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ABSTRACT

The Stages of Concern Questionnaire (SoC) was developed to assess the seven hypothesized Stages of Concern About the Innovation. These stages of concern are a primary dimension of the Concerns Based Adoption Model developed at the Texas Research and Development Center to conceptualize and facilitate educational change. This manual describing the development of the measure has been designed to serve the needs of researchers, facilitators of change, and users of the SoC questionnaire. Both psychometric and interpretative information are included. The stages of concern are defined, the questionnaire is described, reliability and validity data are presented, and administration and scoring directions are given. The complete SoC questionnaire and sample data for computer processing are appended. (Author/MV)

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MEASURING STAGES OF CONCERN ABOUT THE INNOVATION: A Manual for Use of the SoC Questionnaire

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PREFACE

The Stages of Concern About the Innovation Questionnaire is the result of three and one-half years of research and development, including extensive study of individuals involved in "change" in both schools and universities. Based on teacher concerns research conducted by Frances Fuller in the 1960's, Stages of Concern are a primary dimension of the Concerns-Based Adoption Model, a model developed at the Texas R&D Center to conceptualize and facilitate educational change. The Stages of Concern Questionnaire (SoCQ) was developed to assess the seven hypothesized Stages of Concern About the Innovation. The final form of the SoCQ presented in this manual has been used in cross-sectional and/or longitudinal studies of eleven process and product innovations. Based on data from these studies, the existence of Stages of Concern and the usefulness of the SoC Questionnaire have been confirmed.

This manual has been designed to serve the needs of researchers, facilitators of change, and others who would like to use the SoC Questionnaire. It is both a user's manual and a technical report of the development of the measure. In it, we provide both psychometric and interpretative information about the SoCQ. We begin by defining concerns, describing the questionnaire, and presenting reliability and validity information. Administration and scoring sections follow. Nearly half of the manual is devoted to interpretation -- from the simplest interpretation based on identification of highest Stage of Concern to the most complex interpretation based on SoC profiles and individual item responses. The manual text concludes with a statement of limitations and restrictions. The complete SoC Questionnaire, including optional pages, is included in the Appendix. Program listings and sample data for computer processing are also included as appendices.

For those who prefer a less quantitative and technical assessment of Stages of Concern About the Innovation, an alternative to the SoCQ is available. In another publication, *A Manual for Assessing Open-Ended Statements of Concern About the Innovation* (Austin: Research and Development Center for Teacher Education, The University of Texas, 1976) by Beulah Newlove and Gene Hall, an open-ended procedure for assessing concerns of innovation users and nonusers is described. The open-ended form is especially suited to more open-ended assessments of concerns and does not require quantitative scoring procedures.

For more information about the SoCQ, the open-ended SoC measure, or other aspects of our research, please feel free to contact us. We would also like to know about the research activities and findings of others who have used the measures, tools, or concepts which we have developed as a part of our studies of change and our initial verification of the Concerns-Based Adoption Model.

We would like to acknowledge the assistance of several of our colleagues in the CBAM Project: Beulah Newlove, who contributed significantly to the development of the interpretation procedure; Sue Loucks, who provided invaluable content editing; Shelley Hays, who typed the manuscript and coordinated the graphics and reproduction; and Eddie Parker and Carl Ratliff, who developed and tested the computer program for scoring the Stages of Concern Questionnaire.

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BACKGROUND: CONCERNS THEORY AND RESEARCH

Research in the area of concerns about innovations is an outgrowth of pioneering research by Frances Fuller in the area she named "teacher concerns." In this section, the previous research in this area is briefly reviewed, including references to the principal papers by Fuller. The Concerns-Based Adoption Model is introduced, briefly described, and the concept of concerns is discussed. Stages of Concern About the Innovation are then introduced and defined, and the section ends with a brief treatment of arousal and resolution of concerns.

Previous Research on Teachers' Concerns

The problems and satisfactions of student teachers and inservice teachers have been the subject of many studies. In 1932, Margaret Phillips reported on "Some Problems of Adjustment in the Early Years of a Teacher's Life" in the *British Journal of Educational Psychology*. Since then, many other researchers have analyzed the problems of teachers, with a number of studies focusing on the "anxieties" of student teachers.

Thompson (1963) asked 125 student teachers near the end of student teaching to respond to a 35-item checklist of particular types of anxieties. The students were asked to indicate which anxieties had been experienced, to report whether the anxiety occurred before or during student teaching, and to identify the source of the anxiety. Thompson defined anxiety as Sawrey and Telford (1959) had: "Anxiety is a mixture of fear, apprehension, and hope referred to the future." Elsewhere in his paper, Thompson equated anxiety with "questions, problems, and worries [experienced] during their [student teacher] preparation."

Travers, Rabinowitz, and Nemovicher (1952) administered a 21-item sentence completion test to 120 elementary student teachers at the beginning and end of a semester student teaching course. Three of the 21 items were analyzed to develop categories for the organization of responses. Anxiety of student teachers was again the focus. "...Anxieties upon which this study is focused are those induced by or attended to teaching circumstances.... anxiety is an extremely unpleasant experience characterized by vague feelings of discomfort and tension." Their data showed that "the student teachers were most anxious in relation to the problem of discipline." Additionally, "Another major source of anxiety is related to the matter of whether the pupils will like the student as a teacher." These authors viewed anxiety about discipline as being "somewhat discouraging" in light of "modern educational theory," and they suggested that teacher training had fallen short since discipline was the major concern of student teachers.

As part of a large-scale (N = 736), two-phase study of the "factors causing strain in teaching and on the emotional problems which beset the teacher in

carrying on his duties," Gabriel (1957) collected data on the problems and satisfactions of experienced and beginning teachers. His book provides a wealth of data and analyses about the stresses and strains on teachers and their relationships to other variables. Among the findings are those abstracted by Fuller (1969) in Figure I.1 which show that problems and satisfactions differ significantly between experienced and inexperienced teachers.

Figure I.1. Concerns of Experienced vs. Inexperienced Teachers in England

	Who is More Concerned?	p
Problems:		
Criticism from superiors	Inexperienced	.01
Maintaining discipline	Inexperienced	.01
Slow progress of pupils	Experienced	.05
Satisfactions:		
Praise from inspectors	Inexperienced	.01
Holidays	Inexperienced	.01
Success of former pupils	Experienced	.01

Source: Adapted from John Gabriel's *Emotional Problems of the Teacher in the Classroom* (London & New Zealand: Angus & Robertson, Ltd., 1957), pp. 197-199.

Frances Fuller, during the mid- and late-1960's, pursued a series of in-depth studies of the "concerns" of teachers. A counseling psychologist, Fuller approached her studies from a clinical rather than a pedagogical point of view. Based on a series of group counseling sessions and longitudinal in-depth interviews of student teachers, Fuller (1969) proposed a developmental conceptualization of the *concerns of teachers*.

The literature provided an independent set of studies under various headings, such as problems and anxieties of teachers, that, when combined with Fuller's clinical assessments, provided a grounded basis for characterizing the various kinds of concerns of preservice and inservice teachers. Further, it appeared that concerns occur in a natural sequence and are not simply a direct consequence of the quality of a particular teacher education program.

Fuller (1969) proposed three phases of concern: a pre-teaching phase, an early teaching phase, and a late teaching phase:

Pre-Teaching Phase: Non-Concern

> "These students rarely had specific concerns related to teaching itself. The teaching-related concerns they did express were usually amorphous and vague: anticipation or apprehension.... This pre-teaching period seemed to be a period of non-concern with the specifics of teaching, or at least a period of relatively low involvement in teaching" (p. 219).

Early Teaching Phase: Concern with Self

> This phase consists of a set of Covert Concerns: Where Do I Stand? and a set of Overt Concerns: How Adequate Am I? These concerns are most frequent with student teachers and beginning teachers. The "Where Do I Stand?" concerns are reflected in teachers trying to estimate how much support they will have from their supervising teacher and the principal and the limits of their acceptance as professional persons within the school. The overt "How Adequate Am I?" concerns deal with class control and the larger concern of general adequacy and preparedness to handle the classroom situation.

Late Concerns: Concern with Pupils

> These concerns are characteristic of experienced, superior teachers. Concerns focus on pupil learning and teacher professional development.

By the end of the 1960's, the "concerns model" was abstracted to "self," "task," and "impact" concerns with the "impact" concerns being sub-divided into several levels. In 1970, Fuller proposed a model for personalized teacher education, "Personalized Education for Teachers, An Introduction for Teacher Educators," based on the concerns of teachers, and further pursued research into the dynamics of teachers' concerns (Fuller, Parsons, & Watkins, 1973), and their assessment, arousal, and resolution (Fuller & Manning, 1972; Fuller & Bown, 1975). This pioneering work on concerns of teachers served as the basis for development of the Stages of Concern About the Innovation dimension of the Concerns-Based Adoption Model.

The Concerns-Based Adoption Model

In the 1969-70 academic year, staff members of the Inter-Institutional Program of the Research and Development Center for Teacher Education observed that teachers and professors involved in change appeared to express "concerns" about innovations that were quite similar to those which Fuller had identified with teachers about their teaching. Procedures were set up for documenting the concerns expressed by adopters of various educational innovations. Qualitative data was collected as part of the on-going field work of the Inter-Institutional staff for the next three years.

As the Center's product and process innovations were adopted by more and more teacher educators, the Inter-Institutional Program staff began to hypothesize that there were definite categories of innovation adopter concerns and that these concerns changed in what seemed to be a logical progression as users became increasingly skilled in using the innovation. In time, seven Stages of Concern About the Innovation (SoC) tentatively were identified. Stages of Concern About the Innovation then served as one of two basic dimensions for describing the dynamics of an individual innovation adopter.

The second dimension, Levels of Use of the Innovation (LoU), focuses on knowledge, skill, and behavioral aspects of the individual's involvement with a change. Levels of Use as a variable has been operationally defined (Hall, Loucks, Rutherford, & Newlove, 1975) and a specially designed focused interview procedure has been developed to measure it (Loucks, Newlove, & Hall, 1976).

In combination, SoC and LoU provide a powerful description of the dynamics of an individual involved in change, one dimension focusing on feelings, the other on performance. Each member of a formal organization, such as a school or college, will have her/his own Stage of Concern about and Level of Use of a particular innovation.

Understanding and describing the process of change in educational institutions, while at the same time maintaining sight of the individual, is a challenging task for managers of the change process, as well as for change researchers. Based on the hypothesized Stages of Concern and Levels of Use, researchers at the UTR&D Center developed a model of the complex process of change as it occurs through the adoption of innovations by individuals within formal organizations. This model, the Concerns-Based Adoption Model (CBAM) was first conceptualized by Hall, Wallace, and Dossett in 1973 in the "original CBAM paper." In it, the authors proposed that SoC and LoU could be used as diagnostic tools for assessing where the individual members of an organization are in relation to the adoption of an innovation. The CBAM further proposes that the manager of a specified change could then use these diagnostic data in developing a prescription for needed interventions to facilitate the change effort.

The Concept of Concerns about Innovations[1]

The world around us is complex. It is not humanly possible to focus at any one time on all of the many different stimuli and conditions surrounding us. There is much that we do not perceive at all. Of all that we do perceive, we are not equally attentive to each part. Each component and each element individually and in various combinations are of different interest and priority, with most being of little or no interest at any given time.

However, certain aspects of our world are of higher priority. Some appear to leap out at us, demanding our attention. The way we perceive these things is dependent on the unique and multifaceted person that each of us is, as well

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[1]This section is part of a concept paper in draft by Gene E. Hall, Research and Development Center for Teacher Education, the University of Texas at Austin, Summer 1976.

as the characteristics of the issue, idea, or thing that is the center of attention. Our past history, personality dynamics, motivations, needs, feelings, education, roles, status, our entire social-psycho being in relation to our experiences and knowledge shape how we perceive and, in our minds, contend with the issue, object, or problem at hand. The reason for attention to be focused on a particular issue may be external, influenced by others, by a thing or an idea; or the demands may be internal, coming from within ourselves; or there may be a combination of internal and external stimuli at work.

