5

SCIENTIA
WNNR · CSIR

SPECIAL REPORT

Rewse

PERS 188   AN EXPLORATORY ATTEMPT TO CONSTRUCT MOTIVATION
                SCALES FOR APPLICATION TO PRELITERATES: A CRITICAL
                EVALUATION

NATIONAL INSTITUTE FOR PERSONNEL RESEARCH
COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

AN EXPLORATORY ATTEMPT TO CONSTRUCT MOTIVATION

SCALES FOR APPLICATION TO PRELITERATES: A

CRITICAL EVALUATION

by

I.M. KENDALL

NATIONAL INSTITUTE FOR PERSONNEL RESEARCH

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

Johannesburg.

March, 1973.

ACKNOWLEDGEMENTS

SUMMARY

This report describes what is perhaps the first published attempt to construct motivation scales, based on psychometric principles and procedures, for use among a heterogeneous African population. Earlier investigations which used the open-ended questionnaire as the principle means of data collection were criticized for their subjectivity and inability to demonstrate acceptable degrees of construct validity. The hope was expressed that through adopting a more rigorous psychometric approach to the conceptualization and measurement of African needs and aspirations, much of the speculation and bias that is built into the more traditional questionnaire approaches could be obviated.

For purposes of the present study, motivation was conceptualized very broadly in terms of Maslow's need hierarchy. One hundred items were written in agree/disagree format and were administered to 290 adult Pedi-speaking males in the form of a directed interview. The responses were subjected to a series of factor- and item-analyses in order to determine the construct validity of the items. An important technique of analysis was the rotation of a 5-factor matrix to a target in which the manner of loading of all the items had been partially specified in terms of a-priori Maslowian assumptions. The measure of goodness-of-fit of the rotated matrix to the target was acceptable, and the results of target factor analysis were therefore adopted as the basis for deriving five separate need scales. The five factors were interpreted as the physiological, safety, group-belongingness, esteem and self-esteem needs, but with certain reservations, for it was apparent that the item content describing each of the five factors was highly specific. The five factor scales were subjected to iterative item analysis in order to maximize reliabilities. Coefficients of internal consistency (Kuder-Richardson 20) ranging from 0,56 (for self-esteem) to 0,80 (esteem) were established.

Group need profiles were drawn up and examined in an attempt to demonstrate a possible hierarchical patterning of need-expression. It was concluded that a trend was observable which followed predictions that could be made in accordance with Maslow's theoretical ranking of his five need classes.

The five needs were also studied from the point of view of their nature of interaction with certain selected biographical variables. Use was made of the NIPR's newly-developed Automatic Interaction Detection procedure which is in essence a progressive application of one-way analysis of variance. The physiological need was chiefly associated with age and sample. Expression of this need was strongest among elderly urban individuals. Safety needs were high for a group of rural, school-educated individuals who had commenced employment in typically rural job categories such as mining and agriculture. Group belongingness was not significantly related to any of the biographical measures while esteem needs (in the sense of status or esteem in the eyes of others) were strongest among rural, educated subjects. Finally, the expression of "self-esteem" was most pronounced among high-school educated individuals.

Critical evaluation of the study led the author to conclude that while there is a promising future for the implementation of psychometric techniques in the field of African motivational assessment, the present study did little justice to demonstrating the feasibility of a full psychometric attack on the problem. In particular, over-reliance on factor analytic techniques, coupled with the poor quality of item that was written for the questionnaire, were cited as major weaknesses in the experimental design. It was recommended that for future research purposes:

(i)   a thorough conceptualization of Maslow-type needs as expressed by members of an African society should be undertaken;

(ii)   owing to the conclusion that the simple agree/disagree item format engenders response set, boredom and superficiality of response, different formats should be considered; and

(iii)   factor analysis should be de-emphasised as a technique for establishing the construct validity of questionnaire items.

TABLE OF CONTENTS   Page

LIST OF FIGURES   Page

INTRODUCTION AND SCOPE OF THE STUDY

African motivation is currently of particular interest and importance to the social scientist and industrialist alike. It is surprising therefore that little attention has been given to the development of measurement scales according to stringent psychometric principles and procedures.

The literature concerning the assessment of African motives and needs is meagre. Previous studies have tended to rely to a greater or lesser extent on the non-directed, open-ended questionnaire as the principle means of data collection (cf. Sherwood[1], 1956; Biesheuvel[2], 1958; Glass[3], 1960; Cortis[4], 1962). Glass[5] (1962), in her discussion on methodological problems encountered in the field of African social psychological research, has described the semi-structured interview as a tool best serving the researcher's purposes in exploratory investigations. Writing in 1962, she further added that the phase of exploratory experimentation in field techniques should be regarded as nearing an end. It is strange therefore, that ten years later, studies of basic theoretical importance are still being conducted in the classic "sociological" manner of semi-structured interviewing. In particular, the International Biological Programme studies relating to the patterning of Maslow-type needs in African populations (Hall and Harris[6], 1970; Hall[7], 1971) have continued to adopt the open-ended questionnaire as the most important means of assessing individual and group needs.

The depth of the material revealed in such interviews reflects the degree of skill with which the investigator has been able to handle the situation. To this one might add that an especial problem in African interviewing is that of typically being unable to elicit little more than a superficial response from the interviewee, in which perfunctory reference is made to but a narrow range of tangible needs and goals that are within the subject's immediate span of awareness. It is speculated that pre-literates might in fact experience very real

difficulties in being able to respond in depth to open-ended questions,
reasons for which may well be cultural. In this connection, Munro[8]
(1969) is sceptical of the use of any form of verbal report as a means
of assessing African motivation. He feels that verbal report of
inner needs in a tribal-orientated population is hindered by the poor
level of development of introspective skills. Furthermore, it may
well be that traditional African culture does not foster the same
degree of preoccupation with self-analysis nor encourage the same
latitude of open verbal communication of the individual's (as opposed
to society's) needs as do western cultures. This speculation is
supported by Baran's[9] (1971) finding that self-awareness is poorly
developed among rural Zulus as opposed to their urban counterparts,
among whom a greater sense of separate identity seems evident.

Possibly then, in the non-directed interview situation, given that
little skill has been developed in identifying and in verbalising ego-
needs and aspirations, the African respondent is often hard put to
respond in terms of anything but the obvious tangible goals and
aspirations which he knows are associated with gainful employment.
Whether the respondent himself is truly committed to attaining such
goals is not readily deducible from his responses. There is little
cause for surprise therefore that the overall description of the needs
of Bantu-speaking people is one of little variability from the one
individual to the other and from one period of investigation to the
next (cf. Sherman[10], 1956; Vorster[11], 1970). It is submitted
that such a picture is largely a function of over-dependence on the
semi-structured interview in previous research projects.

The present study addresses itself directly to the need to pursue a
more rigorous approach to motivational assessment, in order to over-
come the numerous methodological shortcomings attendant upon the
largely uncritical acceptance of the open-ended questionnaire in
African motivational research. The most serious of these short-
comings relate to the issues of construct validity, reliability of
measurement and subjectivity of response interpretation, areas in

which a determined psychometric attack could go a long way towards
obviating much of the speculation and bias that is unwittingly built
into existing research tools. It is hoped too that the more structured
approach to interviewing offered by psychometric techniques might
assist the illiterate interviewee in communicating his need states
in concrete terms through requiring him to expend a minimum of
effort in responding to the interview items.

In the present study motivation has been conceptualised in terms of
Maslow's[12] (1970) theory concerning the hierarchical development
of needs in man. This point of departure was considered the most
appropriate for three reasons:

(i)   Maslow's interpretation of needs is in terms of processes
        that are believed to be relatively more basic than the super-
        ficial conscious desires dictated by cultural circumstances.
        It therefore lays greater claim to being more universally
        valid across cultures than any other theory of social moti-
        vation yet put forward.

(ii)   The theory represents a dynamic, development-orientated
        approach to human behaviour.

(iii)   Maslow's theory has already been considered in previous
        African motivational research conducted under the sponsor-
        ship of the International Biological Programme. (Hall and
        Harris[13], 1970 and Hall[14], 1971, op.cit.)

The essence of Maslow's[15] theory is that man, in his motivational
development, first strives to satisfy a wide range of 'deficiency
needs' before he can proceed to the plane of developing his 'inner
growth needs' whereby he attempts to become actualized in terms of
his full potential and capabilities. The deficiency and growth
needs are regarded as falling along a hierarchical continuum and are
grouped by Maslow into five broad classes termed 'need-types'.
These classes are arranged from lowest to highest with the assumption
that effective motivation of the individual's behaviour through setting

goals associated with any one stage in development would presuppose a moderate degree of satisfaction of the individual's needs lower down in the hierarchy.

The lowest class of needs in the deficiency range of the hierarchy has been termed the physiological. These needs express preoccupation with physical survival and encompass concern for the bare minimum in food, shelter and clothing. Satisfaction of these needs next enables the individual to concern himself with matters of basic safety. The safety needs are defined in terms of the individual's desire to structure his environment as an orderly, predictable and hence secure entity. Third in the hierarchy come the group-belongingness needs which mark the true beginnings of social motivation. These needs develop into the desire to establish, maintain and restore positive affect relationships with others and are therefore accompanied by the desire for a recognized and accepted place in a social group. Fear of rejection by others with concomitant emphasis on conformity to group standards is a feature of behaviour at this level of motivation. Following closely on the group-belongingness needs are those of the esteem variety. The individual at this level seeks respect and esteem in the eyes of others, and then later turns his attention to commanding self-esteem and self-respect. The four above-mentioned need-classes all fall within the 'deficiency range'. Once the individual has attained a moderate degree of satisfaction in terms of all these needs, he can then proceed, according to theory, to the final stage of self-actualization.

The aim of the present study is to develop a set of items capable of tapping the above five need-states as outlined by Maslow. The scope of the study is entirely exploratory, its principle objective being to demonstrate that motivational states in preliterates are amenable to psychometric study. Future research will dedicate itself more specifically to the precise conceptualization of African needs and motives once it has been established that psychometric principles may be followed to full advantage.

EXPERIMENTAL PROCEDURE

Sample

A sample of 290 adult Pedi-speaking males was drawn from three sources representing rural, urban and migrant elements in South Africa's Bantu population.

The rural sample (N : 84) was drawn from the Pedi homeland known as Sekhukhuneland. A further 101 subjects were drawn from an urban textile factory to represent the settled urban element in the Republic's African population while 105 subjects were selected from an urban, industrial regional of the Transvaal. These represent the 'migrant' workers. Both the rural and 'migrant' subjects were selected from samples that had been studied in the International Biological Programme.

Of the total sample, 41% were illiterate, 36% had had between one and seven years' formal schooling while a further 22% had had in addition at least eight years of education.

The Questionnaire

The questionnaire consists of 100 items listed in Appendix A.

The items were designed by a panel of 4 Bantu and 2 European research workers at the NIPR. In drawing up the items panel members were asked to bear in mind that specific items be written as concretely as possible; that reference to nebulous or abstract concepts be avoided; that each item tap no more than one of Maslow's need-categories at a time; and that statements should convey the same meaning to urban and rural, educated and illiterate Pedi-speakers alike.

One hundred items were selected and translated into Pedi. Twelve of the items were repeated at the end of the questionnaire in order to derive a measure of response consistency.

Procedure

The questionnaires were administered to the sample in the form of
a structured, closed-ended interview. In the rural and migrant
samples little emphasis was place on establishing rapport with the
subject as S had already been interviewed by means of a semi-
structured schedule designed to elicit both biographical and moti-
vational-type data (Hall[16], 1971). In the case of the urban sample,
rapport was established by means of a standard pre-interview patter.
It was explained that the interviewer (E) was a research worker and
that he was visiting the factory in order to find out why people work.
Assurances were given that the survey was not sponsored by Manage-
ment, that the interview data would be treated confidentially, that
Management would not gain access to records of S's responses and
that S's job would in no way be affected by the outcome of the
interview. Neither the subject's name nor his company number
was recorded. A brief biographical interview was first conducted
after which E instructed S as follows:

> "Now I want you to listen very carefully to the
> questions I am going to ask you. I would like you
> to agree or disagree with each statement. You
> should think carefully about each question/state-
> ment, but don't feel afraid to tell me what you
> feel is the correct answer. Remember that no one
> is going to know what you have said. Shall we
> begin?"

Items were read out to S by African interviewers in the order appearing
in Appendix A. E noted S's response by placing a tick in the relevant
column on the questionnaire sheet (the columns being 'yes', 'no'
and 'don't know'). Don't know responses were entered only where
E felt that S genuinely could not respond in terms of the required
alternatives. After reading out all the items, E proceeded immediately
with a set of 12 repeat items included as a check on S's consistency
of response. Questionnaire administration time was between 20 and

25 minutes on average, with the rural sample taking a little longer than the urban sample to complete the questionnaire.

At the rural test centre interviews were conducted in the open. For the interviewing of the migrant sample, hospital offices were used while the factory workers were interviewed on the job. Noise-level at the factory was high for ideal interviewing conditions but it did not seem to affect communication between E and S adversely while at the same time it served to prevent neighbouring workers from eavesdropping. All interviews were conducted in Pedi, the items being pre-translated into the vernacular.

Editing the interview Schedules

Before commencing with the analysis of the data each S's question-naire booklet was treated in the following manner: for each indivi-dual a note was made of the total number of 'yes', 'no' and 'don't know' responses he had made during the interview. His consistency score was then calculated. As already mentioned the consistency score was derived by means of a 12 item scale by awarding S one point for each correct correspondence between interview and re-interview response to each item on the scale. Analysis of the frequency distribution of consistency scores indicated a high degree of response consistency. The lowest observed score was 7 out of 12 with well over 85% of the sample obtaining values of 10 or higher. In addition to calculating a consistency score for each individual, correlations were established between the interview and reinterview measures for each of the 12 items. Table 1 summarizes the findings. The average interview-reinterview correlation was calculated to be 0,64. This calculation was based on averaging out the z-transformations corresponding to each individual interview-reinterview point-biserial correlation and then transforming the average z-value to its r-equivalent.

TABLE 1

CORRELATIONS BETWEEN INTERVIEW-REINTERVIEW ITEMS
ON THE RESPONSE CONSISTENCY SCALE

Item	Percentage YES response		r_{ab}
	Interview (a)	Re-interview (b)	
5	46,6	53,4	0,43
6	92,8	94,5	0,46
7	63,1	64,8	0,66
8	49,0	46,6	0,66
15	28,3	31,7	0,66
25	81,0	84,1	0,78
32	42,4	44,5	0,72
34	60,3	57,9	0,67
40	48,3	40,0	0,65
51	94,5	91,4	0,68
54	71,7	80,3	0,58
66	74,8	75,9	0,51

Overall positive response bias was evident with 60% of all items across all subjects being responded to in the affirmative. The total number of 'don't know' responses across all subjects was well below 1%, with 63% of the entire sample not having responded at all in this manner. Analysis of the frequency of 'don't know' responses per item indicated that there was very little concentration of such responses on particular items. 'Don't know' responses appeared to be well-distributed over nearly the full item range. Nevertheless these responses constituted a 'nuisance factor' in the analysis; thus it was decided to recode any 'don't know' responses in either a positive or negative direction. This was done by first dividing the sample into two groups:

Group A were those 63% who not once responded to any item in terms of 'don't know'.

Group B comprised the remaining 37% of the sample whose schedules were to be edited.

All the questionnaire items for subjects in Group A were then inter-correlated and a list was drawn up of the particular items in the questionnaire with which each of the 100 items correlated the highest. All 'don't know' responses in Group B were recoded on the basis of this list.   To take an example, should a subject in Group B have said 'don't know' to item 5, that subject's response to item 72 was noted (because item 5 correlated highest of all with item 72 for Group A subjects) and should his response have been 'no', item 5 was recoded as 'no' and should it have been 'yes' it was recoded accordingly.

In this manner all 'don't know' responses were recoded.   It was felt that the error introduced into the data by such editing was fully justified considering the relative infrequence of occurrence of 'don't know' responses.

STATISTICAL ANALYSIS AND RESULTS

For purposes of statistical analysis, all YES responses were assigned a value of 1 and all NO responses a value of 0.

Establishing the construct validity of the items

Inspection of the percentage 'yes' response to each item (see Appendix A) suggested that up to 19 items could be discarded on the basis of response bias and poor discriminability between individuals.   The majority of these items had been responded to in the positive by well over 80% of the total sample.   The remaining items were then con-sidered for inclusion in the analysis by conferring with the interviewers who had conducted the field work.   Items which had presented diffi-culties in the field (through poor phrasing, or erroneous translation) were discarded thereby reducing the item pool to 70.   The 30 items

that were eliminated are indicated by means of asterisks in Appendix A.

