-.20	.69	-.19	.63	-.13
f. School provided me with counseling that helped me continue my education	-.11	.85	-.11	.86	-.13	.84	-.11	.83	-.13	.85
N	1838		876		962		187		1152	

Appendix C

DETERMINATION OF RESPONDENTS' COMPOSITE SCORES

Composite scores for NLS respondents were computed by taking the arithmetic average of the component item responses answered by the participant. (Scale reversals were first performed; see below.) For example, Composite #2, Satisfaction with Education and Training: Quality of Physical and Recreational Facilities, has as components the responses to parts f, g, h, and k to Third Follow-up Question #50. For each respondent who answered all of these items, the composite was computed from TFU #50 responses (after scale reversal) as

$$\frac{f + g + h + k}{4} .$$

In cases where at least one but not all component responses were missing, the composite was based upon those which were answered. Thus, for Composite #2, if a respondent answered all items except item g, the computation became

$$\frac{f + h + k}{3} .$$

In cases where all component items were missing, the composite score was recorded as missing.

This sort of computation is easily accomplished using statistical program packages or programming languages. RTI developed the composites with SAS, which allows the creation of logical values based on the result of an arithmetic equation. Examples of program statements used to develop composites are illustrated again with Composite #2:

```
1.  NUM2 = NOT(TQ50F = 0) + NOT(TQ50G = 0) + NOT(TQ50H = 0) +
    NOT(TQ50K) = 0); (Increment 1 for each non-zero component)
2.  IF NUM2 = 0 THEN NUM2 = .; (A period is used in SAS to signify a
    missing value)
3.  S2 = (TQ50F + TQ50G + TQ50H + TQ50K) / NUM2;
```

Prior to the execution of these statements, each component item was set to zero if it was missing, through statements such as

```
IF TQ50F > 90 THEN TQ50F = 0;*
```

---

*In reading the input files, edit flags were ignored, having the effect, for example, in Question TQ107, of setting values 101, 102, ..., 201, 202, ..., to 1, 2, ...

Statement 1 sets the logical value of each term on the right to 1 if the statement is true and to 0 if false. Therefore, if a component was not equal to zero, the value of the term was set to 1. Statement 1 thus computes the number of nonmissing responses to be used for the denominator of the average. Statement 2 sets this number to missing if equal to zero; this causes the SAS program to set the value of S2 to missing if there were no responses, as missing values propagate when they appear in arithmetic statements. Setting the value of components to zero if missing allows computation of the average of only nonmissing components by Statement 3.

A breakdown of the number of respondents answering all or less than all items per composite is given in Table C.1. It was considered reasonable to compute composites on cases where some components were missing, even down to a single nonmissing item, (especially given the low incidence of "partial" data) since the remaining items still provide a good estimate of the composite. Typically, if a response was given to one item within a question, a response was usually given to all items in that question.

Many items in the NLS questionnaires are phrased such that greater values indicate not more but less of an attribute. For example, item set 1 (pg. A.1) contains components wherein lower values indicate greater satisfaction with education and training; similarly for item set 2. Item sets 3 and 4 (pg. A.2) are three-point scale response choices where 3 indicates least activity while 1 indicates greatest activity. In order that the value of composite scores might permit directly an intuitive interpretation, the composite scores actually developed were based on a reversal of scoring direction. This was accomplished by taking the average response, as described above, but then subtracting this average from a constant equal to the range of permissible responses plus one. Thus, in the computation of Composite #2, program statement 3 (above) actually became

```
3.   S2 = 6 - (TQ50F + TQ50G + TQ50H + TQ50K) / NUM2);
```

Note that this is equivalent to reversing the scoring direction on each component and then averaging. When these NLS composites are used for analysis, the user should remember that this was done. If, for some reason, the user desires that the scoring direction be identical to that of the questionnaire items, she or he may subtract composite scores from the same constant to recover the original scoring direction. The constants are summarized as follows:

Table C.1--Number of components potentially available and number actually used for composite score determination

Composite	Number of Items Available	Number of Items Used														
		0[2]	1	2	3	4	5	6	7	8	9	10	11	12	13	%part[3]
1	5	823	36	31	63	304	18,835									2.25
2	4	891	27	30	250	18,894										1.62
3	11	745	22	12	10	12	23	21	29	77	181	753	13,653			8.35
4	13	721	104	63	54	11	9	10	3	7	4	32	157	968	17,949	9.92
5	5	1,780	14	19	23	148	19,214									1.33
6	3	1,479	24	114	19,255											0.72
7	2	1,460	58	19,354												0.30
8	6	1,497	11	9	9	32	266	19,048								1.72
9	5	1,517	6	8	36	265	19,040									1.65
10	5	670	6	7	15	177	19,217									1.07
11	4	659	20	236	335	18,842										3.14
12	5	986	9	7	3	43	1,165									5.32
13	2	994	55	1,164												4.73
14	2	987	13	1,213												1.07

[1]Numbers in the table are numbers of respondents (Total N = 22,652).