The composite representation of the feelings, preoccupation, thought, and consideration given to a particular issue or task is called *concern*. Depending on our personal make-up, knowledge, and experiences, each person perceives and mentally contends with a given issue differently; thus there are different kinds of concerns. The issue may be interpreted as an outside threat to one's well-being, or it may be seen as rewarding. There may be an overwhelming feeling of confusion and lack of information about what "it" is. There may be ruminations about the effects. The demand to consider the issue may be self-imposed in the form of a goal or objective that we wish to reach, or the pressure that results in increased attention to the issue may be external. In response to the demand, our minds explore ways, means, potential barriers, possible actions, risks, and rewards in relation to the demand. All in all, the mental activity composed of questioning, analyzing, and re-analyzing, considering alternative actions and reactions, and anticipating consequences is *concern*. An aroused state of personal feelings and thought about a demand as it is perceived is *concern*.

To be concerned means to be in a mentally aroused state about something. The intensity of the arousal will depend on the person's past experiences and associations with the subject of the arousal, as well as how close to the person and how immediate the issue is perceived as being. Close personal involvement is likely to mean more intense (i.e., more highly aroused) concern which will be reflected in greatly increased mental activity, thought, worry, analysis, and anticipation. Through all of this, it is the person's *perceptions* that stimulate concerns, not necessarily the reality of the situation.

In working with individuals involved in change, staff at the UTR&D Center have found concerns about the change to be an important dimension of the process. In this research, the generic name given to the issue, object, problem, or challenge, the thing that is the focus of the concerns, is *innovation*. The innovation and its use provide a frame of reference from which concerns can be viewed and described.

Depending on one's closeness to and involvement with an innovation, one's concerns will be different in type as well as in intensity. Many types, or levels, of concerns can be experienced concurrently; however, there are normally *differential* degrees of arousal. With each person, certain demands of the innovation are perceived as being more important than others at a given time. Thus, the degree of arousal (intensity) of the different types of concern will vary. Concerns will vary depending on the amount of one's knowledge about and experience with the innovation. Use and nonuse make a difference; whether the innovation might be used sometime in the future, direct involvement with it has just begun, or the person is highly experienced with the innovation will likely mean that different types of concern are more intense. In addition, there appears to be a predictable pattern to the movement of intensity of concern across types.

Stages of Concern About the Innovation

Different "stages of concern about the innovation" have been identified. It appears that there is developmental movement through these stages; that is, certain types of concern will be more intense, then less intense, before arousal of other types will occur, thus the name "stages." As in Fuller's work with teachers' concerns about teaching, stages of concern about an innovation appear to develop from early *unrelated*, to *self*, to *task*, and finally to *impact* concerns. Seven different Stages of Concern About an Innovation have been defined in Figure I.2. These stage definitions provide the conceptual basis for development of the SoC Questionnaire and interpretation of its data.

The Arousal and Resolution of Concerns

Concerns about innovations appear to be developmental in that earlier concerns must first be resolved (lowered in intensity) before later concerns emerge (increase in intensity). The research suggests that this developmental pattern holds for most process and product innovations.

As Fuller pointed out, arousal and resolution of concerns require quite different inputs:

> "Arousal seems to occur during affective experiences -- for example, during confrontation with one's own video tape.... Resolution seems to occur through more cognitive experiences: acquisition of information, practice, evaluation, synthesis and so on" (1970, p. 11).

However, resolution of earlier concerns and the arousal of later concerns are not accomplished simply by having more knowledge about or time and experience with the innovation. Many other factors influence concerns as well. For example, the innovation may be basically a bad one. The knowledge and skill requirements may be beyond the person's capabilities. Or other demands on the person may prohibit the innovation from having a high priority in the person's life space. In any case, the process of the arousal and resolution of concerns is highly personal and requires time as well as timely intervention of both cognitive and affective natures. Highly intense concerns may not be easily reduced, and in some cases a person's history, dynamics, and capabilities may make resolution of certain concerns nearly impossible. In general, however, it appears that a person's concerns about an innovation develop toward the later stages (i.e., toward impact concerns) with time, successful experience, and the acquisition of new knowledge and skill.

It is critical to note that higher level concerns development cannot simply be engineered by an outside agent. Holding concerns and changing concerns is a dynamic of the individual. The timely provision of affective experiences and cognitive resources can provide the grist for concerns arousal and resolution, thereby facilitating the development of higher level concerns. But there is no guarantee that arousal of higher stage concerns will follow the reduction of lower stage concerns. Providing inputs that are not stage relevant (e.g., attempting to force high level concerns) is an assured way to increase the intensity of lower stage concerns. Whether and with what speed higher level concerns develop will depend on the person as well as the innovation and the environmental

Figure I.2 Stages of Concern About the Innovation[2]

0 *AWARENESS*: Little concern about or involvement with the innovation is indicated.

1 *INFORMATIONAL*: A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about herself/himself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.

2 *PERSONAL*: Individual is uncertain about the demands of the innovation, her/his inadequacy to meet those demands, and her/his role with the innovation. This includes analysis of her/his role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.

3 *MANAGEMENT*: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.

4 *CONSEQUENCE*: Attention focuses on impact of the innovation on students in her/his immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.

5 *COLLABORATION*: The focus is on coordination and cooperation with others regarding use of the innovation.

6 *REFOCUSING*: The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.

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[2]Original concept from Hall, G. E., Wallace, R. C., Jr., & Dossett, W. A. *A developmental conceptualization of the adoption process within educational institutions*. Austin: Research and Development Center for Teacher Education, The University of Texas, 1973.

context. Personalized interventions can facilitate change, but, in the end, each individual determines for herself or himself whether or not change will occur. Attending to concerns is in no way intended to be a manipulation of the person. Rather, adoption agentry is demonstrating the recognition of the inevitable presence of concerns within individuals and the extension of a helping hand to assist in coping with and resolving those concerns.

SECTION II.

THE STAGES OF CONCERN ABOUT THE INNOVATION QUESTIONNAIRE

The SoC Questionnaire was developed to provide a quick-scoring measure of Stages of Concern. It was validated over a three year period, preceded by ten years of measurement development and research by Frances Fuller and others as they studied the concerns of teachers about teaching. When development of an SoC measure was started, several different formats and methodologies were explored. The resulting SoC Questionnaire was tested for estimates of reliability, internal consistency, and validity with several different samples and eleven different innovations. The next subsection describes briefly the history of development of the SoC Questionnaire; this is followed by reports on the various reliability and validity studies that have been conducted.

Development of the SoC Questionnaire

In the fall of 1973, the first exploratory attempts were made to assess the concerns of individuals about a specified innovation. The first pilot instrument consisted of an open-ended concerns statement and a forced ranking. Variations in open-ended formats, the use of Likert scales, adjective checklists, and interviewing procedures all were explored initially.

By the early spring of 1974, two strategies for measuring Stages of Concern had been identified. The primary strategy was the development of an instrument in the form of a quick-scoring pencil-and-paper questionnaire. The second strategy entailed the development of a clinical instrument using open-ended questions and an objective scoring procedure for classifying individual responses. The SoC Questionnaire (SoCQ) was the product of the first strategy; the Open-Ended Concerns Statement (Newlove & Hall, 1976) was the result of the second strategy.

The first major step in developing the SoCQ was to identify potential items. Project staff members were asked to write items that could indicate a concern of an individual at a particular stage. Definitions and scale points from the original CBAM paper (Hall, Wallace, & Dossett, 1973) were used as guidelines. Items also were selected from the Open-Ended Concerns Statement data that had been collected during the pilot studies.

Five hundred forty-four items were generated by the staff. Using the definitions from the original CBAM paper, item-cards were sorted into eight groups by ten people. The groups corresponded to the seven Stages of Concern and an "unacceptable" category. The results of the Q-sort indicated that at least 400 items were related to a given Stage of Concern, as agreed upon by six or more of the judges.

Those items agreed to were edited for redundancy and reworded into complete statements. One hundred ninety-five items were selected through this process and included on the pilot instrument.

In May of 1974, the pilot instrument of 195 items was sent to a sample of teachers and college faculty stratified according to years of experience with an innovation. Two innovations were identified -- teaming in elementary schools and the use of instructional modules in colleges. Both users and nonusers of the innovations were involved in the study. Three hundred fifty-nine questionnaires were returned and construction of subscales was initiated. Item correlation and factor analyses indicated that seven factors explain over 60% of the common variance among the 195 items and that the hypothesized scales correspond to the factor scales.

Selected persons who had completed the 195-item SoC measure were interviewed to assess their concerns about the innovation. Judges reached agreement on how each person should be classified and these data were subjectively correlated with a person's classification on the 195-item measure.

A 35-item questionnaire was prepared by selecting items from each of the factors of the 195-item questionnaire. In September 1974, this questionnaire was administered to 171 higher education and elementary school faculty members. One week later, the same form was readministered to establish test-retest reliability.

During the subsequent two years, the 35-item SoC Questionnaire was used in cross-sectional and longitudinal studies of 11 different educational innovations. Several different validity studies have been explored. The SoCQ data has been compared with expert judge ratings of Open-Ended Concerns Statements. Respondents have been interviewed about their concerns and the interview tapes rated for concerns. These ratings then have been contrasted with the SoC Questionnaire data. Individuals have been asked to respond to SoC stage definitions and to indicate their relative intensity of concern, and Level of Use interview tapes have been analyzed to determine concerns. The SoC Questionnaire data have been interpreted and predictions made about what the respondents would reflect in an interview; these predictions were compared to actual interview data. And extensive dialog and interaction have occurred during the two years subsequent to the SoCQ development as the project staff developed and refined procedures for interpreting the data.

The general conclusion is that the SoC Questionnaire accurately measures Stages of Concern About the Innovation. In fact, the SoC Questionnaire appears to do an even better job than other measures and clinical judgments.

The next subsection presents more detailed psychometric information about the SoC Questionnaire; Section IV provides an extensive discussion about interpretation.

Reliability of the SoC Questionnaire

The items representing each stage on the questionnaire were selected in such a manner that high internal reliability was very likely. One of the necessary conditions for an item to be included was that responses to it correlate more highly with responses to other items measuring the same stage than with responses

to items on other scales. As a result, high internal reliability was assured. Figure II.1 shows the alpha coefficients of internal consistency for each of the seven Stages of Concern scales. These coefficients reflect the degree of reliability among items on a scale in terms of overlapping variance. The formula is a generalization of the Kuder-Richardson Formula 20 for dichotomous items (Cronbach, 1951). Program TESTAT on the VSTAT library (Veldman, 1967) was used to compute these coefficients using data from a stratified sample of 830 teachers and professors. Many of these persons provided data for the two-year longitudinal studies of concerns. The coefficients in Figure II.1 were computed on the basis of their responses in the fall of 1974, their first exposure to the questionnaire.

Figure II.1. Coefficients of Internal Reliability for the Stages of Concern Questionnaire, N = 830

Stage	0	1	2	3	4	5	6
Alphas	.64	.78	.83	.75	.76	.82	.71

A sample of 171 individuals were asked to complete the SoC Questionnaire a second time, two weeks after their initial completion of the instrument. One hundred thirty-two completed and mailed in this "retest" data. Test-retest correlations were computed and are shown in Figure II.2.

Figure II.2. Test-Retest Correlations on the Stages of Concern Questionnaire, N = 132

Stage	0	1	2	3	4	5	6
Pearson-r	.65	.86	.82	.81	.76	.84	.71

Validity of the SoC Questionnaire

The validity of the scores on the SoCQ as measures of the defined Stages of Concern could not be demonstrated as easily as could their reliability. There does not exist another measure of concerns with which the SoC Questionnaire could be compared easily. Following the strategy outlined by Cronbach and Meehl (1955), an attempt was made to demonstrate that scores on the questionnaire relate to each other and to other variables as concerns theory would suggest. Thus, intercorrelation matrices, judgments of concerns based on interview data, and confirmation of expected group differences and changes over time have been used to investigate the validity of the SoCQ scores.

Correlation Matrices and Factor Analysis

The first indications that the questionnaire might measure concerns as conceptualized came with the analysis of the 195-item pilot checklist (May 1974). This prototype instrument contained six subscales (Stage 1 through Stage 6). Each stage consisted of between 14 and 68 items (which had been Q-sorted by the staff into those stages). Evidence for the validity of these stages as separate constructs which were related in a developmental way comes from two analyses. An analysis of the data from 359 persons who had completed the 195-item questionnaire indicated that 83% of the items correlated more highly with the stage to which they had been assigned than with the total score on the instrument. Indeed, 72% correlated more highly with the stage to which they had been assigned than with any other stage.

Each item, it should be noted, was responded to on a zero through seven scale, a high response indicating that the person considered that item to be "very true of me now." Scores were computed by adding the responses for the items in each scale; the sum of the scale scores constituted the total score. This correlational evidence indicated that the items on a particular scale tended to be responded to similarly, the inference being that the items in each scale measured a notion distinct from notions measured by other scales.