The remaining 70 items were intercorrelated (yielding phi-coefficients) following which the resultant matrix was subjected to a Jöreskog[17] (1963) factor analysis. Five factors were extracted and rotated to simple structure by means of the direct quartimin technique. The rotated factor matrix together with the matrix of factor intercorrelations has been reproduced in Table 4.

A target factor analysis was next performed, using a special computer sub-routine in use at the NIPR (Browne and Kristof[18], 1969). A target matrix was prepared in which factor loading expectations in terms of a five factor solution (oblique) corresponding to Maslow's five need classes were specified. Table 2 summarises the items that were predicted to load substantially on each of the five factors on a-priori grounds. The target matrix was prepared in such a manner that a value of 9 denoted the expectancy that a particular item would load substantially on a particular factor in either a positive or negative manner. Beyond this prediction the precise degree or strength of loading remained unspecified. A value of zero on the other hand represented a fully specified prediction and denoted the expectancy that factor loadings would be zero or would fluctuate around zero to a negligible degree. The unrotated 5-factor matrix obtained following Jöreskog's procedure (in the analysis mentioned above) was then rotated to simple structure using the partially specified matrix as a target. The resultant rotated factor matrix is summarized in Table 3. Comparisons should be made with the oblique matrix in Table 4 wherein rotation of the same factor matrix in the absence of a target was performed. Note that for both analyses certain of the items had been recoded before intercorrelations were calculated. The recoding entailed simply reversing the values 0 or 1 ('no' or 'yes') in cases where it was felt that a negative response indicated a positive need (e.g. in item 1 the subject who says that he does not get enough food to eat each day was awarded a value of 1 for that

TABLE 2

ITEMS EXPECTED TO LOAD SUBSTANTIALLY ON THE FIVE FACTORS

A: PHYSIOLOGICAL

1. Do you get enough food to eat each day?   NO

10. Are you able to feed your family properly each day?   NO

14. Do you worry about whether you will have enough food to eat each night?   YES

42. Do you buy clothes at a jumble sale?   YES

49. Would you willingly accept cast-off clothes?   YES

58. Do you sometimes buy the cheapest clothes you can find?   YES

59. Can you raise enough money to meet an emergency such as death in the family?   NO

60. If you were given R50,00 would you spend it only on food and clothing?   YES

61. Do you borrow money from other people?   YES

65. I do not care what sort of a job I have so long as I get enough money.   AGREES

83. Is buying food for today more important to you than saving money for tomorrow?   YES

98. I always worry that my family might starve.   YES

B: SAFETY

2. Would you willingly work in a well-paying job even if you knew that people were often dismissed there?   NO

5. All jobs are the same, so it is no use leaving one job to go to another.   AGREES

15. If you went out to look for work are you confident that you could get employment quite easily?   NO

32 People who always change their jobs are foolish.   AGREES

38. Do you give most of your money to your relatives?   YES

41. Would you be content to do what you are now doing for the rest of your life?   YES

44. Would you willingly do a heavy job to improve your salary?   YES

48. Do you have an insurance policy?   YES

62. Do you think your home is safe at night when you are not there?   NO

63. Do you agree that so long as the pay is good, it does not matter whether the place you work at is noisy and dirty?   YES

69. Is your house big enough for your family?   YES   (Table cont.)

TABLE 2 (cont.) 12.

B: SAFETY (cont.)

71.   Would you be satisfied to stay in the house where you now live for the rest of your life?   YES

78.   I would be percently content with life if I could say exactly what is going to happen to me tomorrow.   YES

91.   All that matters in life is to know what is going to happen the next day.   YES

C: GROUP-BELONGINGNESS

3.   Do you spend a lot of money on beautiful clothes?   YES

7.   Would you like to be better dressed than your friends?   YES

16.   Would you prefer to work on your own rather than together with other people?   NO

26.   I worry about whether my work companions accept me as a friend.   YES

35.   I often feel that I am nothing here on earth.   YES

40.   Is it important to have as many friends as possible?   YES

47.   I go to work in order to be with other people.   YES

52.   Many friends are better than just a few close friends.   YES

70.   I would only work at a place where there are people whom I already know.   YES

88.   Are you saving money to marry?   YES

89.   Would your friends laugh at you if you did not wear nice clothes?   YES

93.   Do you spend a lot of money when you are together with your friends?   YES

94.   When you work with other people does it interest you to find out what sort of jobs they are doing?   YES

97.   Are you afraid that your friends talk about you behind your back?   YES

D: ESTEEM

3.   Do you spend a lot of money on beautiful clothes?   YES

17.   Would you like to own a car?   YES

18.   Do you intend buying a car in the future?   YES

20.   Would you like to be in charge of other people at work?   YES

25.   Would you like to be able to go away on holiday to other places?   YES

TABLE 2 (cont.)

D: ESTEEM (cont.)

27. Do you always hope that one day you will be rich? YES

31. Are you one of the organisers of the activities in your community? YES

34. Is it important for people to buy lots of clothes? YES

39. Would you like to have your own business? YES

46. I don't make friends with certain people because it would be beneath me to associate with them. YES

53. I would be extremely disappointed if I did not get promoted at work. YES

54. The desire for promotion is the only reason why I want to work. YES

57. Do you get cross if people don't treat you with respect? YES

64. Do you sometimes read a European newspaper? YES

68. A man should go on striving for the things he would like, even if he knows it is almost impossible. YES

76. People who work in cities are much happier than people who are in the country. AGREES

80. Would you like to own a taxi service? YES

84. Would you like to have servants working for you? YES

85. Every home must have a radio. AGREES

99. Would you be angry if your daughter were to break off an engagement to a well-off man? YES

E: SELF-ACTUALIZATION (SELF-ESTEEM)

11. Would you be upset if your children do not get better jobs than you when they start working? YES

13. Do you agree that you will not be able to achieve what you desire in life? YES

53. I would be extremely disappointed if I did not get promoted at work. YES

54. The desire for promotion is the only reason why I want to work. YES

66. Would it bother you if you did not learn any new skills at work? YES

67. Do you agree that work is not important in a man's life except for the money it brings him? DISAGREES

68. A man should go on striving for the things he would like, even if he knows it is almost impossible. YES   (Table cont.)

TABLE 2 (cont.)

E:	SELF-ACTUALIZATION (SELF-ESTEEM) (cont.)	
72.	A person can still enjoy his work, even if he is badly paid.	YES
77.	It is stupid to think about your work when you come home in the evenings.	NO
79.	Do you think a standard VIII person is well-educated?	NO
82.	Do you agree that a rich man never needs to think about his work?	NO
87.	I agree that it is not important for girls to go to school.	NO
92.	Do you ask your children what they learn each day at school?	YES
95.	A good child would leave school as soon as he could in order to help his parents, even if he is very, very clever.	NO

TABLE 3

ROTATED 5-FACTOR MATRIX (AFTER ROTATION TO TARGET)

ITEM	FACTOR	I Physiol.	II Safety	III Group-bel.	IV Esteem	V Self Esteem
1-R		<u>37</u>	-11	10	04	14
2-R		02	-10	-12	-02	10
3		-06	03	<u>32</u>	10	04
5		05	<u>28</u>	-03	-06	-11
7		-02	-19	<u>31</u>	<u>28</u>	16
10-R		<u>56</u>	-<u>29</u>	-01	03	13
11		-12	04	16	-05	<u>45</u>
13		<u>36</u>	18	14	-14	-02
14		23	03	04	04	04
15-R		27	-03	-09	-22	15
16-R		-06	06	02	-08	-08
17		-03	-12	-04	<u>79</u>	-07
18		-04	-06	-08	<u>73</u>	-01
20		04	03	-17	<u>40</u>	-08
25		-04	00	01	<u>36</u>	13
26		08	<u>36</u>	12	-05	-01
27		-03	13	-09	<u>43</u>	01
31		-13	16	14	06	02
32		10	23	08	10	-11
34		14	-11	24	17	-07
35		13	-08	<u>30</u>	01	00
38		04	22	-17	07	00
39		09	-06	-11	<u>56</u>	09
40		-15	06	21	19	05
41		-18	<u>33</u>	15	-09	-06
42		<u>30</u>	10	03	04	-14
44		21	17	-08	10	-01
46		13	<u>29</u>	15	-09	-01
47		01	12	22	-03	-26

TABLE 3 (cont.)

48	-01	<u>48</u>	-16	06	06
49	<u>32</u>	24	-03	07	-14
52	05	22	16	19	-24
53	-08	<u>39</u>	27	<u>30</u>	17
54	-15	<u>34</u>	<u>31</u>	13	04
57	02	-01	<u>39</u>	06	19
58	<u>29</u>	13	-10	-04	-09
59-R	<u>39</u>	-23	-03	-15	02
60	00	03	19	04	-27
61	<u>29</u>	-05	05	03	-12
62-R	27	-<u>29</u>	01	05	-07
63	18	18	-01	-01	-12
64	-13	-10	-08	<u>37</u>	08
65	16	20	00	07	-<u>30</u>
66	05	16	03	-02	<u>33</u>
67-R	-09	00	-13	02	07
68	08	<u>35</u>	-04	15	-14
69	-27	<u>35</u>	-07	03	-08
70	-09	-13	24	07	-19
71	-<u>29</u>	04	13	02	-10
72	-03	16	-02	-05	-<u>31</u>
76	02	05	11	<u>31</u>	-01
77-R	02	-20	-14	07	25
78	12	24	16	27	09
79-R	-06	-07	11	07	<u>29</u>
80	06	-10	02	<u>76</u>	01
82-R	00	03	-<u>34</u>	04	24
83	-04	-10	<u>29</u>	-16	-11
84	17	16	02	<u>41</u>	12
85	01	08	08	<u>50</u>	04
87-R	07	-04	-19	09	19
88	-13	-10	-20	<u>41</u>	-15
89	13	-06	<u>41</u>	13	05

(Table cont.)

TABLE 3 (cont.)

91	16	23	15	27	17
92	01	15	08	23	23
93	11	02	17	09	11
94	01	17	13	14	26
95-R	08	05	-04	09	27
97	-02	-09	<u>52</u>	10	-17
98	<u>28</u>	14	18	01	04
99	-03	04	<u>35</u>	01	07

-R refers to recoded items.

FACTOR INTERCORRELATION MATRIX

FACTOR	Physiol.	Safety	Group-bel.	Esteem	Self Esteem
Physiological	-	02	03	00	09
Safety	02	-	24	08	-14
Group-bel	03	24	-	21	-06
Esteem	00	08	21	-	11
Self Esteem	09	-14	-06	11	-

TABLE 4

ROTATED 5-FACTOR MATRIX (DIRECT QUARTIMIN - NO TARGET)

ITEM	FACTOR	I	II	III	IV	V
1-R		10	_37_	09	02	16
2-R		-10	10	-12	00	02
3		-05	-06	_31_	08	11
5		27	-14	-04	-07	-02
7		-19	08	_30_	26	16
10-R		09	_64_	01	01	09
11		-20	-07	04	-06	_44_
13		_36_	16	11	-17	12
14		15	17	04	02	08
15-R		08	26	-11	-22	13
16-R		04	-10	02	-08	-06
17		-04	04	04	_79_	-11
18		-02	01	-02	_73_	-04
20		10	-01	20	_37_	-01
25		-05	-01	00	_35_	12
26		_32_	-17	07	-07	14
27		10	-09	-08	_42_	03
31		04	-21	11	05	09
32		_28_	-09	08	08	01
34		05	14	27	15	-01
35		02	12	_30_	-01	08
38		18	-08	-19	-07	03
39		01	13	-08	_55_	04
40		-05	-18	19	18	10
41		15	_-37_	11	-10	06
42		_31_	15	06	02	-05
44		26	08	-09	09	04
46		_29_	-09	10	-11	14
47		19	-12	25	-05	-13
48		_33_	-27	-22	05	15

(Table cont.)

TABLE 4 (cont.)

49	43	10	-02	05	-02
52	29	-15	18	17	-09
53	20	-30	19	26	34
54	15	-35	25	10	20
57	-05	00	34	02	28
58	30	16	-09	-05	-03
59-R	05	46	00	-16	-01
60	13	-07	24	03	-18
61	18	24	09	02	-07
62-R	-01	38	07	08	-12
63	28	02	-01	-02	-04
64	-16	-02	-06	38	00
65	36	-04	05	06	-19
66	03	-02	-07	-04	36
67-R	-08	-05	-14	03	02
68	36	-16	-04	13	-02
69	12	-43	-10	04	-02
70	-08	-05	29	06	-15
71	-11	-28	14	02	-08
72	21	-16	02	-05	-24
76	07	-03	12	29	05
77-R	-23	18	-15	08	13
78	25	-06	13	23	18
79-R	-19	04	-15	07	20
80	01	11	08	75	-01
82-R	-08	05	-38	-02	13
83	-06	-02	30	-17	-05
84	20	05	01	38	18
85	09	-05	09	48	08
87-R	-05	12	-20	10	11
88	-08	-04	-12	43	-24
89	03	10	40	09	15

(Table cont.)

TABLE 4 (cont.)

91	23	00	10	24	<u>28</u>
92	05	-06	02	21	<u>28</u>
93	05	08	15	07	17
94	05	-07	05	12	<u>32</u>
95-R	00	08	-09	09	25
97	00	-05	<u>54</u>	06	-03
98	26	12	15	-02	16
99	00	-08	<u>31</u>	-02	17

-R refers to recoded items.

FACTOR INTERCORRELATION MATRIX

FACTOR	I	II	III	IV	V
I	-	-07	19	00	05
II	-07	-	-11	-02	09
III	19	-11	-	15	03
IV	00	-02	15	-	22
V	05	09	03	22	-

response). This recoding was carried out in order to facilitate interpretation of the factor matrices.

Deriving the scales of measurement

Correspondence between the rotated factor matrices reported in Tables 3 and 4 was far from perfect, but, with the exception of the first two factors, it was not altogether discouraging. The measure of goodness of fit of the rotated factor matrix (Table 3) to the target was nevertheless acceptable, the square root of the average squared deviation being 0,14. The results yielded by rotation to the target were therefore accepted for purposes of drawing up the five scales of measurement corresponding with Maslow's five need-classes.

Each factor was analyzed separately. To begin with all items loading on factors 1 to 5 in excess of 0,20 (a very low criterion) were selected for purposes of iterative item analyses. Such items were considered to constitute a scale of measurement, one scale per factor. An item analysis was run on each scale using Gulliksen's[19] (1950) method which yields item parameters functionally related to the parameters of the total scale.