[2]Zero components used means these respondents did not answer any of the component items, and were assigned a missing value as the composite score. Instrument nonresponse and other legitimate skips have been excluded from these figures (20,439 for composites 12-14; 7,114 for composite 3; 1,780 for composites 5-9, and 2,560 for the remainder).

[3]Percentage of composite scores based on "partial" or less than complete data, ignoring missing data. A composite score is based on partial data when computed with a number of components greater than zero but less than the number of possible components. For example, 2.25% of the non-missing values for composite 1 are based on less than complete data (36+31+63+304/36+31+63+304+18835).

Composite Score	Constant
1, 2, 8, 9	6
3, 12, 13, 14	5
4, 5, 6, 7, 10, 11	4

Alternatively, we can note that it is permissible to treat certain aggregate statistics directly, without costly recoding. Thus, mean scores may be reversed by subtracting the group mean from the appropriate constant, standard deviations being unaffected; intercorrelations where reversal of one of the pair of items would have been desirable are simply given opposite sizes.

Appendix D

DIFFERENCES IN COMPOSITE SCORES AMONG GROUPS BY SEX, RACE, SOCIOECONOMIC BACKGROUND (SES), AND ACADEMIC ABILITY

NOTE: Cases for Composites 1 and 2 were included only if respondents elsewhere indicated they were in college at the time.

Table D.1--Differences in composite score means between men and women

	Men	Women	
A. Satisfaction with education and training			
S1. Quality of academic program			
Mean	3.84	3.95	F=50.01
Standard deviation	0.77	0.78	p<.0001
Number	5229	4865	
S2. Extracurricular opportunities and facilities			
Mean	4.19	4.18	F=0.0
Standard deviation	0.63	0.65	p<.950
Number	5229	4865	
B. Satisfaction with work			
S3. Satisfaction in General			
Mean	2.91	2.92	F=1.80
Standard deviation	0.58	0.58	p<.181
Number	7775	6926	
C. Voluntary participation			
S4. General activism			
Mean	1.27	1.23	F=97.90
Standard deviation	0.31	0.28	p<.0001
Number	9359	9883	
D. Consumerism			
S5. General consumerism			
Mean	1.83	1.84	F=6.23
Standard deviation	0.38	0.38	p<.013
Number	9396	10007	
S6. High consumer activism			
Mean	1.44	1.41	F=15.75
Standard deviation	0.45	0.45	p<.0001
Number	9385	9993	
S7. Moderate consumer activism			
Mean	2.41	2.48	F=116.14
Standard deviation	0.49	0.46	p<.0001
Number	9393	10004	
E. Quality of life			
S8. Freedom from constraints			
Mean	3.65	3.66	F=.26
Standard deviation	0.84	0.83	p<.61
Number	9366	9994	
S9. Personal growth			
Mean	4.13	4.22	F=77.08
Standard deviation	0.77	0.74	p<.0001
Number	9359	9981	

Table D.1 (continued)

	Men	Women	
F. Political participation			
S10. Participation in election campaign			
Mean	1.32	1.27	F=62.46
Standard deviation	0.39	0.36	p<.0001
Number	9381	9912	
S11. Discussion of public problems			
Mean	2.07	2.02	F=56.41
Standard deviation	0.45	0.45	p<.0001
Number	9386	9917	
G. Factors in choosing a graduate school			
S12. Academic quality			
Mean	2.44	2.46	F=.40
Standard deviation	0.69	0.71	p<.53
Number	639	578	
S13. Location			
Mean	2.37	2.51	F=9.64
Standard deviation	0.74	0.78	p<.002
Number	636	573	
S14. Cost of attending			
Mean	2.45	2.51	F=2.23
Standard deviation	0.82	0.87	p<.14
Number	639	577	