Later, a correlation matrix was computed based on these same data. Figure II.3 is a summary of how the scales (each measuring one stage) intercorrelate.

The correlations near the diagonal are higher than those more removed from it. Guttman (1954, 1957) has applied the term *simplex* to this type of pattern. The simplex pattern in a matrix corresponds to a set of objects having degrees of similarity and dissimilarity with one another in such a way that they can be arranged on a line. Each object will be more like an object immediately beside it than like any object farther away on the line. Thus, the scales on the pilot questionnaire indicated an order consistent with the hypothesized order of the Stages of Concern.

Because of programming limitations, it was necessary to select 150 items from the 195 before subjecting the data to a factor analysis. Content of items and item-scale correlations were examined; 45 items were deleted for this analysis. An image covariance matrix based on the 150 variables and 363 respondents was subjected to principal components factor analysis with varimax rotation. Seven factors were extracted even though only six were hypothesized in order to allow for more complete examination of the structure of the matrix. As it turned out, the seventh factor proved to be very relevant to the Stage of Concern theory in that it was immediately identified as representative of Stage 0 concerns.

Figure II.3. Intercorrelation of 195-Item Stages of Concern Questionnaire Scales

		Stages					
		1	2	3	4	5	6
Stages	1	1.0	.68	.47	.21	.21	.19
	2		1.0	.78	.43	.37	.43
	3			1.0	.60	.51	.59
	4				1.0	.82	.80
	5					1.0	.77
	6						1.0

Staff members were asked to peruse the 195 items in the pilot questionnaire and identify those items which reflected Stage 0 concerns. (No items had been specifically designed to reflect these concerns on the basis of input from external consultants who did not believe Stage 0 was relevant to the theory.) Each item selected by at least six of ten staff members as representative of Stage 0 was reclassified. Most of these items had been Stage 1. Thus, it was possible to identify each of the 150 items in the factor analysis pool with one of the seven (0 through 6) Stages of Concern. It was observed that the items in each stage had primary loadings predominantly on one of the varimax factors.

A comparison of the hypothesized scales with the obtained factor structure revealed surprisingly high congruence. Stages of Concern scores calculated by summing each person's responses on the item or each scale can be correlated with factor scores computed on the basis of the varimax rotated factor structure. A program developed these correlations, which are summarized in Figure II.4. This matrix shows that varimas factor 7 corresponds to the SoC scale for Stage 0, factor 1 corresponds to Stage 1, etc. This analysis led project members to infer that the seven scales tapped seven independent constructs which could be identified readily with the seven Stages of Concern proposed in the Concerns-Based Adoption Model.

Correspondence Between SoC Questionnaire Scores and Other Measures of Concern

In September 1974, 27 professors completed the 35-item questionnaire and also filled out an open-ended response questionnaire which asked them to say what they were concerned about "when you think about your use of modules." Each of these 27 professors was given a Stages of Concern rating by four CBAM staff

Figure II.4. Correlations Between Varimax Factor Scores and Scale Scores on the Pilot Stages of Concern Questionnaire -- Analysis of 150 Items, 363 Respondents

		Varimax Factor Scores						
		7	1	6	3	4	2	5
	0	.83	-.36	.41	.04	.05	-.04	-.09
	1	.46	.67	-.40	-.10	.22	-.35	.01
SoC	2	-.14	.49	.72	.36	.04	-.14	.26
Scale	3	.10	-.04	-.34	.91	.10	.12	-.12
Scores	4	-.14	-.19	.00	.12	.96	-.02	-.07
	5	.10	.37	.11	-.11	.11	.82	-.34
	6	.16	-.05	-.17	-.02	.07	.40	.88

members. These four judges met and developed a consensus on each of the 27 SoC ratings. Independent ratings on the 27 open-ended statements had an estimated .59 reliability. Group consensus reliability was estimated at .84. These estimates of judgmental consistency were computed using a technique described by R. L. Ebel (1951) and programmed by Veldman (1967).

Multiple regression was used to determine the relationships between rated SoC and scores on the questionnaire. Using raw scores on the seven (0 through 6) scales as predictors, a multiple R of .58 was obtained. This was not significant at the .05 level for these few subjects and this many predictors. When raw scores on Stages 0 and 6 only were used, the multiple R dropped only slightly to .52, which is significant at the .02 level for two predictors and 27 subjects. Thus, there is certainly some relationship between SoC scores and ratings of concerns expressed on open-ended statements. Considering the difficulty of the rating task, the recognition of this relationship was encouraging.

In the spring of 1975, another check on the validity of the SoC was made. As part of a cooperative evaluation study with Austin Independent School District, 161 teachers involved in individualizing math and reading were assessed as to Levels of Use and Stages of Concern of these innovations. Forty teachers who had extremely high or low factor scores on SoC Stages 2 or 5 for reading (ten teachers high on 2, ten low on 2, ten high on 5, ten low on 5) were interviewed for concerns about individualized reading. These interviews were carefully planned. Cue questions were asked which elicited information concerning each of the seven (0 through 6) concerns categories. Probes were used in the event that not enough specific information was provided initially. Following the formal interview, the

teachers were given a short, written description of the Stages of Concern. Each teacher reviewed each of the descriptions and indicated on a one-to-eight scale how true that was of her/him at that time. She/he was then asked to indicate, on a separate sheet, the two descriptions about which she/he was most concerned and the two she/he was least concerned about. (It was noted that, in many cases, the teachers' responses on paper seemingly were incongruent with what they had just said in the interview, and even inconsistent in themselves.)

When raw scores were used to predict interviewers' ratings of concern at each stage, results were produced similar to those obtained in the study described above. In this case, ratings of concern on each stage were being predicted instead of overall SoC. Stages 1, 3, 4, and 6 each had multiple R's over .56, significant beyond the .05 level. Stages 0, 2, and 5 were predicted with R's of .52, .50, and .45, which were not significant at the .05 level but were consistently high. Again, it was clear that these ratings of concern on each stage were related to the concerns expressed on the SoC Questionnaire.

An important consideration is that there are indications that the teachers in this study were not a satisfactory sample on which to examine validity of the SoC Questionnaire. Some were very much overburdened with innovations and others were anxious about upcoming school district decisions concerning the individualized concept in general. It is likely that individualized reading was not a priority for many of these teachers. Indeed, fully 33% of the teachers who were said to be using the program were rated as nonusers in an evaluation study. In addition, the reliability estimates (alphas) on the SoC Questionnaire scales were amazingly low as compared to other samples of teachers. Figure II.5 shows the means, sigmas, and alphas for the 40 teachers compared with the same statistics previously obtained on 380 teachers and professors in other studies.

Not only are the alpha coefficients strikingly lower, but the scores on the stages indicate a lack of concern for this innovation. The 40 teachers have extremely high Stage 0 concerns (unconcerned about the innovation) and are much lower elsewhere. Considering the low reliability of the SoC scores within this group, it is somewhat surprising that a significant degree of correspondence between them and the other measures was obtained.

A more rigorous validity study was conducted in August and September 1976. The research focus in this effort was expressed as follows: How accurate are inferences about a person's concerns about an innovation likely to be when these inferences are based on the SoC Questionnaire data? In order to answer this question, staff members first assessed a person's concerns by listening to taped interviews. That person's concerns were estimated, then the actual SoCQ scores were examined. This procedure enabled the investigators to provide quantitative ratings on the person's concerns prior to exposure to SoCQ scores, so that comparisons could be made. Pilot studies had shown that when the investigator is exposed to SoCQ scores prior to assessing concerns in some other manner, a typical reaction had been that the scores did reflect the person's concerns, but these judgments may have reflected a pygmalion prophesy. It was then impossible to assign quantitative concerns scores on the basis of the alternate measure without bias due to exposure to the SoCQ scores.

Data analysis were based on:

1. The investigators' ratings of SoC based on a taped interview. The highest perceived concern was indicated along with one or two "also

Figure II.5. SoC Questionnaire Statistics on 40 Elementary Teachers Involved in AISD Validity Study, Compared with SoC Standardization Data, N = 830

	Stages of Concern							
	0	1	2	3	4	5	6	Total
40 Validity Study Teachers								
means	20.0	12.0	17.0	18.3	1 .3	16.9	15.5	116.0
sigmas	7.7	6.6	6.3	7.9	7.6	6.3	6.6	41.0
alphas	.69	.56	.52	.62	.54	.41	.41	.91
646 Standardization Sample Teachers								
means	5.8	12.9	13.5	14.0	23.4	20.0	16.6	106.2
sigmas	5.4	9.2	9.8	8.1	8.0	8.5	8.0	36.6
alphas	.62	.81	.85	.77	.79	.83	.75	.90

high" concerns. The remaining four or five stages were, by implication, of lower concern.

2. SoC raw stage scores (seven plus total).
3. SoC percentile stage scores (seven plus total).

It should be pointed out that the interviews used were Level of Use interviews that were purposely designed to minimize rather than elicit concerns input from the interviewee. Thus, the staff had to infer concerns from interviews that had not been specifically designed to measure concerns. Three staff members were involved in this validity study of 28 persons selected at random from the spring 1976 sample in the two-year study.

The first analysis investigated the reliability of the investigator's ratings of concerns. In general, reliabilities were moderate to high, as presented in Figure II.6. Ratings of the "highest" and "also high" concerns showed group reliabilities between .42 and .85. Six of the seven were above .58 ($p < .01$). Only Stage 3 showed a non-significant reliability (.42, $p = .06$). These were very encouraging findings because pilot attempts at assessing concerns from interviews had provided less reliable data.

Figure II.7 shows the correlations between the investigator's ratings and the rank ordering of the SoCQ percentile scores. Ideally, high diagonal correlations would be obtained. Indications are that Stage 5 is the "cleanest" ($r = .54$).

Figure II.6. Reliability of Ratings of Stages of Concern in Validity Study Analysis

Stage	Reliability	p
0	.59	<.01
1	.85	<.01
2	.60	<.01
3	.42	.06
4	.71	<.01
5	.73	<.01
6	.67	<.01

Stages 1 and 2 show high diagonal correlations, but also correlate with each other off the diagonal. Stages 0, 3, and 6 are marginally clean, while Stage 4 failed to correlate on the diagonal at all (r = .13). Six out of seven significant correlations on the diagonal is very good. Twenty-two of the 42 off-diagonal elements were non-significant. Half of the off-diagonal significant correlations were negative (5/11). It can be concluded that, except for Stage 4, validity of the SoC is supported in this matrix. Some indication of non-independence of Stages 1 and 2 is evident.

Convincing demonstrations of the validity of the Stages of Concern Questionnaire have come in the course of its use over the two years of longitudinal study. One case in which the SoC scores dramatically reflected changes in concerns which had been predicted by concerns theory involved the faculties of two elementary schools in an urban school district who were invited to participate in a summer workshop where they would help develop and learn how to use a new approach to reading instruction. The new approach, which was to replace a traditional basal reader program, might best be described as a diagnostic-prescriptive program. It calls for teachers to begin by assessing student needs, followed by the establishment of specific instructional objectives, appropriate instruction, and finally careful evaluation of pupil mastery of the stated objective. Although the new approach continues to utilize basal readers, they are used, or supposedly used, in very different ways. In fact, the new program requires a very different way of teaching reading.