The item analysis results for each of the five factors are summarized in Tables 5 to 9. The parameter pg is the proportion of individuals responding to item g in what was considered to be a manner revealing a positive need. The parameter Sg is the item standard deviation while r_x refers to the point-biserial item-total scale correlation and $r_{xg}S_g$ the Gulliksen index. The way in which each of these parameters are related to the overall reliability of the scale is shown in the following formula (Kuder-Richardson formula 20):

$$r_{xx} = \frac{k}{k-1}\left[1 - \frac{\Sigma S^2_g}{(\Sigma r_{xg}S_g)^2}\right]$$

where r_{xx} = reliability coefficient

         k = number of items in scale

        S^2_g = item variance

      $r_{xg}S_g$ = index of item reliability (Gulliksen)

TABLE 5

ITEM ANALYSIS INFORMATION FOR DIMENSION I
(PHYSIOLOGICAL NEED)

Item	Content	p_g	s_g	r_x	$r_{xg}s_g$
10	Unable to feed his family properly each day.	0,25	0,43	0,58	0,25
1	Does not get enough food each day.	0,31	0,46	0,47	0,22
49	Would willingly accept cast-off clothes.	0,40	0,49	0,43	0,21
61	Borrows money from other people.	0,60	0,49	0,42	0,20
62	Feels his home is not safe at night when he is absent.	0,48	0,50	0,41	0,20
58	Sometimes buys cheap clothes when he can find them.	0,66	0,47	0,43	0,20
42	Buys clothes at a jumble sale.	0,28	0,45	0,44	0,20
59	Cannot raise enough money to meet an emergency such as death in family.	0,24	0,43	0,42	0,18
15	Not confident he could get employment if he went out to look for work.	0,72	0,45	0,37	0,16
44	Would willingly do a heavy job to improve his salary.	0,63	0,48	0,34	0,16
14	Worries whether he will have enough food to eat each night.	0,66	0,47	0,34	0,16
71	Would not be satisfied to stay in the house where he lives for the rest of his life.	0,21	0,41	0,35	0,14
98	Always worries that his family might starve.	0,89	0,32	0,31	0,10

Kuder-Richardson 20 : 0,58

Number of items in scale : 13

Mean p_g : 0,49

TABLE 6

ITEM ANALYSIS INFORMATION FOR DIMENSION II
(SAFETY NEED)

Item	Content	p_g	s_g	r_x	$r_{xg}s_g$
53	Would be extremely disappointed if not promoted at work.	0,66	0,47	0,61	0,29
48	Has an insurance policy.	0,49	0,50	0,49	0,24
26	Is concerned whether his work companions accept him as a friend.	0,58	0,49	0,49	0,24
54	Desire for promotion is only reason why he works.	0,72	0,45	0,50	0,22
32	Feels that people who always change their jobs are foolish.	0,42	0,49	0,45	0,22
46	Does not make friends with certain people because it is beneath his dignity.	0,66	0,47	0,44	0,21
78	Would be perfectly content with life if he could say exactly what is going to happen to him tomorrow.	0,76	0,43	0,48	0,21
91	Agrees that all that matters in life is to know what is going to happen the next day.	0,74	0,44	0,47	0,20
5	Agrees that all jobs are the same, so it is no use leaving one job to go to another.	0,47	0,50	0,40	0,20
69	Feels that his house is big enough for his family.	0,48	0,50	0,38	0,19
41	Would be content to do what he is now doing for the rest of his life.	0,73	0,44	0,42	0,19

Kuder-Richardson 20 : 0,64

Number of items in scale : 11

Mean p_g : 0,61

TABLE 7

ITEM ANALYSIS INFORMATION FOR DIMENSION III
(GROUP BELONGINGNESS NEED)

Item	Content	p_g	s_g	r_x	$r_{xg}s_g$
97	Is afraid that his friends talk about him when he is not around.	0,49	0,50	0,54	0,27
57	Gets cross if people don't treat him with respect.	0,46	0,50	0,48	0,24
89	His friends would laugh at him if he did not wear nice clothes.	0,71	0,45	0,52	0,23
7	Would like to be better dressed than his friends.	0,63	0,48	0,47	0,23
34	Agrees that it is important for people to buy lots of clothes.	0,60	0,49	0,44	0,22
99	Would be upset (angry) if his daughter were to break off an engagement to a well-off man.	0,50	0,50	0,43	0,22
40	Agrees it is important to have as many friends as possible.	0,48	0,50	0,41	0,20
3	Spends a lot of money on beautiful clothes.	0,72	0,45	0,43	0,19
70	Would only work at a place where there are people whom he already knows.	0,56	0,50	0,39	0,19
93	Spends a lot of money when he is together with his friends.	0,48	0,50	0,39	0,19
35	Often feels he is unimportant.	0,71	0,45	0,40	0,18
47	Goes to work to be with people.	0,76	0,43	0,31	0,13

Kuder-Richardson 20 : 0,61

Number of items in scale : 12

Mean p_g : 0,59

TABLE 8

ITEM ANALYSIS INFORMATION FOR DIMENSION IV
(OTHER-ESTEEM NEED)

Item	Content	p_g	s_g	r_x	$r_{xg}s_g$
80	Would like to own a taxi service.	0,67	0,47	0,77	0,36
17	Would like to own a car.	0,70	0,46	0,75	0,34
18	Intends buying a car in the future.	0,58	0,49	0,69	0,34
85	Agrees that every home must have a radio.	0,70	0,46	0,59	0,27
84	Would like to have servants working for him.	0,62	0,48	0,53	0,26
27	Always hopes that one day he will be rich.	0,48	0,50	0,51	0,25
20	Would like to be in charge of other people at work.	0,46	0,50	0,50	0,25
53	Would be extremely disappointed if he did not get promoted at work.	0,66	0,47	0,49	0,23
76	Agrees that people working in cities are much happier than those who are in the country.	0,70	0,46	0,45	0,20
39	Would like to have his own business.	0,85	0,36	0,56	0,20
64	Sometimes reads a European news-paper.	0,41	0,49	0,40	0,20
25	Would like to be able to go away on holidays to other places.	0,81	0,39	0,46	0,18

Kuder-Richardson 20   :   0,80

Number of items in scale   :   12

Mean p_g :   0,63

TABLE 9

ITEM ANALYSIS INFORMATION FOR DIMENSION V
(SELF-ESTEEM)

Item	Content	p_g	s_g	r_x	$r_{xg}s_g$
79	Does not think a standard VIII (J.C.) person is well educated.	0,54	0,50	0,45	0,23
82	Disagrees that a rich man never needs to think about his work.	0,68	0,46	0,47	0,22
77	Disagrees that it is stupid to think about work when he comes home in the evenings.	0,69	0,46	0,46	0,22
95	Disagrees that it is good that a child leave school as soon as possible to help his parents, even if he is clever.	0,53	0,50	0,42	0,21
60	Would not spend R50 on food and clothing only.	0,70	0,46	0,45	0,21
11	Would be upset if his children did not get better jobs than him when they start working.	0,71	0,45	0,44	0,20
52	Does not agree that many friends are better than a few close friends.	0,73	0,44	0,42	0,19
47	Does not go to work to be with other people.	0,24	0,43	0,43	0,18
66	It would bother him if he did not learn new skills at work.	0,75	0,43	0,36	0,16
72	A person cannot enjoy his work if he is badly paid.	0,84	0,36	0,42	0,15
65	Does care what sort of job he has - regardless of adequate pay.	0,15	0,35	0,41	0,15

Kuder-Richardson 20 : 0,56

Number of items in scale : 11

Mean p_g : 0,60

Questionnaires were re-scored by computer in order to derive five total scale scores for each individual. Each item responded to in the direction indicated in Tables 5 to 9 was assigned a value of 1 in computing the totals. Table 10 presents the statistics pertaining to the scale score distributions, age and educational achievement. The statistics describe variable means, standard deviations, coefficients of skewness, kurtosis and reliability and the observed maximum and minimum values. All five scale variables together with age and education were intercorrelated following Pearson's product-moment technique. The resultant matrix appears in Table 11.

Analysis of need profiles

Analyses of individual and group need profiles were performed in order to study the possibility of need states being hierarchically patterned.

Each individual's raw score on each of the five scales was converted to a percentile in order to derive a crude basis for comparison of need strength within the individual across all five needs. Individual need profiles were plotted on the basis of percentile rankings. To illustrate the type of profile that was derived, a random sample of 8 graphs have been reproduced in Appendix B.

On the basis of his individual profile each subject was next classed into one of five 'need predominance' groups. That is to say, a subject was classed according to the need expressed most strongly in his profile, regardless of the absolute percentile value of such a need. A plot was then made of the distribution of percentile scores in respect of all five needs for each of the five need dominance groups separately. Because it was decided that percentiles expressed as medians was too crude a basis for studying the relationship of one need to another in the five dominance groups, the raw scores were first converted to their standardized equivalents by specifying a mean of 50 and a standard deviation of 10 for all the

TABLE 10

MOTIVATION SCALES, AGE AND EDUCATION : MEANS, STANDARD DEVIATIONS, COEFFICIENTS OF SKEWNESS, KURTOSIS AND RELIABILITY AND OBSERVED VARIABLE RANGES

	Variable	Mean	S.D.	Sk.	Kt.	r_{tt}	Observed Range	
							Max.	Min.
1.	Physiological	6,32	2,40	0,32	-0,05	0,58	13,00	1,00
2.	Safety	6,71	2,43	-0,35	-0,54	0,64	11,00	0,00
3.	Group Belongingness	7,12	2,50	-0,25	-0,39	0,61	12,00	0,00
4.	Esteem	7,62	3,10	-0,71	-0,37	0,80	12,00	0,00
5.	Self-esteem	6,57	2,11	-0,45	-0,14	0,56	11,00	1,00
6.	Age	33,99	12,35	0,46	-0,40		65,00	19,00
7.	Education (no. of years schooling)	3,44	4,66	0,63	-0,74		12,00	0,00

TABLE 11

INTERCORRELATIONS BETWEEN SCALES, AGE AND EDUCATION

VARIABLE	1	2	3	4	5	6	7
1. Physiological need	-						
2. Safety need	-0,06	-					
3. Group Belongingness	0,04	0,27*	-				
4. Esteem need	0,00	0,31*	0,37*	-			
5. Self-esteem need	0,02	-0,27*	-0,21*	0,01	-		
6. AGE	0,16*	0,10	0,11	-0,27*	-0,04	-	
7. EDUCATION	0,00	-0',06	-0,03	0,25*	0,17*	-0,39*	-

* significant at the 5% level of confidence

scales. Mean standard scores were derived for each of the five needs as expressed by each need-dominance group. The results are presented graphically in Figure 1. Figure 2 reports on a similar analysis only this time the factor labelled self-esteem was omitted. This factor was the least satisfactory in terms of reliability and item content. Subjects who had been classed as 'self-esteem dominant' were assigned to one of the four remaining groups on the basis of the need expressed most strongly in their profile next to self-esteem.

Figure 3 presents the results of an analysis that studied the hierarchical ordering of the five needs from a different angle. Each need was plotted as expressed by the average member of each of the five need-dominant groups. Finally, an attempt was made to demonstrate a hierarchy by ignoring need description as such. Figure 4 reports on this analysis. The abscissa is described in terms of positive and negative (or hierarchically-above or -below) deviations from the dominant needs treated as a group. The 'peak' in the graph refers to the average standard score that was observed across the physiological

FIGURE 1

GROUP NEED PROFILES

(standardised scores)
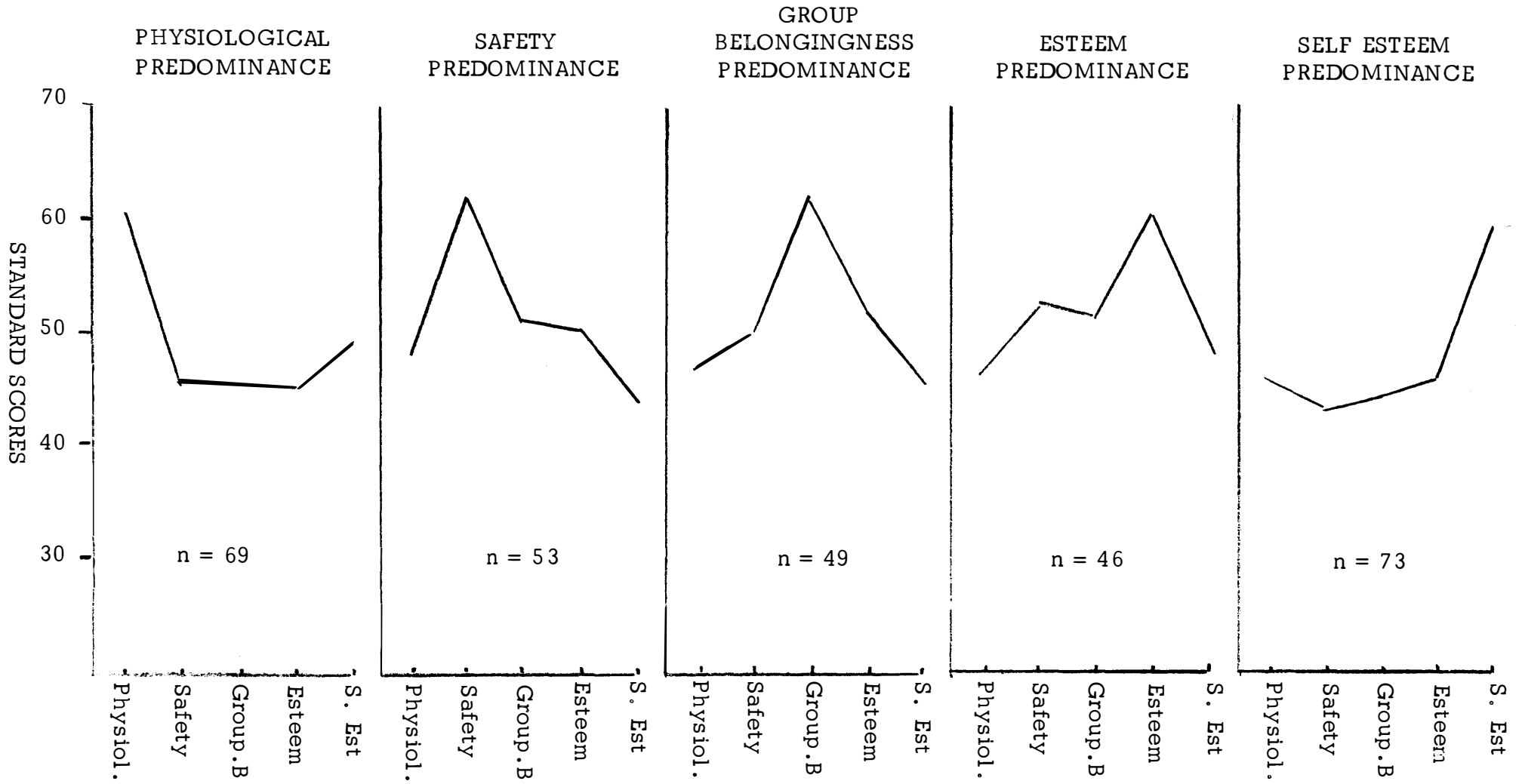
FIGURE 2

GROUP NEED PROFILES

(standard scores - excluding self-esteem)
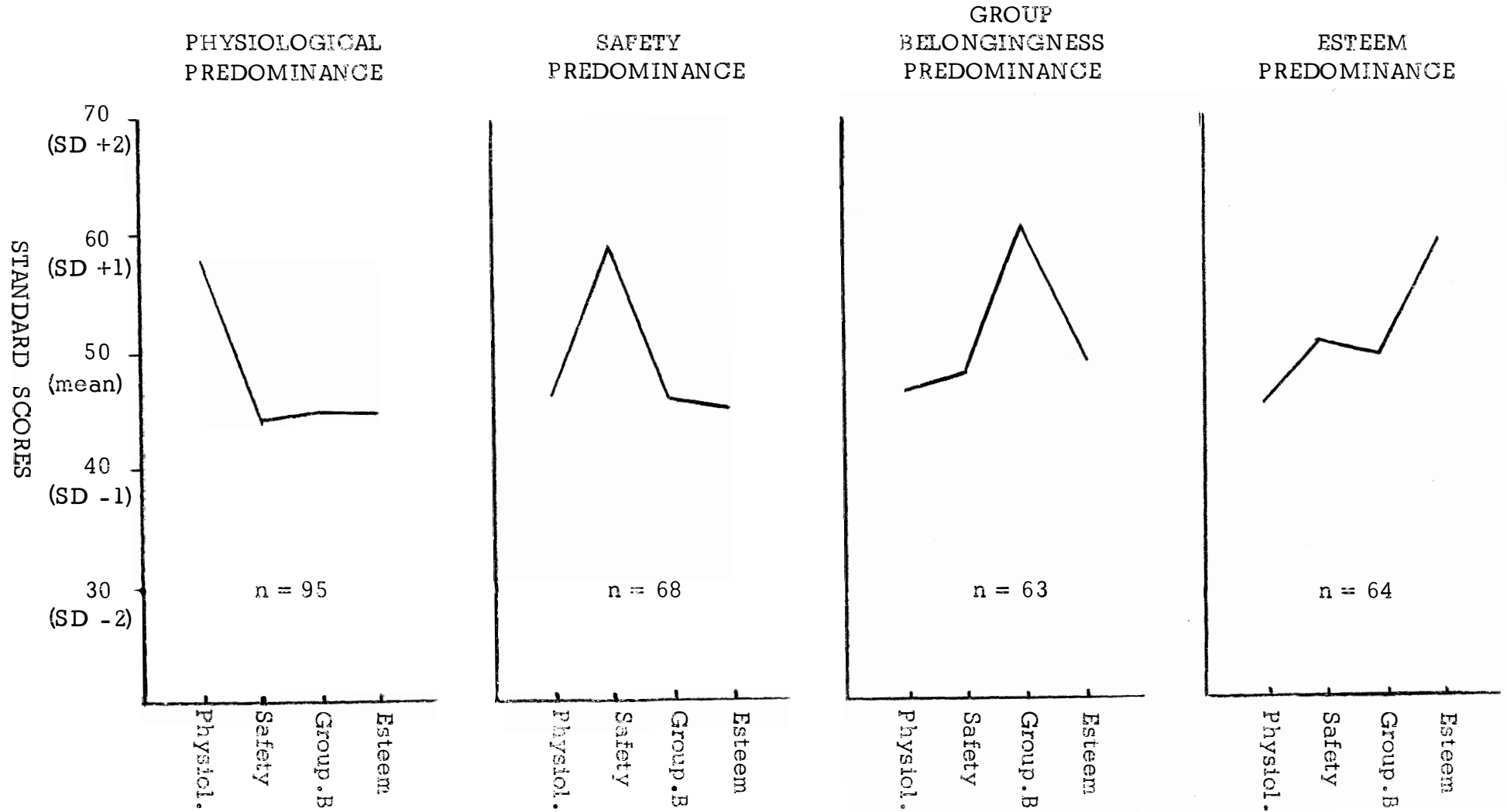
FIGURE 3