Table D.2--Differences in composite score means among racial groups

	Hispanic	Black	White	
A. Satisfaction with education and training				
S1. Quality of academic program				
Mean	3.88	3.87	3.91	F=9.13
Standard deviation	0.78	0.74	0.78	p<.0001
Number	363	1246	8090	
S2. Extracurricular opportunities and facilities				
Mean	4.23	4.16	4.19	F=3.77
Standard deviation	0.66	0.66	0.64	p<.003
Number	363	1246	8090	
B. Satisfaction with work				
S3. Satisfaction in general				
Mean	2.95	2.80	2.94	F=32.79
Standard deviation	0.57	0.58	0.57	p<.0001
Number	598	1885	11520	
C. Voluntary participation				
S4. General activism				
Mean	1.20	1.29	1.25	F=28.43
Standard deviation	0.30	0.35	0.29	p<.0001
Number	786	2516	15002	
D. Consumerism				
S5. General consumerism				
Mean	1.79	1.82	1.84	F=7.82
Standard deviation	0.38	0.38	0.38	p<.0001
Number	836	2607	15032	
S6. High consumer activism				
Mean	1.41	1.43	1.43	F=.43
Standard deviation	0.45	0.45	0.45	p<.7+
Number	836	2596	15019	
S7. Moderate consumer activism				
Mean	2.36	2.40	2.46	F=31.10
Standard deviation	0.49	0.49	0.46	p<.0001
Number	834	2606	15029	
E. Quality of life				
S8. Freedom from constraints				
Mean	3.66	3.79	3.64	F=26.02
Standard deviation	0.87	0.85	0.82	p<.0001
Number	837	2608	14990	
S9. Personal growth				
Mean	4.10	4.22	4.18	F=8.75
Standard deviation	0.83	0.79	0.74	p<.0001
Number	834	2604	14979	

Table D.2 (continued)

	Hispanic	Black	White	
F. Political participation				
S10. Participation in election campaign				
Mean	1.31	1.33	1.29	F=7.98
Standard deviation	0.41	0.39	0.37	p<.0001
Number	793	2545	15016	
S11. Discussion of public problems				
Mean	2.01	2.07	2.04	F=13.70
Standard deviation	0.47	0.49	0.44	p<.0001
Number	792	2548	15024	
G. Factors in choosing a graduate school				
S12. Academic quality				
Mean	2.39	2.38	2.42	F=2.86
Standard deviation	0.71	0.73	0.70	p<.036
Number	46	172	948	
S13. Location				
Mean	2.35	2.49	2.43	F=.49
Standard deviation	0.61	0.82	0.76	p<.70
Number	44	172	941	
S14. Cost of attending				
Mean	2.68	2.86	2.40	F=16.37
Standard deviation	0.71	0.88	0.83	p<.0001
Number	44	175	946	

Table D.3--Differences in composite score means among SES groups

	High	Medium	Low	
A. Satisfaction with education and training				
S1. Quality of academic program				
Mean	3.93	3.88	3.88	F=5.22
Standard deviation	0.79	0.79	0.75	p<.006
Number	3554	4608	1937	
S2. Extracurricular opportunities and facilities				
Mean	4.24	4.17	4.14	F=23.72
Standard	0.64	0.64	0.65	p<.0001
Number	3552	4600	1929	
B. Satisfaction with				
S3. Satisfaction in				
Mean	2.93	2.93	2.88	F=13.07
Standard deviation	0.61	0.57	0.55	p<.0001
Number	3322	7207	4055	
C. Voluntary participation				
S4. General in general				
Mean	1.29	1.25	1.21	F=86.45
Standard deviation	0.30	0.30	0.28	p<.0001
Number	4505	9208	5364	
D. Consumerism				
S5. General consumerism				
Mean	1.87	1.83	1.79	F=61.76
Standard deviation	0.38	0.38	0.37	p<.0001
Number	4546	9240	5464	
S6. High consumer activism				
Mean	1.46	1.43	1.39	F=33.26
Standard deviation	0.46	0.46	0.43	p<.0001
Number	4543	9231	5452	
S7. Moderate consumer activism				
Mean	2.48	2.47	2.39	F=59.10
Standard deviation	0.46	0.47	0.49	p<.0001
Number	4546	9238	5461	
E. Quality of life				
S8. Freedom from constraints				
Mean	3.58	3.67	3.69	F=26.49
Standard deviation	0.83	0.82	0.85	p<.0001
Number	4527	9219	5460	
S9. Personal growth				
Mean	4.23	4.18	4.13	F=21.10
Standard deviation	0.72	0.74	0.80	p<.0001
Number	4523	9212	5452	