As it turned out, approximately half (N = 22) of the faculty members were able (and willing) to attend the five-week summer workshop. To accommodate those who were not in the workshop (N = 25), a one-day workshop was set up just prior to the opening of school in the fall to explain the new program and its implications

Figure II.7. Correlation of Peak Stage Estimates and Rank Order of SoC Percentile Scores

		Peak SoC						
		0	1	2	3	4	5	6
Quantitative Ratings	0	.27	.34	-.11	.02	-.22	-.22	-.13
	1	.15	.47	.47	-.09	-.11	-.50	-.45
	2	.03	.38	.42	-.21	-.10	-.24	-.34
	3	-.25	-.08	.00	.30	-.04	.02	.09
	4	-.05	-.22	-.26	-.01	.13	.08	.33
	5	-.20	-.48	-.20	-.03	.31	.54	.15
	6	-.20	-.20	.16	-.15	.24	.17	.31

N = 65 critical r = .25 $p \leq .05$ —

= .32 $p \leq .01$ ═

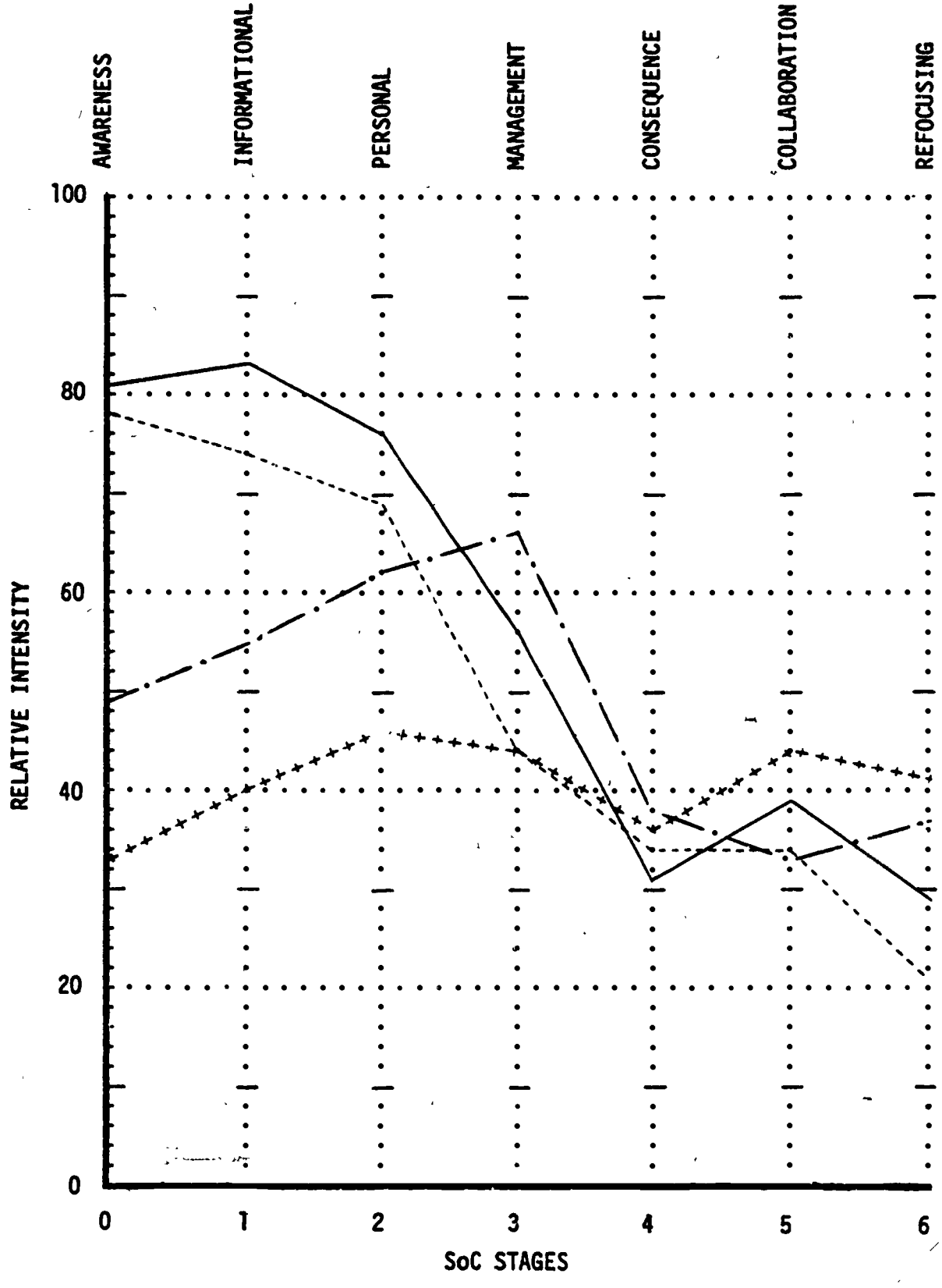
for them. On that same day in a separate location, the workshop participants were meeting for a different purpose.

Before any formal training began with either group, both groups were asked to complete the Stages of Concern Questionnaire which measured their concerns about the new reading program.

Persons who had been exposed to the workshop had higher scores on Stages 3, 5, and 6, while those not in the workshop had higher scores on Stages 0, 1, and 2. (All differences were significant beyond $p < .05$.) There were no significant differences on Stage 4 concerns between the two groups.

Another case demonstrating the validity of the SoC Questionnaire involved the faculty of a single school which was part of a longitudinal study of team teaching. The teachers in this particular school moved from not teaming through establishing teaming as a routine over a two-year period. As hypothesized by SoC theory, their concerns shifted from being high on the lower (0, 1, 2) stages through a high on management concerns (3), and finally to fairly low intensity on all concerns stages (Figure II.8). As discussed in detail later in the Interpretation section, concerns profiles such as this one add support to the validity of the concerns theory as well as to the SoC Questionnaire.

Figure II.8. Two-Year Movement of Teachers' Concerns About Teaming in One Small School



Summary

During the two and one-half years of research related to measuring Stages of Concern About the Innovation, the 35-item Stages of Concern Questionnaire was developed. In a one-week test-retest study, stage score correlations ranged from .65 to .86 with four of the seven correlations being above .80. Estimates of internal consistency (alpha coefficients) range from .64 to .83 with six of the seven coefficients being above .70. A series of validity studies was conducted, all of which provided increased confidence that the SoC Questionnaire measures the hypothesized Stages of Concern.

SECTION III.

USING AND SCORING THE SoC QUESTIONNAIRE

The SoC Questionnaire consists of three parts: the introductory page, two pages of items, and a demographic page. The 35 items remain the same for different administrations with only the name of the innovation changed on the cover page. The SoCQ can be administered by mail or in person. A cover letter can be used to introduce the SoC Questionnaire and to further define the innovation. Scoring is based on converting the item raw score totals for each scale into percentile scores, which then become the basis for interpretation.

Components of the SoC Questionnaire

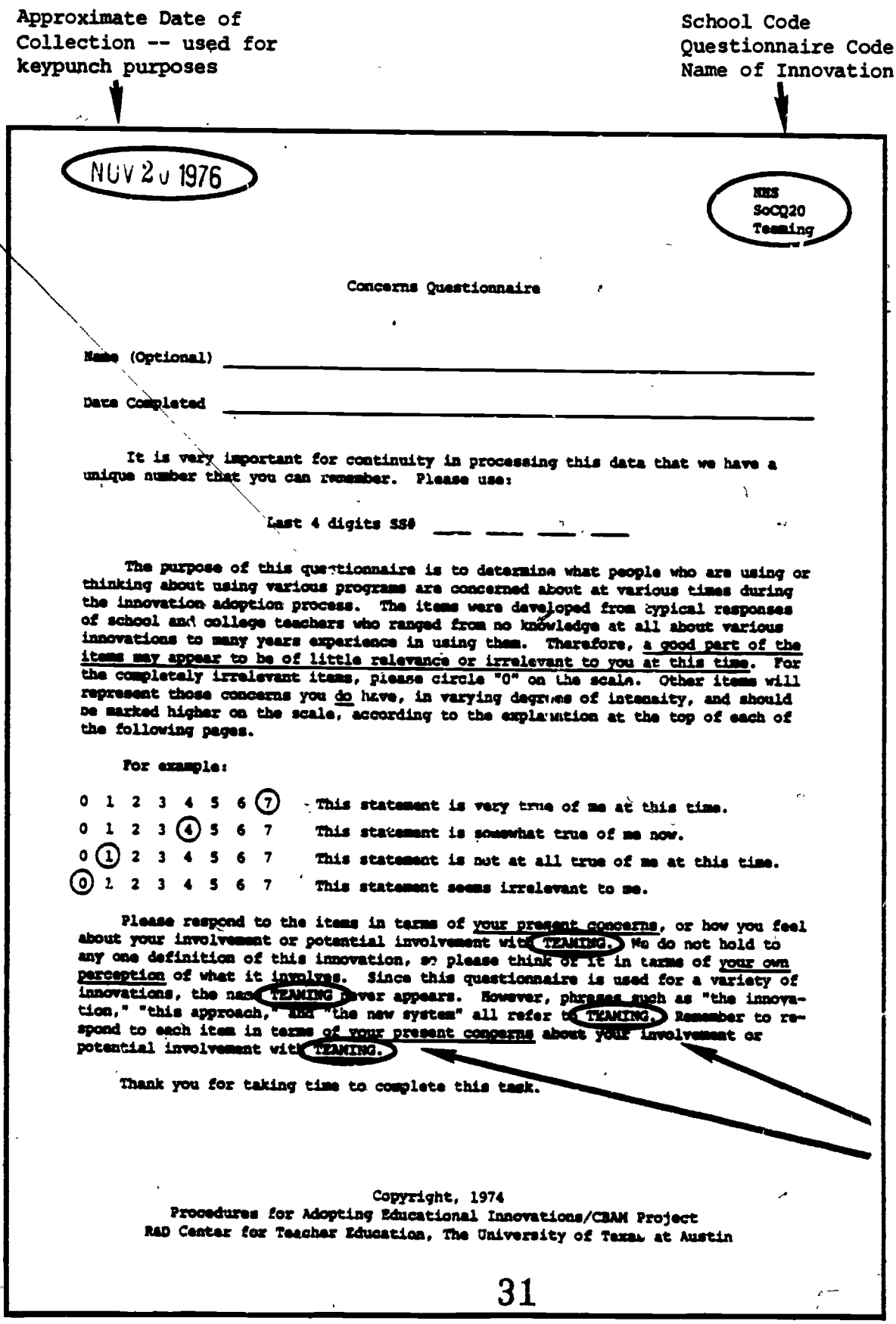
Examples of the three parts of the SoCQ -- the introductory page, the 35 items, and the demographic page -- are included in Appendix A. The *introductory page* presents the purpose of the questionnaire, explains and shows through examples how to complete the instrument, and indicates which "innovation" the individual is to consider when responding. Space is provided for identification of the respondent, either by name or some type of identification number. Finally, in the upper right hand corner of the page, a code is normally written to identify the specific institution receiving the questionnaire and the name of the innovation being addressed. This latter information expedites data management when data are being collected from more than one institution or about more than one innovation.

Figure III.1 is a copy of the introductory page with those elements indicated that need to be changed to fit the particular use that is made of the SoCQ. By simply changing the name of the innovation in the marked places and identifying the institutional setting, the SoCQ is ready for use. No changes are necessary in the items or other wording on the introductory page.

The introductory page was revised based on continuing feedback from respondents during the instrument development process until it clearly conveyed the information and directions needed to get accurate responses. For example, in the early stages of development, some respondents expressed a degree of frustration over the items that seemed irrelevant to them at that moment. Thus, the statement about the applicability of the instrument to a wide range of persons and the underlined statement about relevance of items were entered. These steps seemed to alleviate much of the frustration over this point.

Initially, some teachers tended to respond according to their generalized concerns about teaching rather than to concerns about a specific innovation or program. Also, there was some tendency to respond on the basis of past concerns rather than present concerns. The final paragraph was designed to focus the responses on concerns at the time the SoCQ is completed. Because it has been

Figure III.1 Introductory Page of the SoCQ



refined so extensively, it is suggested that any changes in the introductory page should be made with great care, for they could influence responses.

The second part of the questionnaire (see Appendix A) consists of the 35 *items* on two pages to which the individual responds. The respondent marks each item on a 0 to 7 Likert scale according to how true it is that the item describes a concern felt by the individual at the present time. The "0" at the end of the scale is recommended for marking items that are completely irrelevant.

Typically, ten to 15 minutes are required to complete the questionnaire. In all of the uses of the instrument to date, virtually no respondents have complained about the requirements for completing it. Instead, a number of persons have indicated that the items caused them to think about what they were doing in ways they had previously not considered.

Although the questionnaire is in no way a test, it is important that respondents complete it without consultation with anyone. The purpose is to identify the concerns of individuals, not consensus concerns of several persons.

The third, and optional, part of the SoC Questionnaire is the *demographic page*. This page has been found extremely useful in gathering other information about the respondents for both sample description and correlation purposes. Questions on this part of the questionnaire vary according to the information needs of the person or group issuing the instrument. This part of the questionnaire could be omitted if there was no need for demographic information, or changed in whatever ways are needed to fit a particular situation. A sample demographic page is found in Appendix A.

Administering the SoCQ

There is no prescribed setting or process for administration of the questionnaire. To date, it has been administered in the following ways:

1. Mailed out with a deadline for completion and picked up personally by the issuing person or group.
2. Handed out personally and returned by mail.
3. Issued and returned via mail.
4. Personally issued and collected on an individual basis.
5. Administered to groups by a project representative.