MEAN NEED SCORES ON EACH FACTOR ACCORDING TO DOMINANCE GROUPS

STANDARDIZED SCORES

Physiological Need

Safety Need

Group Belongingness Need

y = standard score

x = need-dominance group

Esteem Need

Self-esteem Need
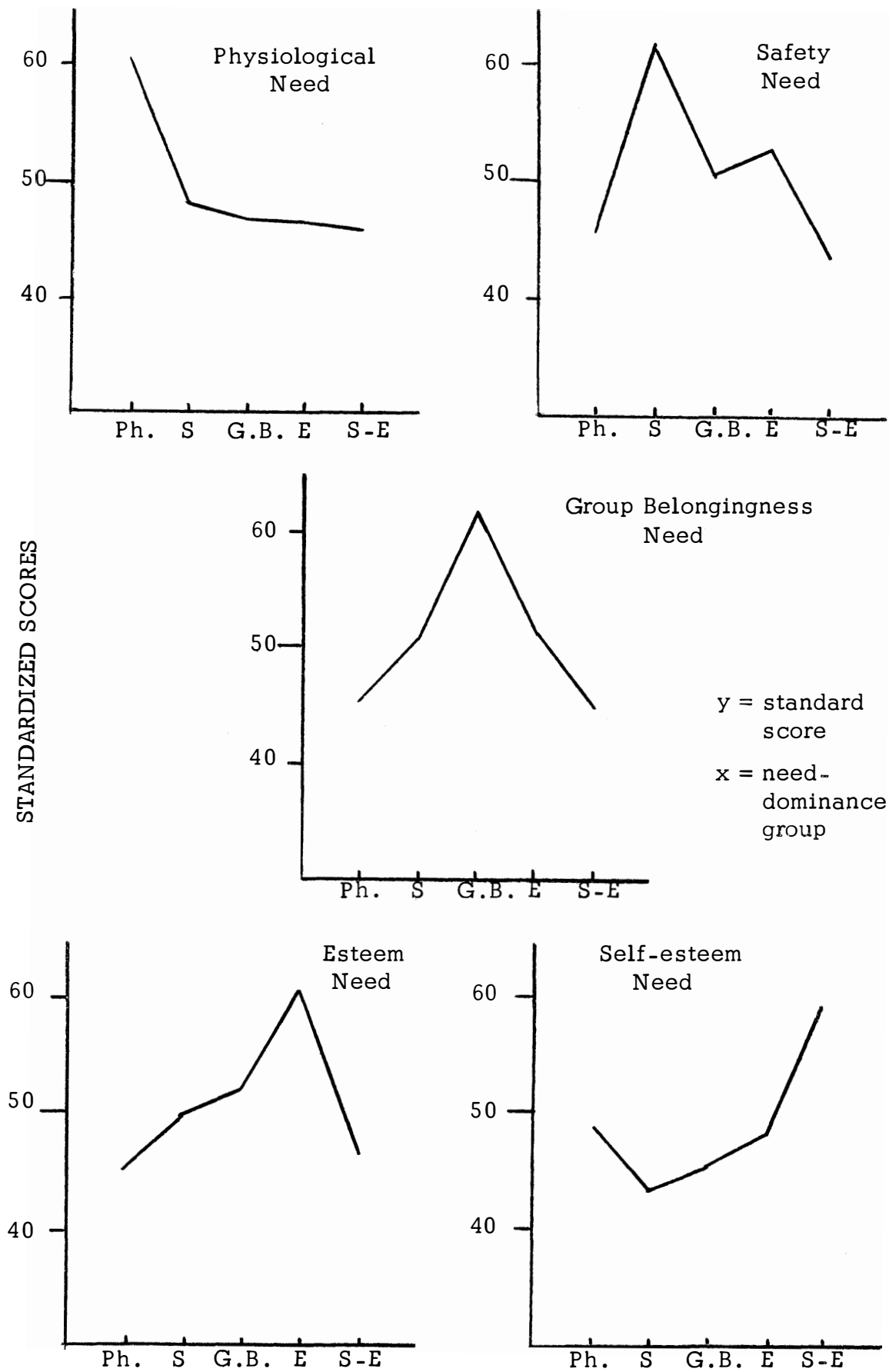
FIGURE 4

THE HIERARCHICAL ORDERING OF NEEDS
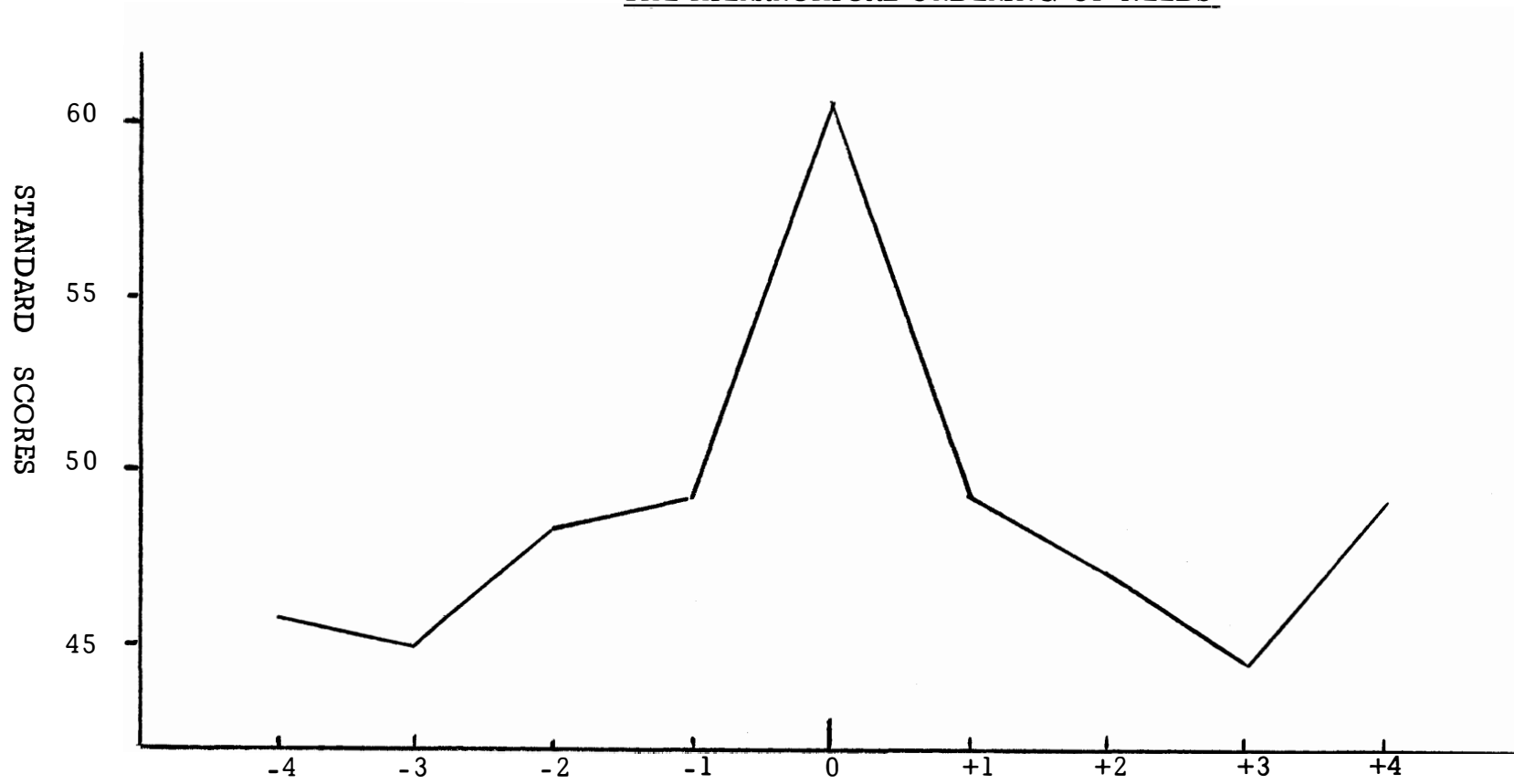
	-4	-3	-2	-1	0	+1	+2	+3	+4
					60,48	45,76	45,46	45,27	49,16
				48,02	61,85	50,80	49,81	43,63	
			46,86	50,44	61,99	52,00	45,56		
		46,57	52,81	51,34	60,68	48,33			
	45,80	43,35	44,81	46,53	59,45				
X =	45,80	44,96	48,16	49,08	60,89	49,22	46,94	44,45	49,16

need in the physiological-dominant group, the safety need in the safety-dominant group, etc., etc. The value +1 describes the group of need scores to the right of the peak. The mean standard score for this group was obtained by averaging the performance of the safety-dominant group on the physiological need, the group-belong-ingness dominant group on the safety need, the esteem-dominant group on the group-belongingness need and the self-esteem dominant group on the esteem need. Similarly, the negative values work backwards from the dominant needs (or 'down' the hierarchy). The graph is obviously more accurate in the middle range of the abscissa (5 observations) and least accurate on the extremes (1 observation). What the graph describes, essentially, is the following: in terms of Maslow's hierarchy, we can abstract a group of people and say that all of them express one particular need in greater strength to all other needs. For this group, the need immediately following in the hypothesized hierarchy and the needs which in turn follow that need are expressed less and less markedly as one moves away from the 'predominant' need. Similarly, looking at the needs which, supposedly have already been partially satisfied and which preceed the dominant need, these also tend to be of lesser importance to the individual the further removed they are in the hierarchy from the dominant need.

This is of course a highly artificial and unsatisfactory way of judging whether a hierarchy can 'explain' the observed patterning of needs in the present study. The merits and demerits of such analysis will be touched upon in the discussion.

The results of the above statistical analyses will now be discussed before describing the analyses pertaining to the interaction of motivational and biographical variables.

DISCUSSION : FACTOR ANALYSIS AND ITEM ANALYSIS

Item Format

The agree/disagree type item format was chosen in an attempt to make the interview situation as concrete as possible for the respon-dent. Unfortunately, while offering a strictly concrete approach to

interviewing, this particular format invited some undesirable problems. The major problem is that it can lead to positive or negative response bias. Secondly, there is little commitment on the part of the subject to his response which could seriously affect the questionnaire's reliability. On the question of response bias, it is evident that over 60% of all responses were in the affirmative, this despite a deliberate attempt to cast some of the items in such a way as to require a negative response for the positive expression of a need. Furthermore a large number of subjects were observed to respond consistently in the positive towards the end of the questionnaire, indicating either positive response set or boredom. Interview-reinterview reliability in terms of the 12 consistency scale items was disappointingly low. Table 1 demonstrates that while the percentage positive response to each of the 12 items was similar during and after the interview, the average correlation was only 0,64.

Of course, a major factor contributing to problems of low interview-reinterview reliability and high response bias might be the item content itself. Because of the urgency with which items were written in order to meet a dead-line for field work, scant attention was paid to detailed conceptualization of each of the need-states in Maslow's hierarchy and to the most appropriate way of couching such concepts in terms of African culture. An example of a poorly constructed item is number 8 (Do you ever dream of being a big (important) person?) designed to tap the esteem need. This item was discarded after it was realised that some subjects had spontaneously said that they never dreamed. In other words, the item was taken too literally. Participation in church activities (item 29) was also discarded after it was realized that fewer than 5% of the rural Pedis were Christians. Even items which were not discarded on grounds of faulty item content were far from suitable from the point of view of accurate and appropriate phrasing of content in terms of African culture. Indeed, the vast majority of items in the

questionnaire display a lack of imagination and do not cover fully the description of each need-state as conceived by Maslow. The author admits that this was partly a result of his own inexperience in constructing items for a questionnaire, coupled with a lack of appreciation of the tremendous importance of fully conceptualizing one's field of interest before attempting measurement.

In conclusion, it may be stated that the item format adopted in the present study needs to be improved upon in future research. A suggestion might be that the subject be asked to state whether he is more like A or more like B. For example:

A likes to do new and different things each day;

B would prefer to know exactly what is going to happen to him each day.

This approach does not represent a paired-comparison approach which was attempted in a study by Hall and Harris[20] (1970) and found to be unsuitable. Rather, two extremes are offered describing high and low motivation in terms of one particular construct. The format could perhaps be expanded to encompass a 4-point scale, but this would require extensive pilot research before being put into effect. An example of the extended format would be:

John hates doing the same thing every day

Peter likes to try new and different things each day

Usipho doesn't mind working to a set routine each day

Lucas would prefer to know exactly what is going to happen to him each day.

A problem with pre-literates might be memory load or the unfamiliarity in being required to choose between four not-too-dissimilar alternatives, but both the 4-point and 2-point scale might prove to be superior to the present agree/disagree format, and ought to be explored in future research.

Factor analyses : establishing the construct validity of the items

In accordance with Maslow's theory, five factors were extracted in
both analyses. The target analysis specified that all items not ex-
pected to measure each of the five needs would have zero loadings
on those factors after rotation. Substantial item loadings on factors
were unspecified. Let us now examine the measure of correspondence
between a-priori prediction and the actual rotated matrix after analysis
using the target. (Tables 2 and 3 should be read conjointly.) The
statistical measure of goodness-of-fit of the matrix to the target was
not too satisfactory, however it was clear that the five factors
could be interpreted in terms of the predictions.

Of the items predicted to load substantially on the first factor
(physiological) 8 were observed to load in excess of 0,28 on factor
1. Mispredictions were: item 60 (If you were given R50, would
you spend it only on food and clothing?); 65 (I do not care what
sort of job I have so long as I get enough money); and 83 (Is
buying food for today more important to you than saving money for
tomorrow?) while item 14 (Do you worry about whether you will have
enough food to eat each night?) loaded in the correct direction,
but only to the extent of 0,23. Furthermore, two items not pre-
dicted to load substantially on factor 1 did in fact do so. These
were: item 13 (Do you agree that you will not be able to achieve
what you desire in life?) and item 71 (Would you be satisfied to
stay in the house where you now live for the rest of your life?),
the first of which is understandable as a physiologically-oriented
individual would be expected to be a little defeatist, although this
is contradicted in item 71 where he says he wouldn't like to live in
the same house for the rest of his life.

In conclusion, it was accepted that 8 of the original 12 predictions
were suitable items for referencing a factor akin to Maslow's[21]
physiological need. Items 1, 10 and 98 refer to not having enough
food to eat; items 42, 49 and 58 refer to concern with obtaining
the bare minimum in clothing; and items 59 and 61 to financial

problems.   The factor was therefore labelled physiological <u>needs</u>.

The safety factor was not clearly determined.   Of the original 14 predictions, <u>only 4</u> were represented by factor loadings on factor 2 in excess of 0,28.   Item 2 (Would you willingly work in a well-paying job even if you knew that people were often dismissed there?) did not load on any of the five factors.   This was also true of item 63 (Do you agree that so long as the pay is good, it does not matter whether the place you work at is noisy or dirty?).   Items 38, 78 and 91 were in the predicted direction though the loading was between 0,20 and 0,28.   All in all then, the second factor could not legitimately be equated with Maslow's safety factor, though inspection of the full item content of items loading substantially on this factor (predicted or otherwise) suggests that it is more akin to safety than to any other construct.

Group-belongingness emerged rather well as a factor, probably because the item content was highly specific.   Of the original 14 predictions, 5 items loaded in excess of 0,28 on factor 3 while an additional 4 items were clearly unidimensional but the loadings on factor 3 were between 0,20 and 0,28.   The factor was interpreted as <u>group-belongingness</u> but with certain reservations.   It was too specific a factor to be equated fully with Maslow's need-class as most of the items dealt with one aspect of group-belongingness only, viz. the desire to be well-dressed for the sake of conforming to the imagined expectations of one's friends, and a general fear of possible non-acceptance by one's friends.   The items are also linked to one another by nothing more deep-rooted than the mere mention of <u>other people</u>, friends or work companions.   There is no mention of <u>specific</u> fear of rejection by a group, or of feelings of loneliness, rootlessness and friendlessness which Maslow sees as important components of group-belongingness.   This is because of the initial absence of such items in the questionnaire.