Table D.3 (continued)

	High	Medium	Low	
F. Political participation				
S10. Participation in election campaign				
Mean	1.36	1.28	1.26	F=103.01
Standard deviation	0.42	0.37	0.35	p<.0001
Number	4499	9235	5395	
S11. Discussion of public problems				
Mean	2.11	2.04	2.00	F=83.74
Standard deviation	0.45	0.44	0.46	p<.0001
Number	4502	9238	5399	
G. Factors in choosing a graduate school				
S12. Academic quality				
Mean	2.50	2.39	2.47	F=3.13
Standard deviation	0.67	0.71	0.76	p<.044
Number	524	477	214	
S13. Location				
Mean	2.41	2.44	2.50	F=0.99
Standard deviation	0.75	0.80	0.73	p<.38
Number	521	474	213	
S14. Cost of attending				
Mean	2.35	2.49	2.76	F=18.23
Standard deviation	0.81	0.85	0.86	p<.0001
Number	521	479	215	

Table D.4--Differences in composite score means among academic ability groups

	High	Medium	Low	
A. Satisfaction with education and training				
S1. Quality of academic program				
Mean	3.94	3.89	3.85	F=7.51
Standard deviation	0.79	0.78	0.75	p<.001
Number	2891	3175	1210	
S2. Extracurricular opportunities and facilities				
Mean	4.21	4.17	4.16	F=2.83
Standard deviation	0.63	0.64	0.63	p<.06
Number	2891	3175	1210	
B. Satisfaction with work				
S3. Satisfaction in general				
Mean	2.90	2.94	2.91	F=4.64
Standard deviation	0.59	0.57	0.57	p<.01
Number	2729	4786	2948	
C. Voluntary participation				
S4. General activism				
Mean	1.28	1.24	1.23	F=41.16
Standard deviation	0.28	0.29	0.30	p<.0001
Number	3696	6130	3826	
D. Consumerism				
S5. General consumerism				
Mean	1.87	1.84	1.80	F=36.15
Standard deviation	0.38	0.38	0.38	p<.0001
Number	3771	6152	3878	
S6. High consumer activism				
Mean	1.44	1.42	1.42	F=4.41
Standard deviation	0.46	0.45	0.45	p<.02
Number	3770	6148	3867	
S7. Moderate consumer activism				
Mean	2.51	2.46	2.37	F=91.44
Standard deviation	0.44	0.47	0.50	p<.0001
Number	3771	6151	3875	
E. Quality of life				
S8. Freedom from constraints				
Mean	3.45	3.70	3.76	F=155.68
Standard deviation	0.82	0.81	0.85	p<.0001
Number	3767	6133	3871	
S9. Personal growth				
Mean	4.16	4.22	4.11	F=25.87
Standard deviation	0.73	0.73	0.82	p<.0001
Number	3767	6129	3865	

Table D.4 (continued)

	High	Medium	Low	
F. Political participation				
S10. Participation in election campaign				
Mean	1.33	1.29	1.27	F=22.41
Standard deviation	0.39	0.37	0.37	p<.0001
Number	3694	6132	3853	
S11. Discussion of public problems				
Mean	2.11	2.04	1.98	F=76.71
Standard deviation	0.44	0.44	0.46	p<.0001
Number	3693	6135	3857	
G. Factors in choosing a graduate school				
S12. Academic quality				
Mean	2.51	2.39	2.43	F=2.39
Standard deviation	0.66	0.73	0.80	p<.09
Number	463	230	127	
S13. Location				
Mean	2.37	2.49	2.54	F=3.07
Standard deviation	0.74	0.83	0.83	p<.05
Number	463	228	127	
S14. Cost of attending				
Mean	2.42	2.46	2.76	F=8.32
Standard deviation	0.83	0.84	0.88	p<.001
Number	464	227	128	

Appendix E

ITEM SETS WITH POSSIBLE MEASUREMENT ARTIFACTS

A. Statement of Problem

Of the NLS questionnaire items which were analyzed, three [(self-insight (#7), sex-role orientation (#9) and feelings about high school (#10)] embodied between-scale differences in valence. For example, responses to items 7a, c, d, and g are directly related to positive feelings about the self, having the negative pole at the left (low end of the scale) while the remaining items of question 7 have the negative pole at the right. Items 9a, c, e, g, and i are inversely scored relative to sex-role liberalism or non-traditionalism, while the other items' scores reflect the opposite. Feelings about high school items 10d and f are similarly opposite to the remaining items, the wording of the statements implying satisfaction only for these two items.