The seriousness with which individuals respond to the questionnaire does not seem to vary noticeably in relation to the method of administration. Under all of these conditions, a high percentage of subjects have responded to every item with a minimum of confusion and with a response pattern indicating careful and independent consideration of all items.

Several cautions that should be considered when administering the questionnaire are:

1. If the return of the questionnaire is by mail, the percentage of returns is likely to be reduced, especially if it was issued by mail.

2. Respondents should not be asked to return their questionnaire to an immediate superior, e.g., teacher to principal; such a process can be threatening to respondents and create at atmosphere of suspicion within an institution. It is acceptable, however, for a superior to distribute the forms if they can be returned somewhere else. A stamped, addressed envelope attached to the questionnaire has proved useful in the past.

3. When administering to a group, it is best to discourage questions of clarification. The questions may "snowball" to the point that responses of individuals are influenced.

When the SoC Questionnaire is to be administered in other than face-to-face ways, a *cover letter* should be attached. The cover letter can introduce the questionnaire, define the innovation, and explain the importance of completing the questionnaire. Instructions about handing in the completed questionnaire can also be included in the cover letter. In some cases, the cover letter may also be used to introduce the respondents to the person(s) conducting the data collection effort. One overriding rule to follow in developing a cover letter is to be clear and to cover the necessary points in a very brief amount of space.

A sample cover letter and copy of the SoC Questionnaire are included in Appendices B and A, respectively. As noted before, changing the introductory page may lead to confusion for the respondents. The items should definitely be left unchanged (see Section V, Limitations and Restrictions).

Scoring the SoCQ

Scoring of the questionnaire is a relatively simple process. Computer programs, which are described and included in Appendix C, have been written to score the SoCQ and to display the data in a useful format. However, the measure can also be hand-scored, especially convenient when only a small number of questionnaires need to be processed. In addition, anytime a computer program is used, a few questionnaires should be hand-scored to verify the computer output.

The questionnaire consists of 35 statements, each expressing a certain concern about the innovation. Respondents indicate the degree to which each concern is true of them by marking a number next to each statement on a 0 to 7 scale. High numbers indicate high concern, low numbers low concern, and 0 is indicative of very low concern or completely irrelevant items.

The 35 statements in the questionnaire were carefully selected to represent seven fundamental areas of concern. Each scale consists of items that are representative of concerns which are prominent at a specific Stage of Concern, according to the concerns theory. Each of the seven Stages of Concern is represented by five statements. The "raw score" for each scale is simply the sum of the responses to the five statements on that scale. Figure III.2 shows the item numbers and statements, arranged according to Stages of Concern. Figure III.3 shows the item numbers and Stage of Concern with which that item is associated.

Once the seven raw scale scores have been obtained, it is usually necessary to convert these to percentile scores to interpret them. Figure III.4 shows the scale score and the percentile of that score for each of the seven Stages of

Figure III.2. Statements on the Stages of Concern Questionnaire Arranged According to Stage

Item Number	Statement
	STAGE 0
3	I don't even know what the innovation is.
12	I am not concerned about this innovation.
21	I am completely occupied with other things.
23	Although I don't know about this innovation, I am concerned about things in the area.
30	At this time, I am not interested in learning about this innovation.
	STAGE 1
6	I have a very limited knowledge about the innovation.
14	I would like to discuss the possibility of using the innovation.
15	I would like to know what resources are available if we decide to adopt this innovation.
26	I would like to know what the use of the innovation will require in the immediate future.
35	I would like to know how this innovation is better than what we have now.
	STAGE 2
7	I would like to know the effect of reorganization on my professional status.
13	I would like to know who will make the decisions in the new system.
17	I would like to know how my teaching or administration is supposed to change.
28	I would like to have more information on time and energy commitments required by this innovation.
33	I would like to know how my role will change when I am using the innovation.
	STAGE 3
4	I am concerned about not having enough time to organize myself each day.
8	I am concerned about conflict between my interests and my responsibilities.
16	I am concerned about my inability to manage all the innovation requires.
25	I am concerned about time spent working with non-academic problems related to this innovation.
34	Coordination of tasks and people is taking too much of my time.
	STAGE 4
1	I am concerned about students' attitudes toward this innovation.
11	I am concerned about how the innovation affects students.
19	I am concerned about evaluating my impact on students.
24	I would like to excite my students about their part in this approach.
32	I would like to use feedback from students to change the program.
	STAGE 5
5	I would like to help other faculty in their use of the innovation.
10	I would like to develop working relationships with both our faculty and outside faculty using this innovation.
18	I would like to familiarize other departments or persons with the progress of this new approach.
27	I would like to coordinate my effort with others to maximize the innovation's effects.
29	I would like to know what other faculty are doing in this area.
	STAGE 6
2	I now know of some other approaches that might work better.
9	I am concerned about revising my use of the innovation.
20	I would like to revise the innovation's instructional approach.
22	I would like to modify our use of the innovation based on the experiences of our students.
31	I would like to determine how to supplement, enhance, or replace the innovation.

Figure III.3. Item Numbers and Associated Stage of Concern

Item Number	SoC	Item Number	SoC	Item Number	SoC	Item Number	SoC
1	4	10	5	19	4	28	2
2	6	11	4	20	6	29	5
3	0	12	0	21	0	30	0
4	3	13	2	22	6	31	6
5	5	14	1	23	0	32	4
6	1	15	1	24	4	33	2
7	2	16	3	25	3	34	3
8	3	17	2	26	1	35	1
9	6	18	5	27	5		

Concern. The total score, which is simply the sum of the seven raw scale scores, may also be converted to a percentile scale. Figure III.4 also contains the total scores and corresponding percentile scores.

These percentiles are based on the responses of 646 individuals who completed the questionnaire in the spring of 1975. The individuals were a carefully selected stratified sample from elementary schools and higher education institutions with a range of experience with the innovation of teaming or modules. Experience has shown that the percentiles in this table are representative of other innovations. The validity studies reported in Section II were conducted using these percentiles to interpret concerns about several innovations.

Displaying SoCQ Data

SoCQ data can be displayed in different kinds of tables or graphically. The computer program listed in Appendix C provides for two basic displays. Either the stage and total percentile scores can be displayed for a set of individuals (e.g., Figure IV.1), or the item responses and total stage raw scores and percentile scores can be displayed as in Figure IV.16.

The SoCQ data can also be summarized for groups of individuals. This can be done by reporting means for each stage, or the frequency of highest individual score on each stage (e.g., Figure IV.2). These two summary displays are described in Section IV. Interpretation of SoC Questionnaire Data.

Figure III.4. Stages of Concern Raw Score-Percentile Conversion Chart for Stages of Concern Questionnaire

Five Item Raw Scale Score Total	Percentiles for Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Total Raw Score	Percentile
0	10	5	5	2	1	1	1		
1	23	12	12	5	1	2	2	1- 42	3
2	29	16	14	7	1	3	3	43- 55	6
3	37	19	17	9	2	3	5	56- 60	9
4	46	23	21	11	2	4	6	61- 66	12
5	53	27	25	15	3	5	9	68- 72	15
6	60	30	28	18	3	7	11	73- 74	18
7	66	34	31	23	4	9	14	75- 78	21
8	72	37	35	27	5	10	17	79- 80	24
9	77	40	39	30	5	12	20	81- 83	27
10	81	43	41	34	7	14	22	84- 86	30
11	84	45	45	39	8	16	26	87- 89	33
12	86	48	48	43	9	19	30	90- 92	36
13	89	51	52	47	11	22	34	93- 95	39
14	91	54	55	52	13	25	38	96- 98	42
15	93	57	57	56	16	28	42	99-101	45
16	94	60	59	60	19	31	47	102-104	48
17	95	63	63	65	21	36	52	105-107	51
18	96	66	67	69	24	40	57	108-110	54
	97	69	70	73	27	44	60	111-112	57
20	98	72	72	77	30	48	65	113-114	60
21	98	75	76	80	33	52	69	115-118	63
22	99	80	78	83	38	55	73	119-122	66
23	99	84	80	85	43	59	77	123-125	69
24	99	88	83	88	48	64	81	126-127	71
25	99	90	85	90	54	68	84	128-132	74
26	99	91	87	92	59	72	87	133-136	77
27	99	93	89	94	63	76	90	137-141	80
28	99	95	91	95	66	80	92	142-144	83
29	99	96	92	97	71	84	94	145-150	86
30	99	97	94	97	76	88	96	151-156	89
31	99	98	95	98	82	91	97	157-161	92
32	99	99	96	98	86	93	98	162-173	95
33	99	99	96	99	90	95	99	174-189	98
34	99	99	97	99	92	97	99	191-245	99
35	99	99	99	99	96	98	99		

Graphic representation of the percentile scores often greatly assists interpretation of SoCQ data. Figure II.8 on page 19 is an example of such graphing. A blank graph which has been specifically designed for SoCQ profile presentations is included in Appendix D. To plot an individual or group profile, simply mark each vertical line at the point representing the percentile score for the appropriate Stage of Concern. Then connect the marks using a ruler or straightedge and pencil. It is recommended that the blank included here be copied so that all the graphs will have the same framework and scale.

Interpretation of the percentile scores is explicated in this manual in the next section. When scores are used in statistical analyses, we strongly encourage the use of the raw scores. Conversion to percentiles greatly affects the distribution of the scores (tending to make the distribution rectangular), making statistical assumptions more tenuous than would otherwise be the case.

SECTION IV.

INTERPRETATION OF SoC QUESTIONNAIRE DATA

Once collected and processed, Stages of Concern Questionnaire data can be interpreted at several different levels of detail and abstraction. The simplest form of interpretation is to identify the highest stage score (*Peak Stage Score Interpretation*). A more detailed interpretation can be developed by examining both the high stage score and the second highest stage score (*First and Second High Stage Score Interpretation*). The most sensitive interpretation can be developed by analyzing the complete profile (*Profile Interpretation*). By examining the percentile scores for all seven stages and interpreting the meaning of the different highs and lows and their interrelationships, a very rich clinical picture can be developed.

Interpretation of profiles will require some study and practice; however, the process in general is fairly easy to understand for those who have a clinical bent. For those who want a quick and relatively simple method, the straightforward quantitative interpretation of high and second high scores will probably be most useful.

Regardless of the interpretation procedure, caution must be taken in accepting an interpretation as the final truth. The interpretations that are made are only as good as the measure, the genuineness of the responses made by the respondent, and the skill of the interpreter. Therefore, all interpretations must be treated as hypotheses to be confirmed by the respondents, with their confirmation or rejection used to adjust and adapt the hypotheses.

Interpretation of the peak scores, the second highest scores, and profiles all can be done with individual or group data. Obviously, the larger the group the less sensitive to individual differences the interpretation will be. With any of these methods, the resultant interpretation also can be compared with the demographic data items. In some instances, the demographic data will help explain why certain concerns stages are more or less intense.

This section of the manual is divided into subsections that deal in depth with each of these interpretation procedures. Sample data and analyses are presented. The discussion unfolds from the simplest analysis to the most complex. By beginning with the straightforward procedures outlined, a full description of the concerns of the respondent(s) can be developed. The more intricate assessments that are described can be mastered with experience and by checking out hypothesized interpretations with respondents. Of course, previous psychological knowledge and training could be very useful tools for interpreting more complex cases.

Peak Stage Score Interpretation

The procedure for analyzing SoCQ data based upon peak scores is nearly the same for individual and group data. Each stage percentile score can be listed as illustrated in Figure IV.1. From this listing, the highest stage scores for each individual and the group can be identified. In dealing with a listing of percentile scores, sometimes it is useful to go down through the individual listings and circle the highest stage score for each individual, as has been done in the figure. Occasionally, another stage score will be within one or two percentile points, in which case both can be circled. Note that the Total Score is not used in this interpretation procedure. For more information about Total Score, see page 49.