Of the 20 predictions in respect of the esteem factor, 13 were evident in items loading on factor 4 in excess of 0,28.   The factor interpretation was fairly clear, though again it was decided that

despite the label esteem that was assigned to this factor, item content was not sufficiently varied in order to argue that it unequivocally em- bodied Maslow's esteem need.   Most items referred to the desire to possess or acquire tangible status symbols, and little else.   More properly this factor seems to describe the status need among Africans.

Finally, the factor labelled self-esteem emerged as the poorest of all.   Items loading on this factor include: item 11 (S would be upset if his children did not get better jobs than him when they started working), item 65 (S does not agree with the sentiment that it does not matter what job a man has so long as he gets enough money), item 66 (S would be bothered if he did not learn any new skills at work), item 72 (He paradoxically disagrees that a person can still enjoy his work, even if he is badly paid), and item 79 (He does not think that a standard VIII person is well-educated).   The only common denominator linking these items would appear to be a certain degree of modernity, or progressive-outlook regarding employment suggestive of the desire to further oneself in terms of higher educa- tion, better jobs and industrial skills.   The remaining items pre- dicted to load on this dimension proved to be multi-dimensional for the most part, with a few items loading in unidimensional manner on factor 5 but whose loadings were between 0,20 and 0,28.

As a check on the feasibility of labelling the five factors in the above manner, lists of items loading in excess of 0,28 on the factors were drawn up and given to all African NIPR staff members who had not participated in writing the items.   Respondents were asked simply to write down the common denominator underlying positive endorsement of items on each factor.   Most respondents answered in terms of labels broadly similar to those that, unbeknown to them, had been assigned by the author.   An interesting exception which the author feels is rather revealing of the inadequacies of the present labels comes from a third year B.A. student who, after much de- liberation, decided that factor 1 (physiological) described the money- oriented man; factor 2 (safety) the future-dependent man; factor 3

(group-belongingness) the _inadequate_ man; factor 4 (esteem/status)
the _business-minded_ man; and factor 5 (self-esteem) the _progressive_
man. Happily, these labels are not too dissimilar to Maslow-type
constructs. A man motivated by physiological needs tends to em-
phasise money to the exclusion of all else in life; a man seeking
safety is necessarily dependent on his perceptions of the future;
a man seeking acceptance in a group is usually socially inadequate;
African businessmen have been variously described as status
conscious; and finally self-esteem in the context of furthering
one's work ambitions goes hand-in-glove with progressive views
concerning self-advancement. However, they are a far cry to the
labels intended by the author when considered globally. To be
future-dependent is but one aspect of the safety need, and to be
motivated by esteem needs does not mean that one must be a
businessman. The above assigned labels suggest then that our
factors may well be too specific and may not therefore represent
the African expression of each of Maslow's five needs.

Despite the above, the intercorrelations between the five factors
derived after rotation to a partially specified matrix are interesting
from the point of view of Maslow's hierarchy. Significant relation-
ships emerge between group belongingness and safety on the one
hand (r = 0,24) both of which are _adjacent_ in Maslow's hierarchy
and between group-belongingness and esteem, also adjacent needs
on the other hand (r = 0,21). An interesting trend is also apparent
on observing the manner of interrelationship of the safety need with
the other four. Expression of the safety need is positively corre-
lated with feelings of group concernedness, non-significantly
correlated with the physiological and esteem needs and _negatively_
correlated with self-esteem. The intercorrelation profiles remain
mere trends in favour of the operation of Maslow's hierarchy how-
ever, and certainly do not offer convincing proof that his five needs
may be ordered in the manner postulated particularly when it is
borne in mind that the five factors lay little claim to being fully
representative of the five need classes. The trend is encouraging
however.

Turning now to the factor analysis performed in the absence of a partially specified target, we find that we have even less cause for satisfaction that the five factors do in fact represent five highly specific facets of Maslow's broader need-classes. Factors 3, 4 and 5 emerged in broadly similar form to that in the analysis with a target, at least to the extent that the same core items were present in both factor analyses. Factors 1 and 2 bear little resemblance to factors 1 and 2 in the analysis with a target. Factor 1 appears to describe the man with low-level aspirations and who is at the same time struggling to make ends meet. An appropriate label might be characteristics of the poor. The second factor appears to embrace all those items in which the words 'enough' or 'sufficient' were used, regardless of item content. The factor might therefore be described as material satisfaction. Both factors were not of the kind that were anticipated to emerge from analysis and underline the danger of using factor-analytic techniques of analysis in cases where the item content is not definitively conceptualized beforehand.

In conclusion, the author admits that the five factors which emerged after analysis bore little resemblance to descriptions of need-states in the individual according to Maslowian conceptions. It is submitted that the major problem relates to poor questionnaire construction strategy. Where factors did broadly approximate Maslow's need-classes, the links were highly specific and therefore highly tenuous. Future research in this field by the author will concern itself therefore with a thorough investigation of Maslow's definitions, updating these if deemed necessary before translating the concepts into situations appropriate for Africans.

Item Analyses

The item analyses quite clearly re-echo the results of the factor analyses. Optimum reliability coefficients for the five scales were reported to be:

physiological	0,58
safety	0,64
group-belongingness	0,61
esteem	0,80
self-esteem	0,56

The distribution of physiological scale scores is normal with little evidence of skewness or lepto/platykurtosis. Point-biserial item-total scale correlations averaged around 0,44 while the Gulliksen indices tended to be exceptionally low by normal standards for internal consistency. On the whole then, the low overall reliability for the physiological scale can be attributed to poor internal consistency among the constituent items.

Point-biserial item-total correlations and Gulliksen indices for items in the safety scale are a little higher, as is the overall reliability coefficient. Item content however, is less cohesive than for the physiological scale. The same applied to the group-belongingness scale though here the common item content is a little clearer. Both group-belongingness and safety distributions (see Table 10) tend to be positively skewed. In the case of the esteem need, point-biserial item-total correlations, Gulliksen indices and item content all appear to be good by comparison with the other scales. The lowest item-total correlation is 0,40 indicating a good measure of internal consistency among items in respect of their ability to tap the same psychological construct.

Table 11 presents the intercorrelations between the scales. Of significance are the positive intercorrelations between safety and group-belongingness (r = 0,27), group-belongingness and esteem (r = 0,37) and safety and esteem (r = 0,31) all of which factors if interpreted according to Maslow lie in the middle range of the hierarchy and would therefore be expected to correlate substantially among one another. Self-esteem is furthermore negatively correlated with both the safety and group-belongingness needs which is also not contrary to expectation. Education appears to correlate

positively with the two esteem factors while Age is positively associated with the physiological need and negatively with esteem. In the African context this latter finding could be explained by reference to the idealism and optimism of youth in believing that they will be able to achieve status and esteem in life, and the realization as they grow older that the harsh realities of day-to-day existence and survival are ever-present. It is also coupled with the fact that Age and Education are today negatively correlated in Bantu-speaking populations. The positive correlation between the esteem factors and Education is interesting in that it suggests that:

(i)   either Education is a positive factor in promoting the development of motivation; or

(ii)   a cognitive element is operative in determining the manner of questionnaire response.

Esteem-type items may have been cast in such a manner that they were not functionally equivalent for educated and illiterate Africans as was initially intended. It is more probable however that Education serves as a positive factor in enabling the individual in modern African society to aspire to and express preference for esteem-related goals.

Profile Analyses

The profile analyses (Figures 1 to 4) are also interesting. It is difficult to test the 'significance' of the trends that are operating in the direction predicted by Maslow, thus the profiles will have to be evaluated intuitively. It should be remembered that because of low scales reliabilities, the graphs reflect an inordinate amount of error in measurement with obvious consequences for subject misplacement in one of the five need dominant groups. The plot of need strengths relative to one another in each of the five need-dominance groups (Figure 1) yielded two graphs (for the 'safety' and 'group-belongingness' groups) which were in full accordance with Maslow's hierarchy plus a further graph (for the 'esteem' group) which deviated only very slightly. The extreme groups

(physiological and self-esteem) presented the least satisfactory picture. Scale reliabilities were lowest for the physiological and self-esteem factors (around 0,58) while the two dominance groups together claimed groups of subjects that were far larger than the groups that had been classified into predominance classes on the basis of the three more reliable measures. Removal of the self-esteem factor did much to improve the picture in favour of a hierarchy (see Figure 2) though its absence increases the possibility that any similarity to a hierarchy may be spurious.

A different source of evidence in favour of a hierarchical trend in the patterning of our factors is to be found when need strength is studied as a function of increasing/decreasing importance for the five need dominant groups. The hierarchy is very well demonstrated in three out of the five analyses reported in Figure 3 though it is again difficult to conclude that little more than a favourable trend is evident. Finally, Figure 4 attempts to summarise the picture in Figure 3 by compounding the needs regardless of their actual content. The trend is again evident in that the further one moves away from the particular need which was judged to be 'dominant' for the individual, the less strongly expressed are all other needs in the hypothesized hierarchy. There is a marked irregularity in Figure 4 at the extremes of the graph, but this is justifiably attributable to there being fewer possible observations than in the middle range on which to base the analysis.

In conclusion then it can be asserted that while it is difficult to state that Maslow's hierarchy is unequivocably reflected in our present data, there is in fact more intuitive evidence in favour of a trend in the hypothesized direction than there is evident to dispel the notion of a hierarchy as put forward by Maslow. The findings are therefore encouraging and should be even more so in studies where the reliability of measurement is optimal.

THE INTERACTION OF MOTIVATIONAL AND BIOGRAPHICAL VARIABLES

The biographical variables

Brief biographical interview yielded measures relating to age, education, marital status, S's status in his household, the number of dependents and contributors in his household and work history and preferences. Summary biographical forms were drawn up for each individual and were coded for purposes of statistical treatment. Table 12 presents a tabulation of the one-way frequencies after coding.

Variable number 5 (subject's household status) was included as a crude measure of the subject's financial responsibilities in the absence of a reliable index of wage-earning capacity. Variables 6, 7 and 8 were included primarily in order to study the need profiles of individuals whose job preferences were in terms of industrial employment and whose work histories were centred on the mining and other-industrial sectors.

The frequencies reported in Table 12 were judged to be adequate for detailed analysis of the interaction of motivational and biographical variables.

The interaction of motivational and biographical measures

Use was made of the Automatic Interaction Detection (AID) procedure (Kass[22], 1972) in studying the interaction of biographical and motivational measures. Its objective is to select particular predictor variables (e.g. biographical variables) in a stepwise manner such that these predictors are capable of dividing a sample into a series of sub-groups whose means on a dependent measure (e.g. on one of our need measures) explain more of the variability in this measure than do any other such set of sub-groups. It is therefore in essence a progressive application of one-way analysis of variance. It represents a short-cut method of determining which variables interact with the dependent measure and obviates the time

and expense of systematically carrying out a whole series of dis-
crete analyses of variance.

Each motivational variable was studied separately. Before commenc-
ing with AID analysis it was necessary to remove skewness in the
frequency distributions of the dependent measures by regrouping
some of the raw-score values such that scores on the extremes
(high and low scores) were as frequently encountered as scores in
the middle range of the scale.

An integral feature of the AID programme is the dendrogram which is
produced as a form of summary of the way in which the sample has
been split in terms of the dependent variable. The dendrogram shows
how each successively formed group was split and includes the in-
formation as set out in Figure 5.

FIGURE 5

INTERPRETATION OF AID DENDROGRAM
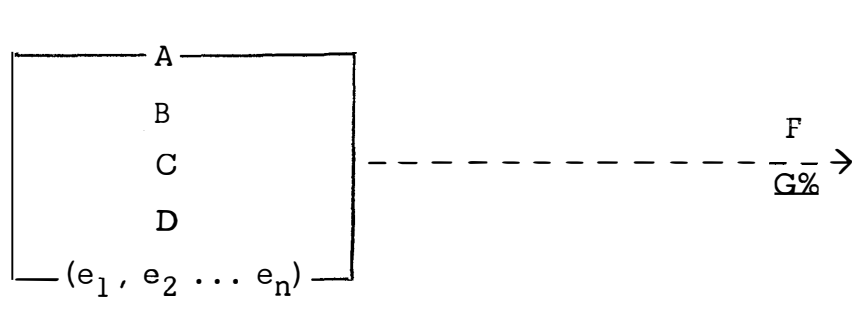
Where:

A = Group number

B = Number of subjects in group

C = Mean on dependent variable

D = Standard Deviation on dependent variable

E = Predictor Categories (refer to code numbers in Table 12)

F = Predictor on which split was made

G = Percentage variance explained

TABLE 12

BIOGRAPHICAL VARIABLES : ONE-WAY FREQUENCY TABLES

	VARIABLE		Code No.	f	%f
1	SAMPLE	Rural	1	84	28,97
		Migrant	2	105	36,21
		Urban	3	101	34,83
2	AGE	Under 25	1	91	31,38
		26 - 35	2	78	26,90
		36 - 45	3	62	21,38
		over 46	4	59	20,34
3	EDUCATION	Illiterate	0	120	41,38
		Primary	1	105	36,20
		Secondary	2	65	22,41
4	MARITAL STATUS	Single	1	108	37,24
		Married	2	182	62,76
5	SUBJECT'S HOUSEHOLD STATUS	Main breadwinner	1	168	57,93
		Main breadwinner in family of origin	2	31	10,69
		contributes to a group	3	45	15,52
		dependent	4	46	15,86
6	S'S FIRST JOB	Domestic	1	47	16,21
		Agricultural	2	43	14,83
		Mining	3	79	27,24
		Industrial	4	80	27,59
		Other	5	41	14,14

(cont.)

TABLE 12 (cont.)

BIOGRAPHICAL VARIABLES : ONE-WAY FREQUENCY TABLES

	VARIABLE		Code No.	f	%f
7	WORK MOST DONE	Industrial	1	178	61,38
		Mining	2	39	13,45
		Other	3	73	25,17
8	WORK PREFERENCE	Industrial	1	183	63,10
		Self-employment	2	25	8,62
		Commercial/ Services	3	34	11,72
		Other	4	48	16,55

Figures 6 to 9 present the dendrograms for each of the five need scales. The dendrogram for the group-belongingness scale has been omitted owing to the negligible degree of interaction of bio-graphical and group-belongingness measures.

Table 13 attempts to summarise the amount of variance (expressed in a percentage) explained by the interaction of each of the 8 pre-dictor variables with each of the dependent variables. There is as yet no test for the 'significance' of such relationships in terms of percentage variance explained. As an arbitrary point of de-parture therefore, the author has considered variance in excess of 3,5% to warrant consideration. The table shows the mean dependent measure score for each of the predictor variable categories.

FIGURE 6

AID DENDROGRAM FOR PHYSIOLOGICAL NEED

% variance explained (cumulative):

8,5%
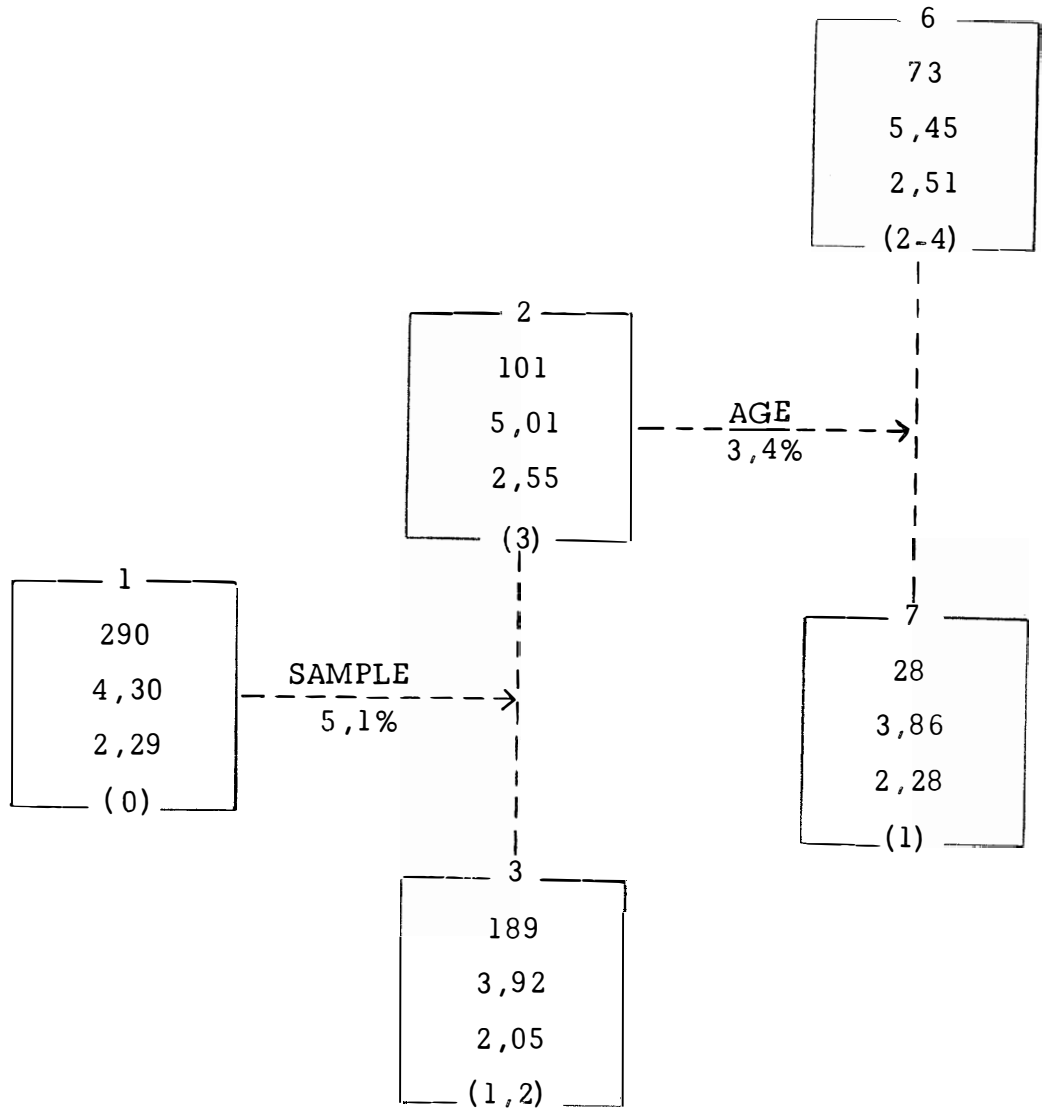
Note: Only splits explaining at least 2,5% of the variance on the
dependent measure within each sub-group are tabulated.