Factor analyses conducted on these item sets indicate that interpretation of factor scores may not be advisable; factor patterns indicate that meaningful component item interrelationships are confounded with possible scale response biases resulting from the fixed attributes of the questionnaire items discussed above. In each instance, items with a "positive" scoring direction tend to load heavily on one factor, while the other items load on a separate factor.

B. Factor Analyses

Factor analyses of the self-insight items (descriptive statistics in Table E.1) yield a two-factor solution for the total group. The first would appear to reflect interpersonal concern, and the second, cognitive organization. This two-factor pattern is generalizable to men and blacks. The three-factor solution for women and whites suggests that the "interpersonal concern" may be separated into two domains: enthusiasm and understanding of others (see Table E.2 and Appendix B, Tables B-13 and B-14). Considering the two-factor solution, the first factor is influenced most strongly by the following items:

1. Understanding of others/not understanding of others
2. Enthusiastic/unenthusiastic
3. Practical/impractical
4. Personally warm/personally cold
5. Ambitious/unambitious

Table E.1--Means, standard deviations, and item correlations of items measuring self-insight (N=1801)

Item	Mean	S.D.	Item Correlations[1]							
			a	b	c	d	e	f	g	h
a. Inactive/energetic	5.61	1.78								
b. Understanding of others/not understanding of others	2.31	1.36	-09							
c. Do not think far ahead/think ahead	5.84	1.90	40	-05						
d. Self-concerned/other-concerned	5.61	1.74	31	-16	36					
e. Enthusiastic/unenthusiastic	3.18	1.76	-25	28	-06	-04				
f. Practical/impractical	2.54	1.39	-15	30	-20	-10	26			
g. Vague thinking/clear thinking	5.98	1.64	46	-13	50	40	-09	-26		
h. Personally warm/personally cold	2.27	1.46	-09	40	-03	-15	35	27	-07	
i. Ambitious/unambitious	2.65	1.52	-28	20	-17	-06	33	32	-20	24

[1] Decimal points are removed.

Table E.2--Varimax rotated alpha factor patterns of items measuring self-insight

	All persons		Men		Women			Blacks		Whites		
	I	II	I	II	I	II	III	I	II	I	II	III
a. Inactive/energetic	-.20	.59	-.18	.60	-.01	.52	-.42	-.22	.70	-.01	.50	-.35
b. Understanding of others/not understanding of others	.53	-.07	.53	-.07	.67	-.09	.11	.63	-.08	.60	-.06	.15
c. Do not think far ahead/think ahead	-.05	.70	-.05	.76	-.05	.61	-.10	.00	.68	.02	.67	-.16
d. Self-concerned/other concerned	-.09	.48	-.05	.44	-.17	.62	.03	.06	.56	-.30	.58	.12
e. Enthusiastic/unenthusiastic	.57	-.06	.57	-.02	.31	-.04	.56	.49	-.00	.35	-.04	.52
f. Practical/impractical	.49	-.19	.47	-.19	.41	-.17	.30	.65	-.02	.29	-.20	.34
g. Vague thinking/clear thinking	-.13	.76	-.11	.77	-.11	.71	-.17	-.14	.81	-.03	.71	-.20
h. Personally warm/personally cold	.61	-.02	.57	.01	.62	-.07	.22	.70	-.08	.62	-.01	.21
i. Ambitious/unambitious	.47	-.19	.51	-.16	.19	-.14	.57	.58	-.07	.16	-.17	.58

Eigenvalues based on initial (unrotated) loadings were as follows:

All persons: 6.23, 2.77
Men: 5.92, 3.08
Women: 5.70, 2.30, 1.00
Blacks: 5.46, 3.54
Whites: 5.59, 2.36, 1.05

The second factor is controlled by four items:

1. Inactive/energetic
2. Do not think far ahead/think ahead
3. Self-concerned/other concerned
4. Vague thinking/clear thinking

Internal consistency coefficients were computed to be .68, and .73, respectively, for these two potential composite variables. In the third follow-up survey, participants were asked to express how they feel about sex roles. The ten items included were selected from 19 items, previously used by the National Center for the Study of Politics at Ann Arbor or other national studies measuring sex-role attitudes, based on the analysis results of field test data from 426 respondents. These ten items were subject to factor analyses again, using the third follow-up survey data. A two-factor solution was obtained for the combined sample (Table E.3). Separate analyses for men and women indicate that three factors could be retained for men (see Tables E.4 and E.5). Results of analyses for blacks and whites are basically the same, except that the item on working mothers defines an additional factor for blacks (see also Appendix B, Tables B-17 and B-18).