Figure IV.1. Listing of Individual Stage of Concern Percentile Scores for a Science Curriculum Innovation

Subject Number	Stage of Concern Percentile Scores							
	0	1	2	3	4	5	6	Total
1	10	5	41	47	(86)	80	65	51
2	46	63	80	(94)	71	76	60	85
3	10	5	45	73	82	(93)	(92)	66
4	53	5	14	(90)	13	10	30	13
5	31	55	51	54	73	(77)	63	63
6	11	42	15	6	30	(87)	12	18
7	37	4	4	25	78	39	(87)	26
8	43	19	54	57	(83)	69	81	59
9	(99)	96	92	92	90	64	26	98
10	(77)	63	48	15	2	16	2	11
11	(97)	(99)	87	83	13	16	3	73
12	37	(91)	35	2	9	72	11	29
13	81	(97)	59	27	33	55	34	66
14	(99)	(99)	96	85	86	72	52	0
15	(98)	(99)	85	97	63	52	84	98
16	10	30	5	47	66	(95)	34	40
Group Profile N = 16								
Means	52	54	51	56	55	61	46	53

Interpretation of the high score is based directly on the Stages of Concern About the Innovation definitions that were presented as Figure I.2 on page 7. The stage scores are directly related to the stage definitions with the *relative* intensity of concern being indicated by the percentile score. The higher the score, the more intense the concerns at that stage. The lower the score, the less intense the concerns at that stage. Higher and lower are not absolute, however, but relative to the other stage scores for that individual. Thus, a 51st percentile for one person may represent her/his highest score and, therefore, her/his most intense Stage of Concern, while a 51st percentile stage score for another person may represent her/his lowest stage score -- a stage where there is not a great deal of concern.

Individuals in Figure IV.1 can be used to illustrate this interpretation procedure. For example, the highest Stage of Concern for the first individual listed is Stage 4. An 86th percentile score suggests that the individual is concerned about the "Consequences" of the innovation for students. This respondent is most concerned about her/his students and the effects of the innovation on them.

Other peak stage scores can be interpreted directly from the SoC definitions as in the previous example, with the exception of Stage 0. As described in more detail later in this section, Stage 0 has two very different meanings depending upon whether the respondent is a nonuser or a user of the innovation. For nonusers of the innovation, a high peak score on Stage 0 reflects awareness of and concern about the innovation, while for users of the innovation, a high Stage 0 score indicates lack of concern about the innovation. A high Stage 0 score is the only case when the peak score alone would not be sufficient for interpretation. Other information is required. Often study of other stage scores is helpful. Usually nonusers who are high on Stage 0 will also be high on Stages 1 and 2, while users who are high on Stage 0 will be low on Stages 1 and 2. Other sources of additional information include demographic data and outside judgment of whether or not the individual is using the innovation.

A high Stage 1 score is indicative of intense concerns about what the innovation is and what use of the innovation entails. Persons who have intense Stage 1 concerns are interested in having more descriptive information about the innovation. They are not concerned about "nitty gritty" details, but, rather, want general information about what the innovation is, what it will do, and what use would involve. Stage 1 concerns do not have a strong "self" component. They are quite substantive in nature, focusing on the structure and function of the innovation.

Stage 2 Personal concerns deal with what Fuller referred to as "self" concerns. A high Stage 2 score is indicative of ego-oriented questions and uncertainties about the innovation. Concern about status, reward, and potential or real effects of the innovation on the respondent are of high concern. A respondent with relatively intense personal concerns may, in effect, operationally block out more substantive concerns about the innovation.

A high Stage 3 score is indicative of intense concern about management, time, and logistical aspects of the innovation. Similar descriptions and interpretations can be made of peak scores on Stages 4, 5, and 6, interpreting the high score directly from the Stages of Concern About the Innovation definitions.

Group Data

There are two recommended ways of treating group data. One way, illustrated in Figure IV.2, is to tally the number of individuals that are high on each stage. This gives a clear picture of the range of peak stage scores within a group.

Figure IV.2. Frequency of Highest Concerns Stage for the Individuals Displayed in Figure IV.1

	Highest Stage of Concern						
	0	1	2	3	4	5	6
Number of Individuals	4	4	0	2	2	3	1

Another way to treat group data is to aggregate individual data by developing a profile that presents the mean scores for each stage of the individuals in a group such as a school faculty or the various departments of a college. This is illustrated in Figure IV.1. It should be noted that the more individuals that are aggregated, the less likely the mean is to be representative of the individual scores.

Normally, the group averages will reflect the dominant high and low Stages of Concern of the composite group; however, the individual highs should also be checked in case there are distinct subgroups. This is where the first treatment of group data, the frequency count of high stage scores, is beneficial. It can also be the case that averaging individual data obscures any high peak score trends. This is the case in Figure IV.1. Keeping in mind these problems with aggregating data, interpretation is again the straightforward translation of the high and low stage scores based on the Stages of Concern definitions.

Second High Stage Score Interpretation

To develop additional insight into the dynamics of concerns, the second high stage score as well as the peak stage score can be analyzed. Again, this analysis can be done with individual or group data.

Assuming the seeming developmental nature of concern, the second highest Stage of Concern will often be adjacent to the highest Stage of Concern. That is, if an individual is high on Stage 3 she/he will frequently be second highest

on Stage 2 or Stage 4. By looking at the second highest Stage of Concern, the presence or absence of this general pattern can be assessed.

Across a group, however, there are bound to be individuals who do not conform to the general pattern. There could be individuals who are highest on Stage 3 and second highest on Stage 6, or high on Stage 4 and second highest on Stage 1. Although some of the possible combinations are not very likely, all are conceivable.

Analysis of the second high stage score for an individual is also reasonably straightforward. For example, in Figure IV.1, the last individual listed was highest on Stage 5 and second highest on Stage 4. This individual is intensely concerned about working with others (her/his colleagues) in relation to the innovation. The second high Stage 4 concerns indicate that the respondent is also concerned about the consequences and effects the innovation has on her/his students.

A common high/second high combination is a person highest on Stage 3 and second highest on Stage 6. Individuals with this combination are concerned about management of the innovation (high Stage 3) and have some ideas about how to change their use (second high Stage 6). Individuals who are low on Stage 6 and high on Stage 3 do not have ideas about what to do and are apt to be stuck with their time and efficiency problems. Likewise, these individuals will often be second high on Stage 2, indicating their uncertainty and doubt about whether they can master the innovation.

With group data, developing a matrix that cross-tabulates the individual's highest Stage of Concern with her/his second highest is sometimes useful. One example of this approach is presented in Figure IV.3, where the highest Stage of Concern for most individuals tends to be either Stage 0, 3, or 6. The second most frequent highest Stage of Concern can be identified by selecting one of the highest Stages of Concern from the left-hand column and reading across. The frequencies listed show how the individuals were distributed on their second highest Stage of Concern. For example, the individuals who were highest on Stage 4 were second highest on either Stage 2 (35%) or Stage 5 (30%), accounting for 65% of the individuals.

With these data, individuals with high Stage 4 concerns appear to be of two kinds: those who still have very high personal concerns (second high is Stage 2) and those who are very highly concerned about working with others (second high is Stage 5). It is very likely that those who are highest on Stage 4 and second highest on Stage 5 may be in some teaming structure or at least have high concerns to begin more collaborative work with their colleagues in relation to use of the innovation. Quite different staff development activities for these two kinds of individuals with high Stage 4 concerns would obviously be in order.

Such an identification of the highest and second highest Stages of Concern combinations makes for a straightforward analysis and presentation that also reflects the complexity of concerns data. Other high/second high combinations are discussed in the Guidelines, pages 53 to 55.

The richest and most profitable interpretation of concerns data is probably entailed in a complete profile analysis. The next subsection deals in detail with profile interpretations.

Figure IV.3. Percent Distribution of Second Highest Stage of Concern in Relation to First Highest Stage of Concern

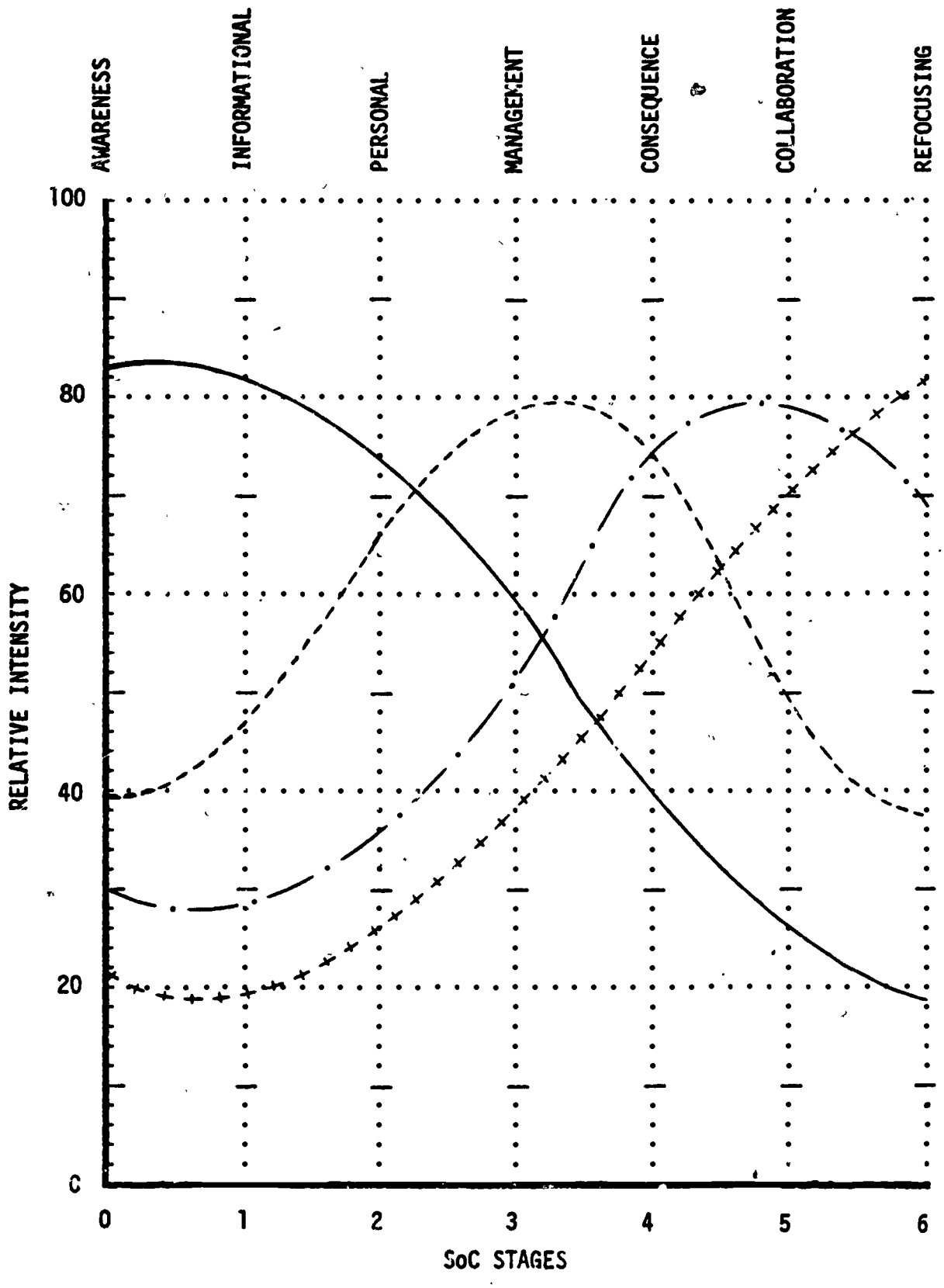
Highest Stage of Concern		Second Highest Stage of Concern: Awareness 0	Informational 1	Personal 2	Management 3	Consequence 4	Collaboration 5	Refocusing 6	Row Total Percent	Row Total N
0	Awareness	0	9.4	21.9	28.1	15.6	3.1	21.9	19.8	32
1	Informational	0	0	50.0	0	0	0	50.0	1.2	2
2	Personal	27.8	27.8	0	5.6	11.1	0	27.8	11.1	18
3	Management	3.7	3.3	20.0	0	10.0	0	56.7	18.5	30
4	Consequence	10.0	5.0	35.0	10.0	0	30.0	10.0	12.3	20
5	Collaboration	9.1	0	36.4	0	36.4	0	18.2	6.8	11
6	Refocusing	6.1	6.1	24.5	20.4	40.8	2.0	0	30.2	49
	Total									162

Profile Interpretation

As individuals move from unawareness and nonuse of an innovation into beginning use and more highly sophisticated use, it is hypothesized that their concerns develop from being most intense at Stages 0, 1, and 2, to most intense at Stage 3, and ultimately to most intense at Stages 4, 5, and 6. Particularly if the innovation is a positive one and there is support for its implementation, an individual's concern profile plotted over time should have the form of a progressive wave motion from left to right as illustrated in Figure IV.4. Where the individual is in this "growth" sequence can best be assessed through interpretation of the complete concerns profile.