FIGURE 7

AID DENDROGRAM FOR SAFETY NEED

% variance explained (cumulative):

15,5%

Box 1:
290
3,75
2,21
(0)

SAMPLE
4,1%

Box 2:
185
4,09
2,21
(1,3)

Box 3:
105
3,15
2,12
(2)

FIRST JOB
5,0%

Box 4:
100
4,66
2,01
(1,3)

Box 5:
85
3,41
2,24
(4,5)

FIRST JOB
2,0%

Box 6:
61
3,59
2,07
(3,4)

Box 7:
44
2,54
2,03
(1,2,5)

Box 10:
55
5,13
1,72
(1,2)

EDUCATION
1,9%

Box 11:
45
4,09
2,18
(0)

EDUCATION
2,4%

Box 9:
35
2,66
1,97
(2)

Box 8:
50
3,34
2,27
(0,1)

FIGURE 8   51.
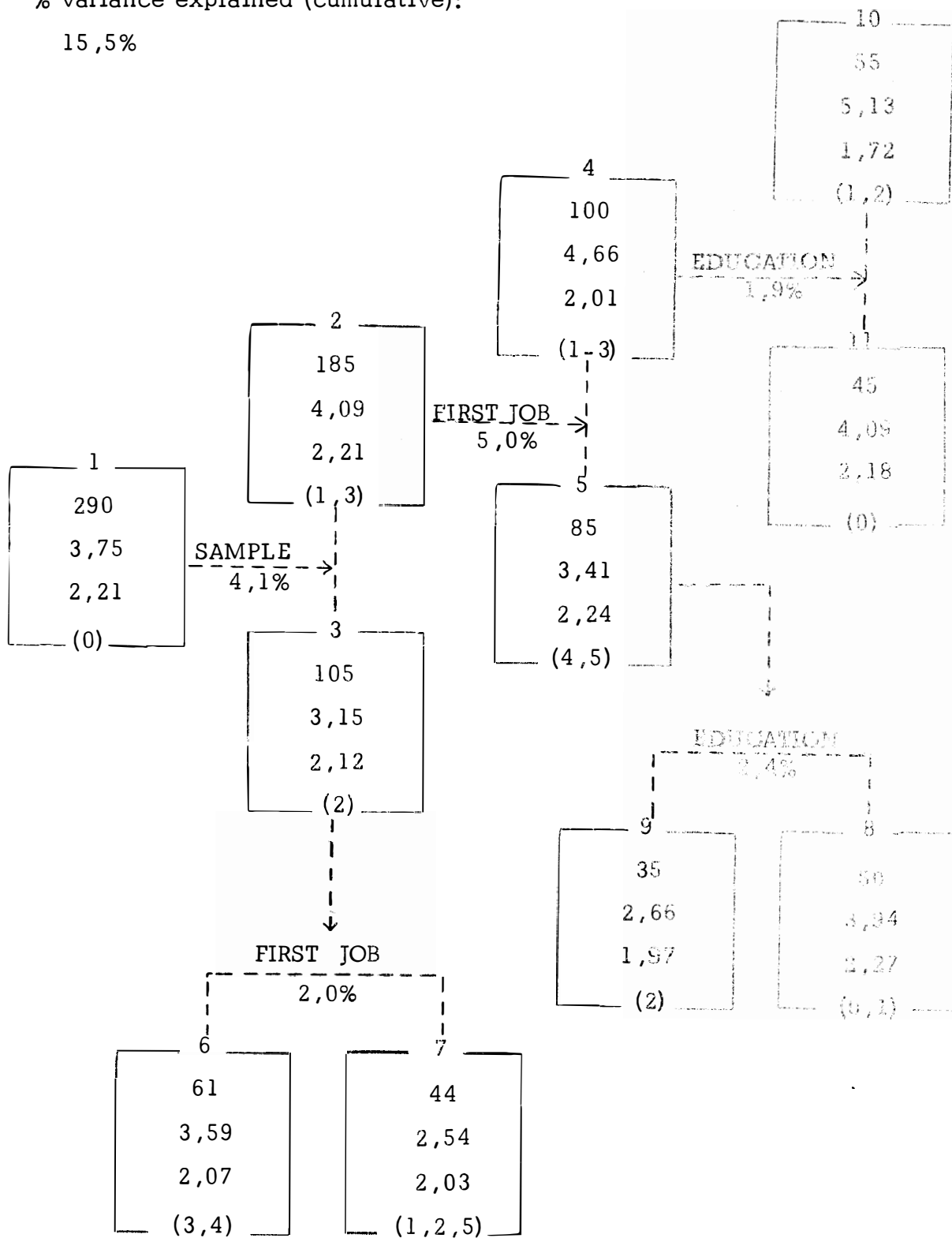
AID DENDROGRAM FOR ESTEEM NEED

% variance explained (cumulative):

    27,6%

```
                                                        ┌──── 8 ────┐
                                     ┌──── 4 ────┐       │     6     │
                                     │    59     │       │   5,33    │
                                     │   4,51    │       │   0,74    │
                                     │   1,53    │       │    (2)    │
              ┌──── 2 ────┐          │    (1)    │       └───────────┘          ┌──── 10 ────┐
              │   170     │                                                     │     72     │
              │   3,90    │     SAMPLE                    MOSTWORK               │    3,86    │
              │   1,83    │  ─ ─2,8%─ ─→                ─ ─1,6%─ ─→             │    1,82    │
              │   (1,2)   │                                                     │   (4,5)    │
              └───────────┘                                                     └────────────┘
 ┌──── 1 ────┐                       ┌──── 5 ────┐       ┌──── 9 ────┐
 │   290     │                       │   111     │       │   105     │
 │   3,23    │   EDUCATION           │   3,58    │       │   3,48    │    FIRST JOB
 │   2,04    │  ─15,3%─ ─→           │   1,89    │       │   1,89    │   ─2,8%─ ─→
 │    (0)    │                       │   (2,3)   │       │   (1,3)   │
 └───────────┘                       └───────────┘       └───────────┘          ┌──── 11 ────┐
                                                                                │     33     │
                                                                                │    2,64    │
                                                                                │    1,75    │
                                     ┌──── 6 ────┐       ┌──── 12 ────┐         │   (1-3)    │
                                     │    63     │       │     28     │         └────────────┘
                                     │   2,78    │       │    3,53    │
                                     │   1,84    │       │    1,94    │
 ┌──── 3 ────┐                       │   (1,3)   │       │   (2,3)    │
 │   120     │                       └───────────┘       └────────────┘
 │   2,28    │    SAMPLE
 │   1,94    │  ─2,7%─ ─→                            MOSTWORK
 │    (0)    │                       ┌──── 7 ────┐  ─2,4%─ ─→     ┌──── 13 ────┐
 └───────────┘                       │    57     │               │     35     │
                                     │   1,74    │               │    2,17    │
                                     │   1,90    │               │    1,50    │
                                     │    (2)    │               │    (1)     │
                                     └───────────┘               └────────────┘
```
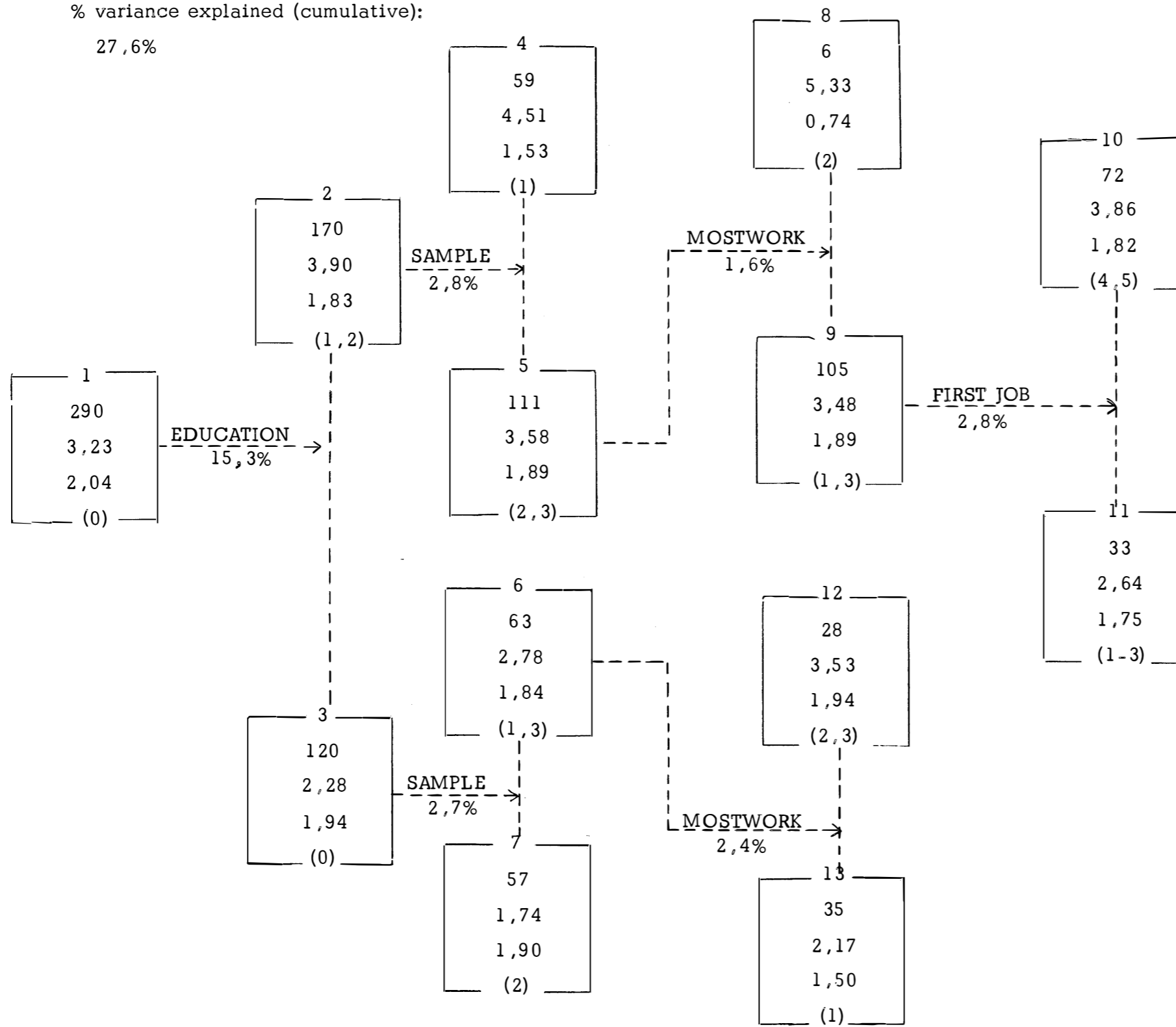
FIGURE 9

AID DENDROGRAM FOR SELF-ESTEEM

```
                    ┌──── 2 ────┐                      ┌──── 6 ────┐
                    │    65     │                      │    91     │
                    │   3,38    │                      │   2,99    │
                    │   1,62    │                      │   1,71    │
                    │    (2)    │                      │  (1,4,5)  │
 ┌──── 1 ────┐      └───────────┘     ┌──── 4 ────┐    └───────────┘
 │   290     │                        │   158     │
 │   2,65    │   EDUCATION            │   2,67    │   FIRST JOB
 │   1,71    │     5,3%               │   1,69    │     2,5%
 │    (0)    │                        │   (2,3)   │        ┌──── 7 ────┐
 └───────────┘      ┌──── 3 ────┐     └───────────┘        │    67     │
                    │   225     │                          │   2,24    │
                    │   2,44    │   SAMPLE                  │   1,57    │
                    │   1,68    │     3,3%                  │   (2,3)   │
                    │   (0,1)   │                          └───────────┘
                    └───────────┘
```

```
                                                          ┌──── 14 ───┐
                                                          │    54     │
                                                          │   2,17    │
                                                          │   1,54    │
                                                          │   (1-3)   │
                                      ┌──── 5 ────┐        └───────────┘
                                      │    67     │
                                      │   1,89    │   WORKPREF.
                                      │   1,53    │     2,4%
% variance explained (cumulative):    │    (1)    │        ┌──── 15 ───┐
                                      └───────────┘        │    13     │
    11,7%                                                  │   0,77    │
                                                          │   0,80    │
                                                          │    (4)    │
                                                          └───────────┘
```

TABLE 13   53.
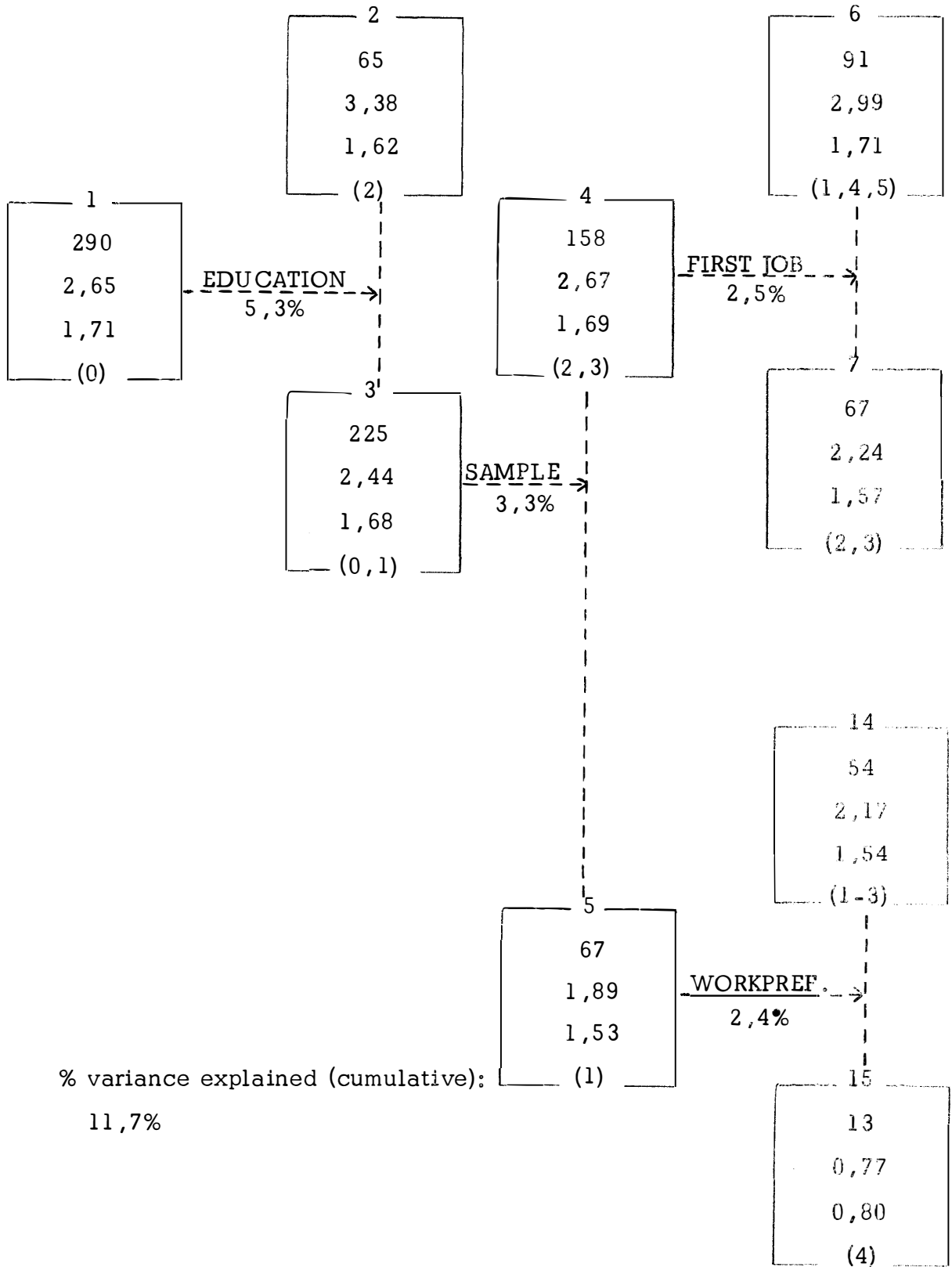
Percentage variance explained by each predictor variable