Based upon the rotated two-factor solution, two potential composite variables may be developed. Their component items are as follows for factor I:

1. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family.
2. Most women are just not interested in having big and important jobs.
3. Most women are happiest when they are making a home and caring for the children.
4. It is more important for a wife to help her husband than to have a career herself.
5. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family.

and for factor II:

1. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.).
2. Many qualified women can't get good jobs; men with the same skills have much less trouble.
3. High school counselors should use young women to train for jobs which are now held mainly by men.
4. Schools teach women to want the less important jobs.

Table E.3--Means, standard deviations, item correlations, and varimax rotated alpha factor pattern of measuring sex-role orientations (N=1,831)

Item	Mean		Item correlations*									Factor pattern	
			a	b	c	d	e	f	g	h	i	I	II
a. A working mother of pre-school children can be just as good a mother as the woman who doesn't work	2.63	.90										-.34	-.20
b. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	2.65	.81	-33									.67	.23
c. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	2.74	.65	17	-18								-.15	-.44
d. Most women are just not interested in having big and important jobs	2.91	.67	-11	24	00							.42	-.07
e. Many qualified women can't get good jobs; men with the same skills have much less trouble	2.24	.70	08	-10	12	01						-.02	-.39
f. Most women are happiest when they are making a home and caring for children	2.66	.69	-21	46	-13	34	-02					.68	.06
g. High school counselors should urge young women to train for jobs which are now held mainly by men	2.51	.73	23	-24	42	-11	25	-21				-.25	-.64
h. It is more important for a wife to help her husband than to have a career herself	2.68	.77	-26	51	-20	26	-09	47	-24			.67	.21
i. Schools teach women to want the less important jobs	2.80	.71	05	-15	18	03	23	-11	23	-13		-.01	-.44
j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	2.77	.86	-26	47	-15	24	-12	42	-26	49	-05	.63	.17

* Decimal points are removed.

Table E.4--Initial alpha factor pattern of items measuring sex-role orientations

Item	All persons		Men			Women		Blacks			Whites	
	I	II	I	II	III	I	II	I	II	III	I	II
a. A working mother of pre-school children can be just as good a mother as the woman who doesn't work	-.39	.03	-.27	.06	-.07	-.43	.08	-.24	.13	-.47	-.40	-.05
b. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	.68	-.20	.68	.12	-.03	.68	-.19	.60	-.36	.01	.67	.19
c. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	-.37	-.27	-.28	.50	-.56	-.43	-.33	.28	.52	.11	-.39	.22
d. Most women are just not interested in having big and important jobs	.10	-.30	.33	.22	-.04	.31	-.31	.38	.08	.03	.33	.28
e. Many qualified women can't get good jobs; men with the same skills have much less trouble	-.24	-.31	-.19	.48	.41	-.25	-.29	.31	.24	-.05	-.27	.27
f. Most women are happiest when they are making a home and caring for children	.59	-.34	.59	.25	-.10	.63	-.34	.62	-.23	-.15	.63	.34
g. High school counselors should urge young women to train for jobs which are now held mainly by men	-.58	-.38	-.43	.30	-.13	-.59	-.44	.16	.72	-.44	-.58	.34
h. It is more important for a wife to help her husband than to have a career herself	.67	-.22	.70	.18	.03	.68	-.17	.59	-.19	-.16	.69	.19
i. Schools teach women to want the less important jobs	-.27	-.35	-.25	.32	.19	-.24	-.37	.14	.36	.17	-.29	.39
j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	.62	-.22	.56	.14	-.04	.65	-.24	.57	-.28	-.05	.64	.20
λ	7.05	2.95	6.41	2.16	1.24	7.00	1.00	5.34	3.32	1.34	7.45	2.55
N	1831		865			966		212			1435	

Table E.5--Varimax rotated alpha factor pattern of items measuring sex-role orientations