Analysis of concerns profiles, either through looking at the tabular listing of percentile scores or the plots of these percentile scores on a graph, provides the most complete clinical interpretation and assessment of both individual and group data. By use of clinical interpretation techniques, an interpretor can develop a great deal of insight, not only into the type(s) of concern that is(are) most intense and least intense, but also into the affective stance that the respondent is taking towards the innovation.

Figure IV.4. Hypothesized Development of Stages of Concern



Here again, interpretation of profiles, whether it be for individual or group data, is based upon the stage definitions presented in Figure I.2. In this subsection, typical SoC profiles are first introduced and discussed, and then a set of rules for interpretation is presented that can guide the reader in interpreting some of the subtleties and interactions which can occur across stages. In addition to looking at profiles, responses to individual items will often be discussed as a further check. The fullness of the picture that can be developed depends to a great extent upon use of the rules and guidelines that are summarized on pages 53 to 55.

Typical Nonuser SoCQ Profile

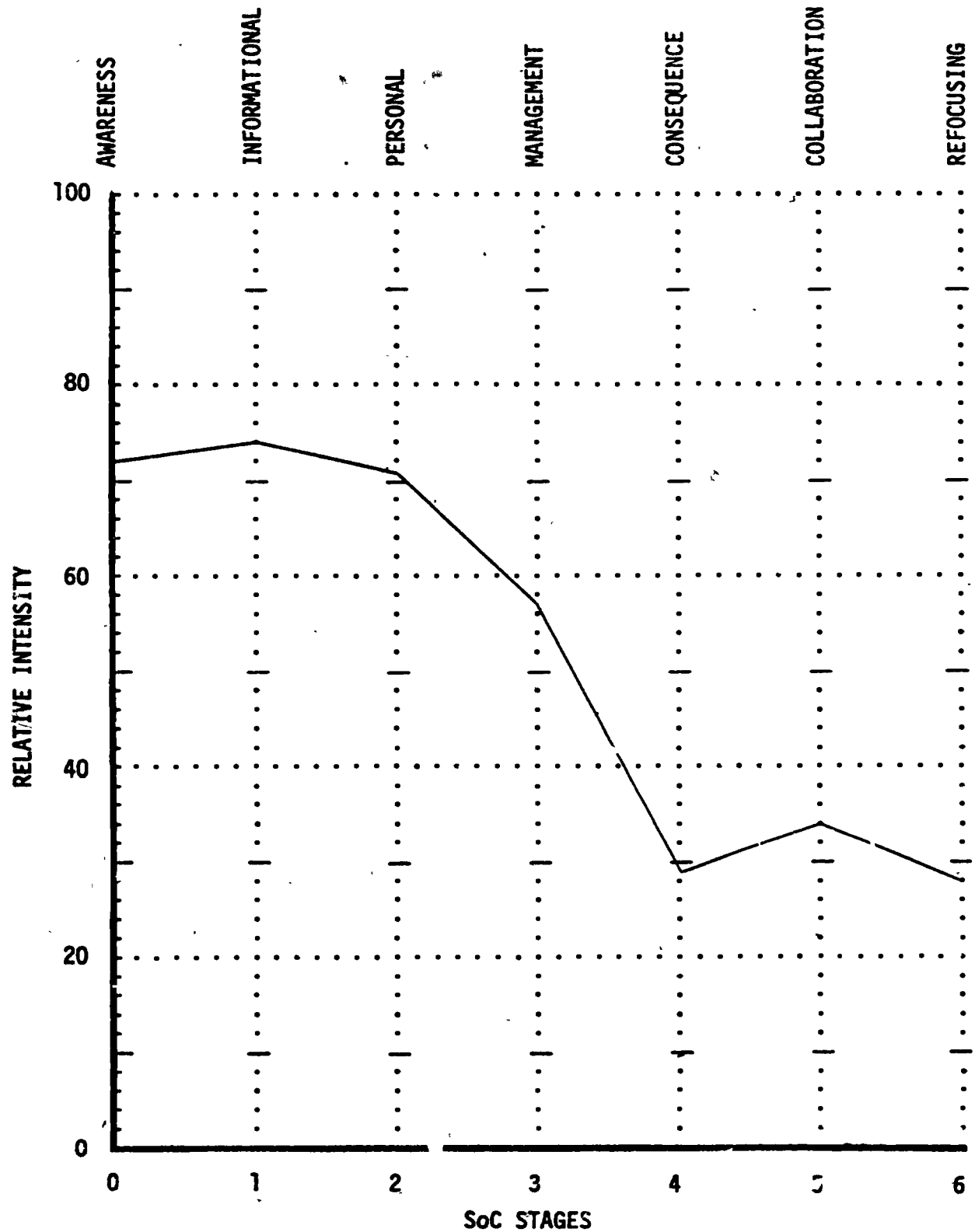
Probably the most readily identified and commonly found concerns profile is that of the nonuser. In all of the research that has been done to date using the Stages of Concern Questionnaire, the nonuser concerns profile stands out most clearly and consistently. Nonusers' concerns are normally highest on Stages 0, 1, and 2, and lowest on Stages 4, 5, and 6. There is some variation in the amount of intensity of these concerns depending on the innovation and whether or not it is a school or college setting; however, the general shape of the pattern is as plotted in Figure IV.5.

Nonusers' Stage 0 scores vary from being the highest to being the second or third highest. In general, either Stage 0, 1, or 2 is the highest score. The variations in Stage 0 do not seem to be as important as do the variations in Stages 1 and 2. It is important to check closely for the relative position of Stages 1 and 2 and also the relative position of Stage 6 in order to understand characteristic differences in the nonuser profile.

The profile illustrated in Figure IV.5 is that of a normal, interested individual who is somewhat aware of and concerned about the innovation (Stage 0) and is interested in learning more about the innovation from a positive proactive perspective (Stage 1 slightly higher than Stage 2). The individual at this time does not have a great deal of management concerns (medium intensity Stage 3) and is not intensely concerned about the innovation's consequences for students (low Stages 4 and 5). The low tailing-off Stage 6 score suggests that the individual does not have other ideas that would be potentially competitive with the innovation. The overall profile suggests and reflects the interested, not terribly over-concerned, positively disposed nonuser.

In contrast to the positive nonuser concerns profile, Figures IV.6 and IV.7 represent profiles depicting various degrees of doubt and potential resistance to the innovation. This can be clearly identified in what is referred to as the "one/two split." When the Stage 2 concerns are equal to or more intense than the Stage 1 concerns, the innovation is perceived much differently than in the previous illustration. In general, when such a "negative one/two split" occurs, personal concerns (Stage 2) override concerns about learning more about the innovation (Stage 1). The individual is much more concerned about her/his personal position and well-being in relation to the change than she/he is interested in learning more of a substantive nature about the innovation. Experience has shown that, even when general, non-threatening attempts are made to discuss the innovation with a person with this profile, the high Stage 2 concerns are intensified and the Stage 1 concerns are reduced. For this kind of person, Stage 2 concerns normally have to be reduced before she/he can look at a proposed innovation objectively.

Figure IV.5. Typical Nonuser SoCQ Profile



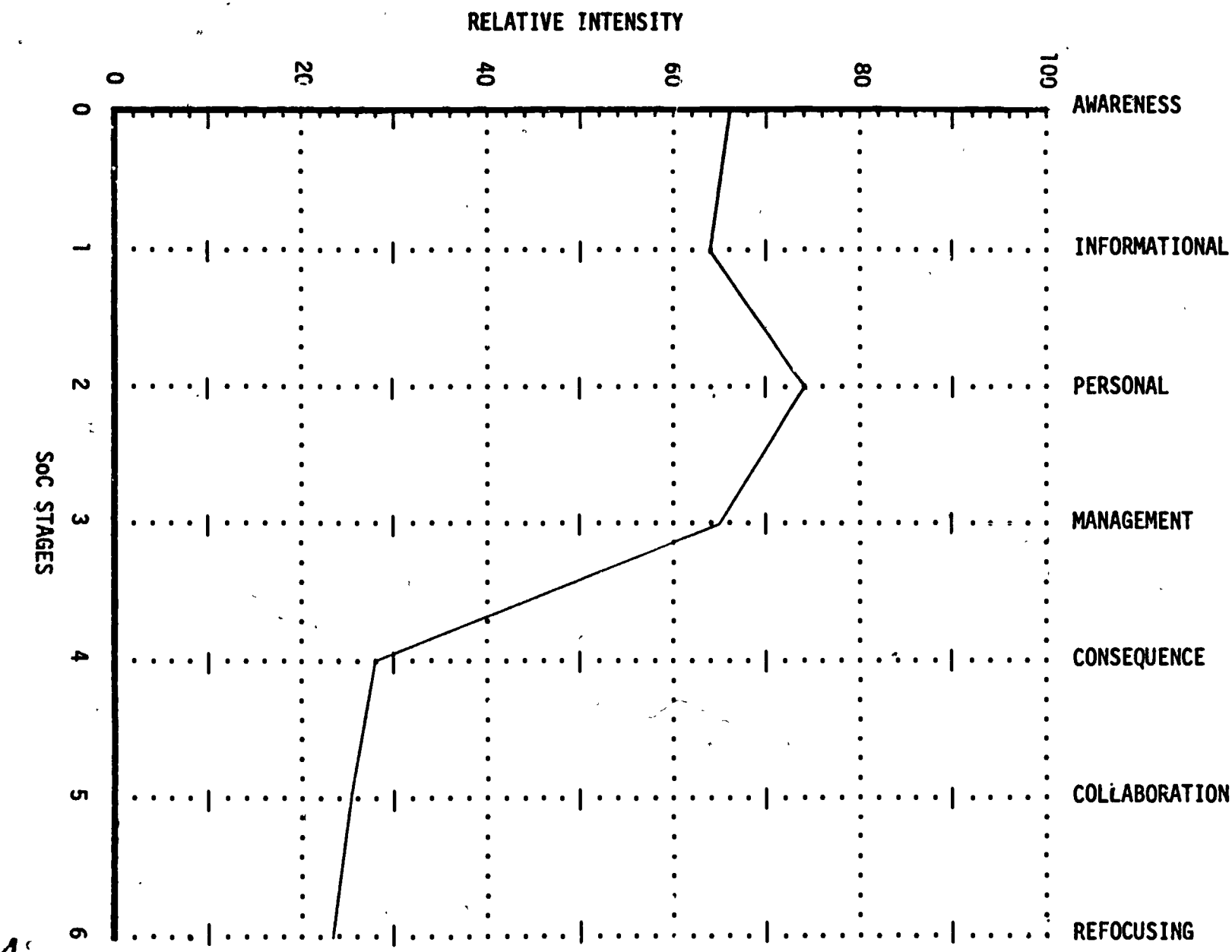
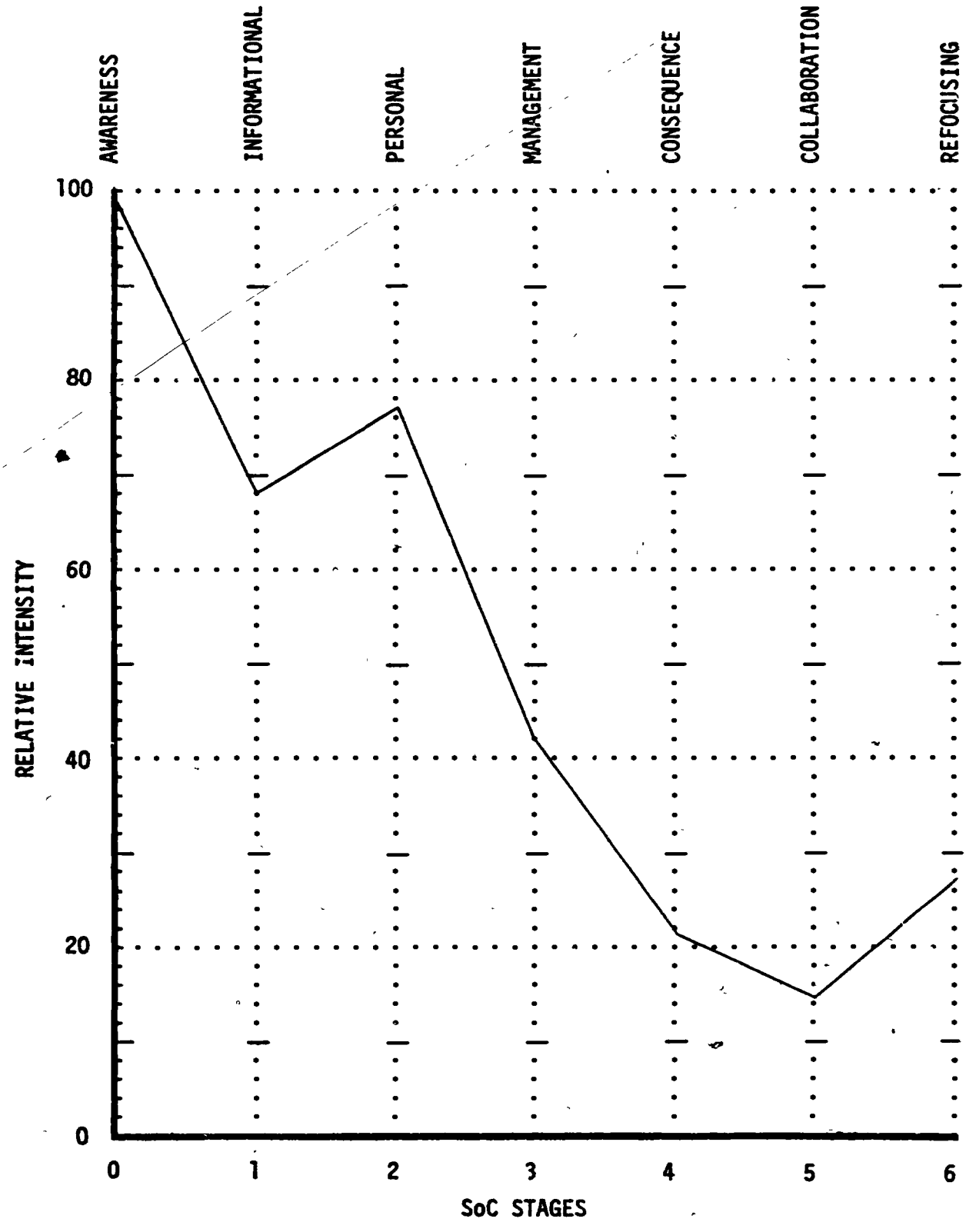