PREDICTOR VARIABLE	CATEGORY	DEPENDENT VARIABLE				
		PHYSIOL.	SAFETY	GROUP-BEL.	ESTEEM	SELF-ESTEEM
SAMPLE	RURAL	4,1	4,4	4,7	4,1	2,1
	MIGRANT	5,1% 3,8	4,1% 3,2	2,1% 3,9	8,2% 2,5	4,1% 2,8
	URBAN	5,0	3,8	3,9	3,2	3,0
FIRST JOB	DOMESTIC	4,6	4,0	4,1	3,1	2,9
	AGRICULTURAL	3,9	3,5	4,0	2,8	2,4
	MINING	1,4% 4,1	3,6% 4,4	1,0% 4,5	3,6% 2,9	5,1% 2,1
	INDUSTRIAL	4,5	3,4	3,9	3,6	3,1
	OTHER	4,5	3,2	4,3	3,8	2,9
AGE	under 25	3,9	3,5	4,0	3,9	2,7
	26-35	4,1	3,6	3,9	3,2	2,8
	36-45	2,0% 4,4	1,8% 3,7	0,8% 4,3	5,1% 3,0	1,0% 2,8
	over 46	4,9	4,3	4,5	2,5	2,3
EDUCATION	Illiterate	4,6	3,7	3,9	2,3	2,4
	PRIMARY	1,0% 4,1	2,7% 4,2	1,2% 4,5	15,3% 3,9	5,3% 2,5
	SECONDARY	4,1	3,1	4,1	3,9	3,4
MARITAL STATUS	SINGLE	3,9	3,6	4,1	3,9	2,7
	MARRIED	1,6% 4,5	0,3% 3,8	0,0% 4,2	6,0% 2,8	0,0% 2,6
HOUSEHOLD STATUS *	1	4,6	4,1	4,3	2,9	2,7
	2	3,7	3,1	3,9	3,3	2,5
	3	2,0% 4,2	2,1% 3,3	1,1% 3,6	5,2% 4,0	1,9% 3,0
	4	3,8	3,8	4,3	3,8	2,2
WORK PREFERENCE	INDUSTRIAL	4,4	4,0	4,2	3,2	2,7
	SELF-EMPLOY	1,2% 4,8	3,0% 3,2	0,3% 3,8	0,4% 2,9	1,2% 2,9
	COMM./SERV.	4,1	3,1	4,1	3,1	2,8
	OTHER	3,8	3,3	4,3	3,5	2,2
WORK DONE MOST	INDUSTRIAL	4,4	3,6	3,9	3,0	2,9
	MINING	0,5% 3,9	0,9% 4,3	2,4% 4,8	2,9% 3,8	2,6% 2,2
	OTHER	4,2	3,9	4,5	3,6	2,4

NOTE: The dependent variables scores have not been standardised therefore comparisons of mean scores across these variables may not be made.

* See table 12 for code identification

DISCUSSION : INTERACTION BETWEEN MOTIVATIONAL AND BIOGRAPHICAL VARIABLES

The value of Automatic Interaction Detection (AID) analysis to psycho-metric research has yet to be demonstrated more fully before the re-sults can be treated with confidence. One unfortunate limitation is that it forces a dichotomous split on one's data. It could well be that in certain cases a three-way split could be more meaningful psychologically. The AID results will therefore be treated more as a guide than as a definitive statement of fact.

It is obvious that the 'success' of AID analysis is highly dependent on the reliability of the dependent variables. The esteem scale was the most reliable of the five scales developed in this study, with the result that the splits reported in the esteem dendrogram explained as much as 27,6% of the cumulative variance. Compare this with the 8,5% variance explained in one of the least reliable scales, viz. the physiological.

Let us discuss the essence of each dendrogram in turn. It should be borne in mind that each successive split resulted in the creation of sub-groups whose means on the dependent measure differed signifi-cantly at the 1% level of confidence (t-tests were carried out on all the splits).

A.   The Physiological Need Scale

From Figure 6 it can be seen that the first split on the physiological variable was in terms of Sample. That is to say, after ordering the three categories in this predictor variable (urban, migrant and rural) in terms of mean physiological need score, the dichotomy accounting for the greatest variability in physiological need expression was urban (group 2, category code 3) on the one hand and who scored high, and migrant-rural (group 3, category codes 1 and 2) on the other hand scoring low by comparison. Of all the 8 potential pre-dictors then, Sample was first chosen as the predictor most signifi-cantly linked with expression of the physiological needs.

Group 3 (rural-migrant) was not further sub-divided, but sub-division of the urban group demonstrated that <u>within</u> this group, expression of the physiological need was significantly associated with Age. That is to say, persons over 26 in the urban group appear to have stronger physiological needs than do urban youths under the age of 26. Inspection of Table 13 suggests that when the <u>whole</u> sample is considered, Age would account for only 2,0% of the variance. Nevertheless, there is a clear tendency for the physiological needs to be more strongly experienced by all subjects as a function of Age. The mean physiological need score consistently increases from 3,9 for the under 25's, through 4,1 for the 26 - 35 year olds, 4,4 for the 36 - 45 year olds to 4,9 for the over 46's. We of course already know that Age and the physiological need correlate to the extent of 0,16 (Table 11).

What the results of AID analysis suggest therefore, is that while there may be an overall tendency for subjects to experience the physiological need more strongly as they grow older, this relationship:

(i)   either holds true for urban individuals only; or

(ii)   is more marked among urban than among rural and migrant individuals.

The conclusion that the physiological need as measured by the present psychometric scale is more strongly expressed by urban than by rural individuals does not contradict Hall's[23] (1971) findings based on the same sample but in which interviewing was in terms of open-ended questions. In Hall's study the 'urban' group corresponds with our 'migrant' group. Table 13 shows that the mean physiological need score for the rural sample ($\bar{X} = 4,1$) is higher than the mean for the migrant sample (Hall's 'urban' sample) which is 3,8. The difference between the means is not statistically significant however. Hall concluded that the rural Pedi expressed significantly stronger physiological needs (as

measured by open-ended questionnaire interview) than the 'urban'
Pedi.   The trend suggested in the present study is therefore not
at variance with the conclusion that had been drawn by Hall.

B.   The Safety Need Scale

The term 'safety' might be a bit misleading considering our previous
conclusion that the present item-content is a poor reflection of
Maslow's original definitions.   The factor should therefore be under-
stood to refer more specifically to 'future-dependent' behaviour
linked to the satisfaction of an individual's security needs.

Figure 7 demonstrates that the 'safety' need was first split in terms
of Sample.   The split resulted in a high-safety need group (urban
and rural) as opposed to a low safety need group (migrant).   This
dichotomy seems quite arbitrary however, for inspection of Table
13 shows that the mean urban score is equidistant from the mean
migrant score on the one hand and the mean rural score on the other
hand.   This is clearly one instance where AID analysis would have
been more meaningful psychologically if 3-way splits were per-
mitted.   Nevertheless, the rural-urban group (high safety need)
was further dichotomised into a high need group who had first
started work as domestic servants, agricultural hands and miners,
and a low need group who had started work in secondary industry,
in the services or in commerce.   Logically, this split brings us
back to our original point of departure wherein it was observed that
the 'safety' need was most strongly evidenced by rural individuals
(who are more likely to have started work on the farms, on the mines
and as domestics) while urban individuals (who are more likely to
have started work in secondary industry, the services or in commerce)
did not express the need as strongly as their rural counterparts.

The high 'safety need' group was further sub-divided in terms of
Education.   The split resulted in a 'high safety need' group of
persons who had attended school as opposed to a 'low safety need'
group of illiterates.   The low safety need group (mostly urban

individuals who had started work in urban-type jobs) was also sub-
divided in terms of Education, but along lines different from the
predominantly rural group mentioned above. The split resulted in
a 'high need group' of illiterates and primary-school educated
people and a 'low' group of secondary-educated people.

It would appear at the one extreme that we have a group who are
very strongly motivated by safety-seeking factors (viz. group 10
whose mean score is 5,13) and who are characterised by rural-
orientation, formal schooling and commencement of employment in
typically rural jobs. On the other extreme is to be found a group
of individuals who do not express the safety need to any appreci-
able extent (group 7, $\overline{X}$ = 2,54) comprising persons who fall into
the migrant category of workers and who commenced employment in
the services/commerce, as domestic labourers or as farm hands
(indicating rural - as opposed to urban - work background). They
might also by inference be expected to be a comparatively young
group of individuals for inspection of Table 13 suggests that
Safety need expression becomes more pronounced as a function of
Age. Age as a factor might not have emerged from AID analysis
as 'significant' in terms of contributing towards further variance
simply because it is most probably interrelated with other pre-
dictors such as sample, education and nature of first job.

One minor point of interest that emerged from AID analysis was that
both urban and rural individuals who had been to primary school
were demonstrated to be highly 'future-dependent'. They were
joined by high-school educated persons in the rural group and by
illiterates in the urban group. To what may we attribute this re-
versal in the relationship between safety-seeking/future-dependent
behaviour and Education in the urban as opposed to rural group?
One possibility could be that in the rural areas, where unemploy-
ment is rife, it is the educated African who is more acutely aware
of his need to gain employment but feels thwarted through the ab-
sence of openings for employment in his homeland. On the other

hand, where work opportunities are more plentiful as in the cities, education becomes a very important criterion for worker selection, placement and advancement. Logically, therefore, where work is plentiful but where there is strong competition for particular jobs, it is the illiterate who would feel more acutely the need to obtain and hold on to his job. Another interesting observation is that migrant workers express lower security needs than both urban and rural individuals as a group. This could be accounted for by the fact that their security (i.e. financial security) needs prompted them to take up contract labour commitments in the cities, during which period of active employment their needs might have been satisfied to a certain extent.

It should be borne in mind however that the reliability of the 'safety' need scale was of the order of 0,64 and that assessment of individual differences in terms of this construct is subject therefore to a large amount of error in measurement. Some of the relationships commented on above might therefore be spurious. Hall[24] reported that there were no significant differences between the rural and migrant groups in respect of the 'security' need as measured by the open-ended questionnaire. Our data disputes this conclusion for the rural group emerged as most concerned with safety-seeking factors while the migrant group appeared to be little motivated by such factors. However, Hall did conclude that among her rural sample the security needs were significantly higher among elderly persons which is not contradicted by our findings. Of course, in considering the correspondence of the present data with Hall's findings, it should be remembered that because of the abstract nature of Maslow's safety/security construct, open-ended interviewing may have yielded meaningless responses. It might also be that the safety need in the present study measures (albeit unreliably) a certain psychological quality that is not conceptually equivalent to Hall's security class of needs. It is likely therefore that there is a considerable amount of error in measurement on

both sides.

C.   The Group-belongingness Need Scale

No dendrogram was reported for this factor as it appeared that few
predictor variables were meaningfully related to performance in
terms of the group-belongingness need.   As can be seen from Table
13, the best predictors would be Sample (rural vs. migrant-urban)
and type of work done most in working life (mining as opposed to
industrial); persons in the rural group who had worked mostly on
the mines being more concerned with group-belonging than urban
persons who had worked mostly in industry.   These relationships
appear to be quite spurious.

D.   The Esteem Need Scale

The scale can best be treated as a measure of the extent to which
an individual desires to acquire status in the form of material
symbols, position and other qualities that he can display to the
world.   Analysis of the interrelationships between status-seeking
behaviour and biographical variables produced several interesting
observations.   The first AID analysis split resulted in 15,3% of
the variance being explained and was in terms of Education.   The
high esteem group comprised individuals who had had some form
of schooling, however meagre, while the low esteem group com-
prised illiterates.   Within the school-educated group, a split
emerged in terms of Sample (rural subjects expressing the esteem
need significantly more often or with greater intensity than migrant
and urban individuals).   Sub-division of the migrant-urban high
esteem group produced a group who had spent most of their working
life on the mines (6 individuals only) as opposed to a group who
were not characterized by mining experience.   This latter group
was in turn broken down into a high esteem need group whose
first jobs had been in industry, commerce or the services, and a
low-esteem group whose first jobs were on the farms or in domestic
employ.

Comparing extremes it would appear that the type of individual

most likely to express a high esteem/status need is the rural, edu-
cated person. The group with the lowest esteem aspirations was
a group of illiterate, migrant workers, followed closely by a group
of illiterate persons of rural or urban background who had spent
most of their working life in secondary industry.

Inspection of Table 13 reveals that most predictor variables are
relatively powerful correlates of the esteem need. In order of
importance these variables would seem to be: education, sample,
marital status, household status, age and nature of first job. The
four last-mentioned variables are highly interrelated not only among
themselves, but also with sample and education, which might ex-
plain why they did not emerge as significant entities in AID analysis.
In conclusion then, the type of individual in our sample who is
strongly esteem-motivated tends to be rural-orientated, educated,
unmarried and under the age of 26. He is also more likely to be a
contributor to a group rather than a dependent or main breadwinner.
In other words, the individual in modern Pedi society who is
esteem-orientated is one who has few financial responsibilities
towards others. In this respect it is interesting to note that the
mean esteem score consistently decreases with Age. (See Table 13.)

These findings corroborate Hall's conclusions, particularly in
respect of the relationship between esteem, sample, age and
education.

E.   The Self-esteem Need Scale

Better described as a scale measuring a progressive outlook on self-
advancement than self-esteem proper, the first split in AID analysis
was again in terms of Education. High-school educated subjects
scored significantly higher than both illiterates and primary-school
educated persons. Within the lesser-educated and illiterate
group however, expression of a progressive attitude toward self-
advancement and achievement was significantly related to Sample
(being more strongly expressed by migrant and urban persons).

A further break-down revealed that urban and migrant persons who had started work in industry, as domestic servants or in the services/ commerce expressed the need very highly.

It can be speculated that despite the very low reliability of the scale, it is apparent that certain progressive attitudes towards self-achievement are most strongly held by:

(i)   high-school educated subjects; and

(ii)   illiterates and primary-school educated subjects of urban/migrant background who started work in industry, commerce or the services.

The group with the lowest score proved to be a group of illiterates/ primary school individuals of rural background who preferred employment in domestic, agricultural or mining categories.

GENERAL SYNOPSIS AND CONCLUDING COMMENTS

A sober evaluation of the major findings that have emerged in this study leads to the general conclusion that there was much at fault with the methodological strategy chosen for purposes of exploratory investigation. In the introduction, the author speculated that a psychometric attack could (but not necessarily would) obviate the bias and subjectivity built into other alternative non-psychometric procedures. In many respects however, the present study appears to be guilty of a certain measure of experimental bias in that although a sound conceptual model had been adopted as the basis for study (viz. Maslow's need hierarchy), the type of item that had been designed to measure each of the hypothesized needs did not succeed in tapping the full spectrum of need characterization according to Maslow's[25] (1970) latest statement of the theory. It would appear that only specifics emerged after factor analysis. The major weakness in the study, next to poor item construction, appears to be the use of factor analysis for explanatory purposes. By rights, a factor analysis (which is after all little more than a

highly sophisticated technique for <u>describing</u> the way in which individual test/questionnaire items are functionally interrelated), should have been used solely as a <u>check</u> on the accuracy of factor predictions. This was of course done through carrying out a target analysis, but unfortunately the results of this analysis formed the basis for deriving the actual scales of measurement even though there were as many items in the factors which were not predicted on a-priori grounds as there were items which were accurately predicted beforehand.