Item	All persons		Men			Women		Blacks			Whites	
	I	II	I	II	III	I	II	I	II	III	I	II
a. A working mother of pre-school children can be just as good a mother as the woman who doesn't work	-.34	.20	-.21	.06	.19	-.40	.17	.14	.09	.51	-.36	.19
b. It is usually better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family	.67	-.23	.65	-.13	-.17	.67	-.23	.67	-.05	-.20	.66	-.24
c. Young men should be encouraged to take jobs that are usually filled by women (nursing, secretarial work, etc.)	-.14	.44	.04	.05	.79	-.17	.51	.01	.60	.00	-.18	.41
d. Most women are just not interested in having big and important jobs	.42	.07	.39	.03	.03	.43	.09	.29	.25	.06	.43	.04
e. Many qualified women can't get good jobs; men with the same skills have much less trouble	-.02	.39	.01	.65	.03	-.05	.39	.19	.34	.06	-.06	.38
f. Most women are happiest when they are making a home and caring for children	.68	-.06	.64	-.06	-.01	.71	-.07	.67	.04	-.02	.71	-.10
g. High school counselors should urge young women to train for jobs which are now held mainly by men	-.25	.64	-.23	.24	.43	-.25	.70	.03	.62	.59	-.27	.62
h. It is more important for a wife to help her husband than to have a career herself	.67	-.21	.69	-.06	-.19	.65	-.24	.64	.07	.01	.67	-.25
i. Schools teach women to want the less important jobs	-.01	.44	-.09	.41	.13	.00	.44	-.06	.41	-.09	-.01	.49
j. Men should be given first chance at most jobs because they have the primary responsibility for providing for a family	.63	-.17	.56	-.09	-.11	.67	-.17	.63	.00	-.12	.64	-.22

Internal consistency coefficients are .76 and .56, respectively, for these item sets.

There are six items in set #10, measuring feelings about high school. Their response categories range from "agree strongly" (assigned a value of 1) to "disagree strongly" (assigned a value of 4). If a respondent provided the answer of "does not apply" (a value of 5), the response was given a missing value and was not included in the analysis. Descriptive statistics and the rotated factor pattern are included in Table E.6. Factor analysis provided a two-factor solution, separate analyses for men and women, and for blacks and whites, revealing a similar factor structure (see also Appendix B, Tables B-19 and B-20).

Based on the factor solution, two composite variables could be defined. Their components are shown in Table E.6 to include items a, b, c, and e (factor I) and d and f (factor II). Internal consistency coefficients are .62 and .67, respectively.

C. Problems with Factor Interpretation

We might be tempted to interpret school satisfaction factors as "curricular programs" and "counseling services," and sex role orientation factors as "traditional values" and "attitudes toward work." Interpretation of the self-insight factors is less straightforward. Yet, for all three sets, any attempt at interpretation is confounded by the response bias problems defined earlier.

It might be thought that reanalysis with the direction of some items arithmetically reversed (cf. Appendix C) would be desired, but it can be shown both empirically and mathematically that this will result only in sign changes, within factors, for either the reversed or the nonreversed items. Yet, while the sign of a loading may be important when composite scores are computed, the selection of composite components by factor analysis is governed only by the absolute magnitude of the loadings. Artifacts which may result from question wording or response scale definition are fully controlled by the fixed questionnaire formats, which statistical manipulation cannot resolve.

The psychological mechanisms which may produce response bias in questionnaire responding are several. They may have to do with presentation of the self, such as yea-saying, giving socially desirable responses, and so forth. We suspect that the response biases which may be operating in the present instances are controlled by other, more basic or less "cognitive" processes

Table E.6--Means, standard deviations, item correlations, and varimax rotated alpha factor pattern of items measuring feelings about the high school respondent graduated from (N=1838)

Item	Mean[1]	S.D.	Item correlations[2]					Factor pattern[3]	
			a	b	c	d	e	I	II
a. School should have placed more emphasis on basic academic subjects	2.21	.88						.32	-.00
b. School did not offer enough practical work experience	2.03	.85	25					.79	-.10
c. School should have placed more emphasis on voc-tech programs	2.03	.85	16	52				.59	-.00
d. School provided me with counseling that helped me find employment	3.03	.98	01	-11	01			-.00	.74
e. School should have given more attention to my needs as an individual	2.13	.86	18	35	30	-10		.50	-.13
f. School provided me with counseling that helped me continue my education	2.73	1.01	-05	-17	-08	50	-16	-.13	.68

[1] Lower scores indicate a higher degree of agreement.

[2] Decimal points are removed.

[3] The factor pattern is applicable to men, women, blacks, and whites. Eigenvalues associated with the initial matrix were λ 4.12 and λ = 1.88.

having to do with ways of agreeing or disagreeing with positive versus negatively phrased items, and, in the case of self-insight, with a tendency not to use the full eight point scale (specifically, an inclination away from circling the rightmost points).

D. Possibilities for Composite Variable Construction

Two approaches could be taken to develop composite variables thus confounded by question formats. One way is to ignore possible response bias artifacts and base composites on the two-factor solutions obtained, according to the methods we have established. The other approach would be to include all components loading on either factor in a single composite, reversing the direction of scoring for items loading high on one of the factors. This approach accepts the possiblility of response bias and, in effect, is based on the face validity of considering all question components as conceptually related.

A comparison of subjects' composite scores (cf. Appendix D) was performed on composites developed by methods described in Appendix C; results of these analyses are summarized in Table E.7, which reveals three composites for each item set. The first two composites in each set reflect "approach 1", which is based on the factor analysis solution, while the third reflects "approach 2", which includes all components comprising the other two composites. To make the scoring meaningful, and to facilitate comparison, the direction of scoring was reversed (see Appendix C) for items comprising the second composite score in each group; the same items were reversed in computing the continued score. Thus, higher scores indicate, for the three groups, respectively, more positive self-image, greater "sex-role liberalism", and more positive feelings about high school.

Inspection of Table E.7 reveals that all the composites, except for 3c, do discriminate well between groups of subjects variously categorized. Most "a" means are clearly different than "b" means; the combined means, as would be expected, lie somewhere between the two.

Neither approach was considered satisfactory enough to develop composite scores; it should remain for the individual researcher to determine which approach should be taken, or if a composite score should be used at all. Researchers may construct composites according to procedures explained in this Appendix and in Appendix C, but are urged to use caution in developing these

Table E.7--Means and significance levels of mean difference

	Composite	Sex			Ability				SES				Race			
		M	F	p	Hi	Med	Lo	p	Hi	Med	Lo	p	Black	White	Hispanic	p
	(Self-insight)															
	E[a] = 4.5															
1a.	SQ153a, c, d, g	5.78	5.73	*	6.04	5.86	5.30	***	5.97	5.79	5.51	***	5.44	5.83	5.51	***
1b.	SQ153b, e, f, h, i	6.28	6.50	***	6.36	6.44	6.36	***	6.43	6.40	6.34	***	6.54	6.38	6.38	***
1c.	Combined	6.05	6.15	***	6.22	6.18	5.88	***	6.22	6.13	5.96	***	6.04	6.13	5.99	***
	(Sex-role orientation)															
	E = 2.5															
2a.	TQ150 b, d, f, h, j	2.62	2.84	***	2.92	2.74	2.57	***	2.88	2.71	2.65	***	2.77	2.73	2.70	**
2b.	TQ150 c, e, g, i	2.38	2.49	***	2.57	2.40	2.36	***	2.53	2.41	2.40	***	2.46	2.43	2.47	***
2c.	Combined	2.51	2.68	***	2.76	2.59	2.48	***	2.72	2.58	2.54	***	2.63	2.59	2.59	***
	(Feelings about h.s.)[b]															
	E = 2.5															
3a.	TQ157 a, b, c, e	2.13	2.14	ns	2.23	2.13	2.06	***	2.19	2.14	2.09	***	2.01	2.16	2.06	***
3b.	TQ157 d, f	2.21	2.27	***	2.15	2.18	2.36	***	2.16	2.31	2.34	***	2.47	2.19	2.37	***
3c.	Combined	2.15	2.18	ns	2.20	2.15	2.15	***	2.18	2.16	2.17	ns	2.17	2.17	2.16	ns

NOTE: Scoring reversed for items comprising composites 1b, 2b, and 3b, and for these items in the combined scores. See text for explanation.

[a] E = Expected value of mean, based on a range of 1-8 for self-insight responses and 1-4 for the other sets.

[b] A large number of missing responses characterized "feelings about high school" components.

* : $.001 < p < .01$

** : $.0001 < p < .001$

***: $p < .0001$

ns : $p > .01$, not significant

composites. The fact that these scores discriminate between respondent groupings is not a sufficient condition for confidence in their validity. Interpretation of results presented in Table E.7 is likewise left to the reader; we caution that the mean scale values are necessarily affected by any response biases, and differences between "a" and "b" composites may be due to these biases.