In conclusion, then, it is recommended that factor analysis should be abandoned as a means of deriving scales of measurement in future research programmes. In its place the author considers the use of the NIPR's newly developed Item Response Evaluation technique (Coulter[26], 1973) to be highly appropriate. This procedure enables the researcher to determine the correlation of an item with all other scales simultaneously.

A second drawback in the study appears to be the adoption of the agree/disagree item format. Although originally selected for its simplicity and because of its apparent success in an American study (Lodahl and Kejner[27], 1965), it is clear that undesirable degrees of response set, and no doubt a great deal of subject uninvolvement and consequent boredome, is engendered. Alternative formats should therefore be considered, including various ipsotive, multiple choice and forced choice formats.

Despite the weaknesses in the experimental design of this exploratory survey, it is encouraging to learn that the five scales appeared to be related both to one another and to the selected biographical variables in a manner contradicting neither Maslowian theory nor common-sense. These findings auger well for future research in this field, and demonstrate quite clearly that Maslow's theory is an appropriate base for the study of African motivational development. In considering future research strategy, it would

be well to underline the need to conduct longitudinal studies. Of
particular relevance might be the research strategy adopted by
Suttle and his associates (cf. Lawler and Suttle[28], 1972) wherein
the "cross-lagged" technique of correlational analysis is followed.

It is confidently expected that a rigorous approach to the concep-
tualization and reliable measurement of the needs of Bantu-speaking
people would go a long way towards conferring upon this subject
the respectability that it deserves. As Munro[29] (1969) has
put it:

> "The motivation of Africans is a subject which was
> proved to be just as popular a subject for speculation
> and prejudice as cognitive abilities, but has received
> little or no attention from researchers. In is antici-
> pated that by beginning to ask the correct scientific
> questions in this field it will be accorded the same
> kind of respect that the study of cognition has won as
> a determinant of the potential performance of African
> peoples."   (Munro, 1969, p. 47.)

APPENDIX A

QUESTIONNAIRE ITEMS INDICATING FREQUENCY OF POSITIVE RESPONSE

Item No.	I T E M	% positive response
1	Do you get enough food to eat each day?	69,3
2	Would you be willing to work in a well-paying job even if you knew that people were often dismissed there?	43,1
3	Do you spend a lot of money on beautiful clothes?	72,4
4*	Would you like to have many children?	70,3
5	All jobs are the same, so it is no use leaving one job to go to another.	46,6
6*	Poor pay is the only thing that makes people want to leave their work.	92,8
7	Would you like to be better dressed than your friends?	63,1
8*	Do you ever dream of being a big (important) person?	49,0
9*	All the time I am looking for a job that pays better.	94,0
10	Are you able to feed your family properly each day?	74,8
11	Would you be upset if your children do not get better jobs than you when they start working?	71,0
12*	Do you think that one day you will be able to have a beautiful house?	85,2
13	Do you agree that you will not be able to achieve what you desire in life?	55,5
14	Do you worry about whether you will have enough food to eat each night?	66,2
15	If you went out to look for work, are you confident that you could get employment quite easily?	28,3
16	Would you prefer to work on your own rather than together with other people?	26,2
17	Would you like to own a car?	69,7

APPENDIX A (cont.)

Item No.	ITEM	% positive response
18	Do you intend buying a car in the future?	58,3
19*	Would you like it if your children worked in a factory as labourers?	83,8
20	Would you like to be in charge of other people at work?	45,9
21*	Are you worried about whether you will be endorsed out of your area/home?	80,7
22*	Are you paying furniture instalments? (Lit. translation : Do you pay for the goods in the house monthly/weekly?)	49,3
23*	Are you planning to build your own house?	94,8
24*	Do you save money in order to visit relatives in other areas?	66,9
25	Would you like to be able to go away on holidays to other places?	81,0
26	I worry about whether my work companions accept me as a friend.	57,6
27	Do you always hope that one day you will be rich?	47,6
28*	Do you agree that it does not matter what job a man has so long as he gets enough money?	88,3
29*	Do you participate in church activities? (Lit. translation : do you have work to do in the church?)	33,1
30*	Do you want to stay in your neighbourhood for the rest of your life?	89,0
31	Are you one of the organisers of the activities in your community? (Lit. translation : are you one of the people who controls the work of the community?)	22,1
32	People who always change their jobs are foolish.	42,4
33*	People leave their jobs in order to find more interesting work.	89,3
34	Is it important for people to buy lots of clothes?	60,3
35	I often feel that I am unimportant in this world. (Lit. translation : I often feel that I am nothing here on earth.)	71,7

(cont.)

APPENDIX A (cont.)

Item No.	ITEM	% positive response
36*	Do you have enough furniture and household utensils in your home?	32,8
37*	Do these things enhance the prestige of your home more than that they serve as merely utilitarian objects?	79,3
38	Do you give most of your money to your relatives?	72,1
39	Would you like to have your own business?	84,8
40	Is it important to have as many friends as possible?	48,3
41	Would you be content to do what you are now doing for the rest of your life?	73,1
42	Do you buy clothes at a jumble sale?	27,6
43*	Are you often unable to pay your rent?	24,1
44	Would you willingly do a heavy job to improve your salary?	62,8
45*	Do you prefer to pay cash for the things you buy?	54,8
46	I don't make friends with certain people because it would be beneath me to associate with them.	66,2
47	I go to work in order to be with other people.	75,9
48	Do you have an insurance policy?	49,3
49	Would you willingly accept cast-off clothes?	40,3
50*	If I had to work alone at a job I would not enjoy my work.	60,3
51*	A person should always try to be with big (important) and respected people.	94,5
52	Many friends are better than just a few close friends.	26,9
53	I would be extremely disappointed if I did not get promoted at work.	65,9
54	The desire for promotion is the only reason why I want to work.	71,7
55*	Do people learn a lot from their jobs?	84,8
56*	It is best to always try and do your work better than anybody else.	91,4

APPENDIX A (cont.)

Item No.	I T E M	% positive response
57	Do you get cross if people don't treat you with respect?	45,9
58	Do you sometimes buy the cheapest clothes you can find?	65,9
59	Can you raise enough money to meet an emergency such as death in the family?	76,2
60	If you were given R50, would you spend it only on food and clothing?	29,7
61	Do you borrow money from other people?	60,3
62	Do you think your home is safe at night when you are not there?	51,7
63	Do you agree that so long as the pay is good, it does not matter whether the place you work at is noisy and dirty?	61,7
64	Do you sometimes read a European newspaper?	40,7
65	I do not care what sort of a job I have so long as I get enough money.	85,5
66	Would it bother you if you did not learn any new skills at work?	74,8
67	Do you agree that work is not important in a man's life except for the money it brings him?	55,5
68	A man should go on striving for the things he would like, even if he knows it is almost impossible.	72,4
69	Is your house big enough for your family?	47,9
70	I would only work at a place where there are people whom I already know.	56,2
71	Would you be satisfied to stay in the house where you now live for the rest of your life?	79,0
72	A person can still enjoy his work, even if he is badly paid.	15,5
73*	Do you worry if you are unable to save enough money every week?	90,3
74*	A person must sometimes try to be like the people he lives with.	94,1

APPENDIX A (cont.)

| Item No.	I T E M	% positive response
75*	Does a parent have to worry about his future if his children are well-educated?	17,9
76	People who work in cities are much happier than people who are in the country.	70,0
77	It is stupid to think about your work when you come home in the evenings.	31,4
78	I would be perfectly content with life if I could say exactly what is going to happen to me tomorrow.	75,9
79	Do you think a standard VIII person is well-educated?	46,2
80	Would you like to own a taxi service?	66,9
81*	A person is important if he owns a bicycle.	34,8
82	Do you agree that a rich man never needs to think about his work?	31,7
83	Is buying food for today more important to you than saving money for tomorrow?	34,5
84	Would you like to have servants working for you?	62,1
85	Every home must have a radio.	69,7
86*	Would you like a difficult job where you have to think for yourself and plan what to do?	57,2
87	I agree that it is not important for girls to go to school.	23,1
88	Are you saving money to marry?	33,1
89	Would your friends laugh at you if you did not wear nice clothes?	71,0
90*	The only thing a worker expects from his employer is a reasonable wage.	97,2
91	All that matters in life is to know what is going to happen the next day.	74,5
92	Do you ask your children what they learn each day at school/Would you ask your children ...... (for unmarried Ss)	88,3
93	Do you spend a lot of money when you are together with your friends?	47,9

(cont.)

APPENDIX A (cont.)

Item No.	I T E M	% positive response
94	When you work with other people does it interest you to find out what sort of jobs they are doing?	80,7
95	A good child would leave school as soon as he could in order to help his parents, even if he is very, very clever.	46,2
96*	The only way to stop worrying about life is through saving money.	96,2
97	Are you afraid that your friends talk about you behind your back?	49,3
98	I always worry that my family might starve.	88,6
99	Would you be angry if your daughter were to break off an engagement to a well-off man?	50,0
100*	When children start working, they should give most of their money to their parents.	85,5

* items omitted from analysis

APPENDIX B

EXAMPLES OF INDIVIDUAL NEED PROFILES

PERCENTILES

Ph.   S.   G.B. E.   S-E.

Ph.   S.   G.B. E.   S-E.
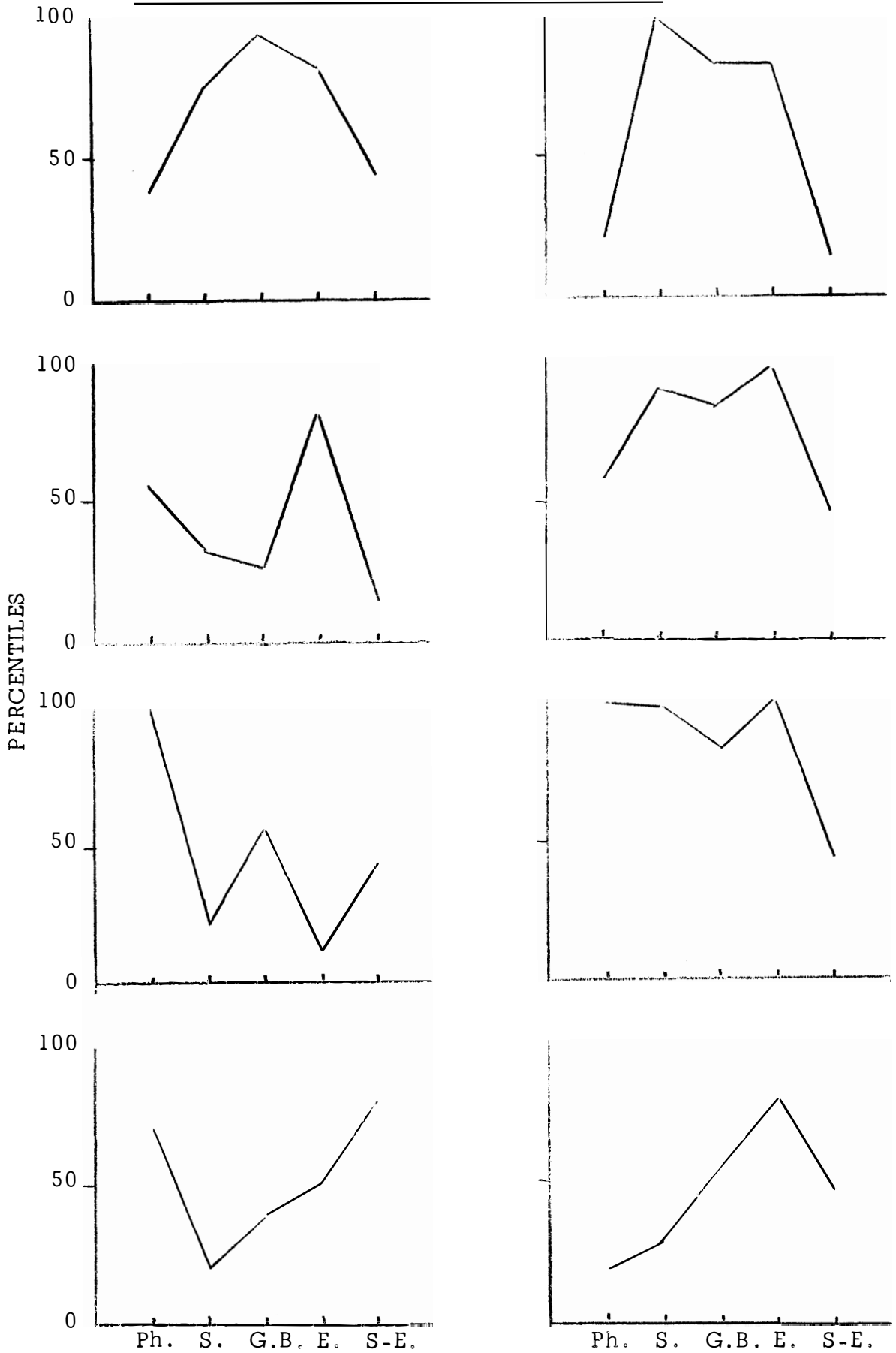
REFERENCES   Order of
Appearance

BARAN, S. (1971) <u>Development and validation of a TAT-type</u>   9
<u>projective test for use among Bantu-speaking people.</u>
CSIR Special Report no. Pers. 138. Johannesburg,
SACSIR, NIPR.

BIESHEUVEL, S. (1958) Methodology in the study of atti-   2
tudes of Africans. <u>J. soc. Psychol.</u>, 47, 169 - 184.

BROWNE, M. <u>and</u> W. KRISTOF (1969) On the oblique rotation   18
of a factor matrix to a specified pattern. <u>Psycho-</u>
<u>metrika</u>, 34, 237 - 248.

CORTIS, L.E. (1962) A comparative study of the attitudes   4
of Bantu and European workers. <u>Psychologia</u>
<u>Africana</u>, 9, 148 - 167.

COULTER, M.A. (1973) <u>Item response evaluation.</u> CSIR   26
Special Report no. Pers. 186. Johannesburg,
SACSIR, NIPR. (In Press.)

GLASS, Y. (1960) <u>The black industrial worker: a social</u>   3
<u>psychological study.</u> Pretoria, South African
Council for Scientific and Industrial Research,
National Institute for Personnel Research.

GLASS, Y. (1962) Social psychological research in industry   5
an appraisal of problems and techniques. <u>Psychol-</u>
<u>ogia Africana</u>, 9, 133 - 147.

GULLIKSEN, H. (1950) <u>Theory of mental tests.</u> New York,   19
John Wiley.

HALL, S.K.P. (1971) <u>Motivation among a rural and an urban</u>   7, 14, 16,
<u>employed group of adult Pedi males.</u> CSIR Special   23, 24
Report no. Pers. 154. Johannesburg, SACSIR, NIPR.

HALL, S.K.P. <u>and</u> J. HARRIS (1970) <u>Motivational patterns of</u>   6, 13, 20
<u>a rural and an urban group of adult male Vendas.</u>
CSIR Special Report no. Pers. 124. Johannesburg,
SACSIR, NIPR.

JÖRESKOG, K.G. (1963) Statistical estimation in factor   17
      analysis: a new technique and its foundation.
      Uppsala, Sweden. Almqvist and Wiksell.

KASS, G.V. (1972) AID system at the NIPR: User's and   22
      programmer's guide. CSIR Special Report no. PERS
      168. Johannesburg, SACSIR, NIPR.

LAWLER, E.E. and J.L. SUTTLE (1972) A causal correlational   28
      test of the need hierarchy concept. Organizational
      Behav. and Human Performance, 7, 265 - 287.

LODAHL, T.M. and M. KEJNER (1965) The definition and   27
      measurement of job involvement. J. appl. Psychol.,
      49, 24 - 33.

MASLOW, A.H. (1970) Motivation and Personality. 2nd   12, 15, 21,
      edition. New York, Harper and Row.   25

MUNRO, D. (1969) Motivation in Zambia. Lusaka: 8, 29
      Bulletin of the University of Zambia Institute for
      Social Research. No. 4, 38 - 48.

SHERWOOD, R. (1956) Motivational analysis: a comparison   1, 10
      of job attitudes among African and American pro-
      fessional and clerical workers. Proceedings of
      the S. Afr. Psychol. Assoc., 1956/1957, nos. 7/8,
      27 - 28.

VORSTER, D.J.M. (1970) The ambitions of African workers.   11
      Management. 1, 59 - 62.