Figure IV.6. Negative "One/Two Split"

Figure IV.7. Negative "One/Two Split" with Tailing-Up 6



The tailing-up of Stage 6 on the typical nonuser concerns profile provides further information about the attitude of the respondent toward the innovation. When Stage 6 tails off or down at the end of the nonuser curve, as in Figure IV.5, this generally means that the respondent does not have other ideas that would potentially compete with the innovation. However, when Stage 6 concerns tail up as in Figure IV.7, then one can infer that the respondent has other ideas that she/he sees as having more merit than the proposed innovation. The Stage 6 tailing-up needs only to be seven to ten percentile points to be detectable in terms of the overall concerns of the individual. Thus, any tailing-up of the Stage 6 concerns on a nonuser profile should be taken as a potential warning that there may be resistance to the innovation on the part of the respondent. A more severe tailing-up should be heeded as a loud announcement.

Single Peak User Profiles

The most frequently found user concerns profiles have a single peak at either Stage 3, 4, 5, or 6. In general, profile interpretations can be based heavily upon the definition of the stage that has the highest score. In many cases, the second highest scores will be quite a bit lower than the highest stage score. If the second highest score is more than 20 percentile points below the highest, it normally does not account for very many of the intense concerns of the respondent. If certain stage scores are dramatically low, then these are areas where individuals are reporting that they have minimal or no concerns.

In Figure IV.8, for example, Stage 3 Management concerns are relatively intense. The respondent is indicating high concern about time, logistics, or other managerial problems related to the innovation. The respondent is also somewhat concerned about students (Stage 4), but not concerned about working with others (low Stage 5). She/he does not have intense personal concerns about the innovation (low Stage 2).

The respondent in Figure IV.9 has most intense Stage 4 concerns, i.e., is most intensely concerned about the impact of the innovation upon her/his students. The lower Stage 5 and Stage 3 concerns suggest that she/he is not very concerned about management of the innovation, nor about working with others. However, the extremely low Stage 1 score indicates that the respondent feels that she/he knows all that is necessary about the innovation. There is no concern at all about obtaining any additional information about the innovation.

A high Stage 5 concerns profile respondent, as illustrated in Figure IV.10, is heavily concerned about working with her/his colleagues or others in coordinating use of the innovation. This concerns profile is typical of team leaders and many administrators who spend a great deal of their time coordinating the work of others. In contrast to this profile, many full-time administrators who have high Stage 5 concerns tend to be lower on Stage 4. As illustrated in Figure IV.11, they do not reflect relatively intense concerns about students. By checking the demographic page, the interpreter will know whether or not the respondent has the role of an administrator or is a full-time teacher. Here again, interpretation is straightforward, with the high Stage 5 score indicating that the individual has her/his most intense concerns about coordination with others in relation to the innovation.

In general, high Stage 6 concerns profiles (Figure IV.12) do not appear to reflect only concerns about *obtaining* other ideas. High Stage 6 concerns

Figure IV.8. Intense Management Concerns Profile

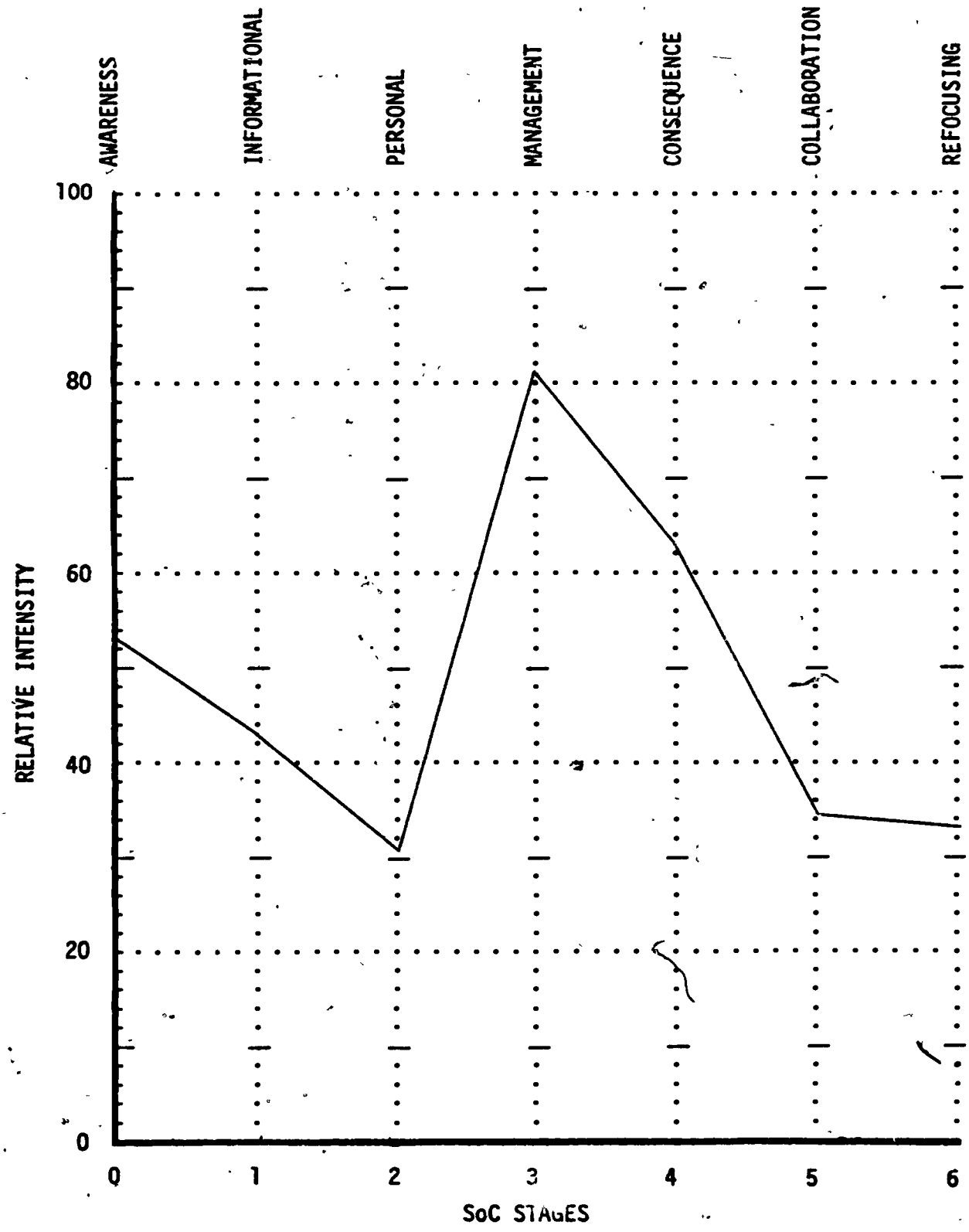
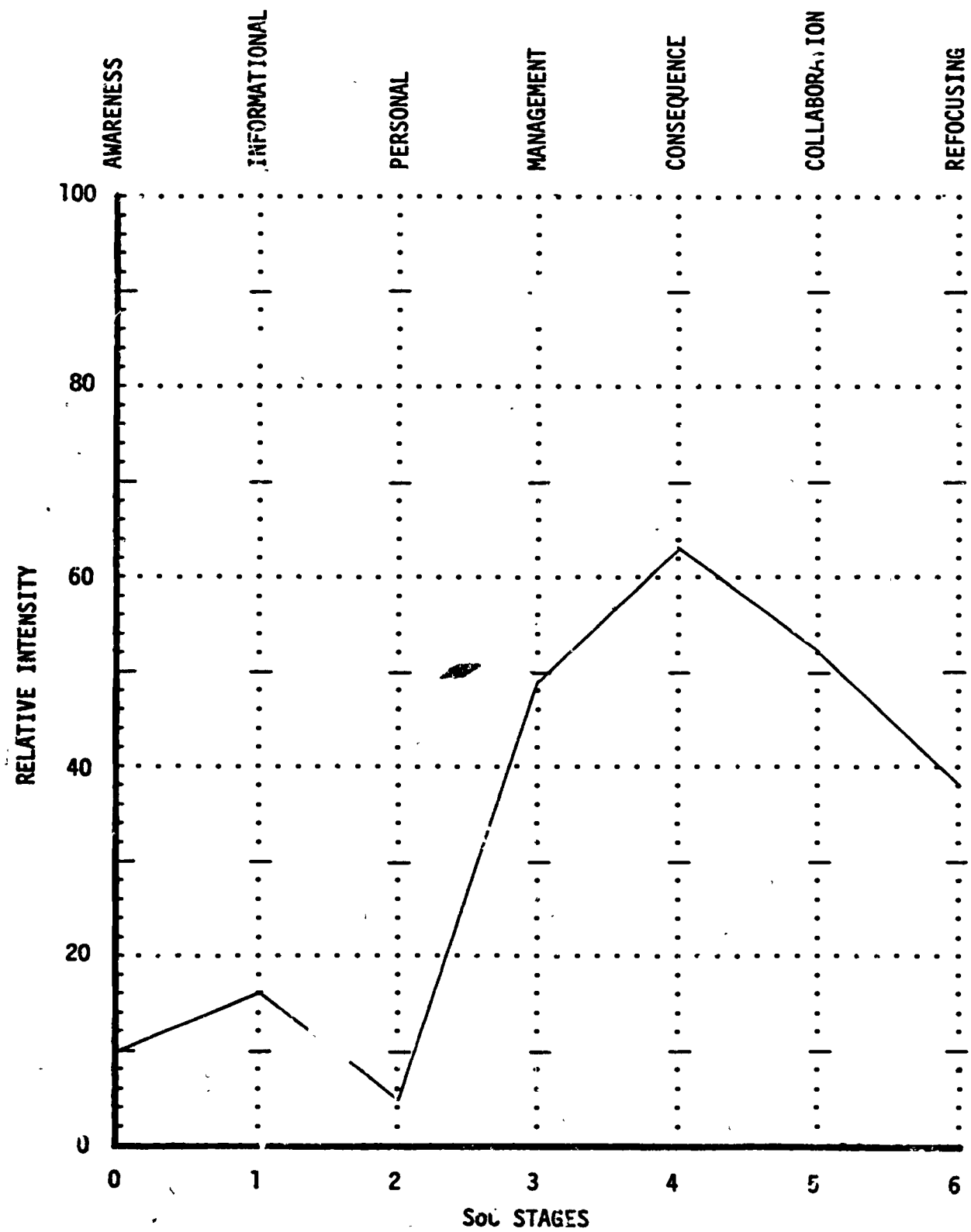


Figure IV.9. Consequence Concerns Profile



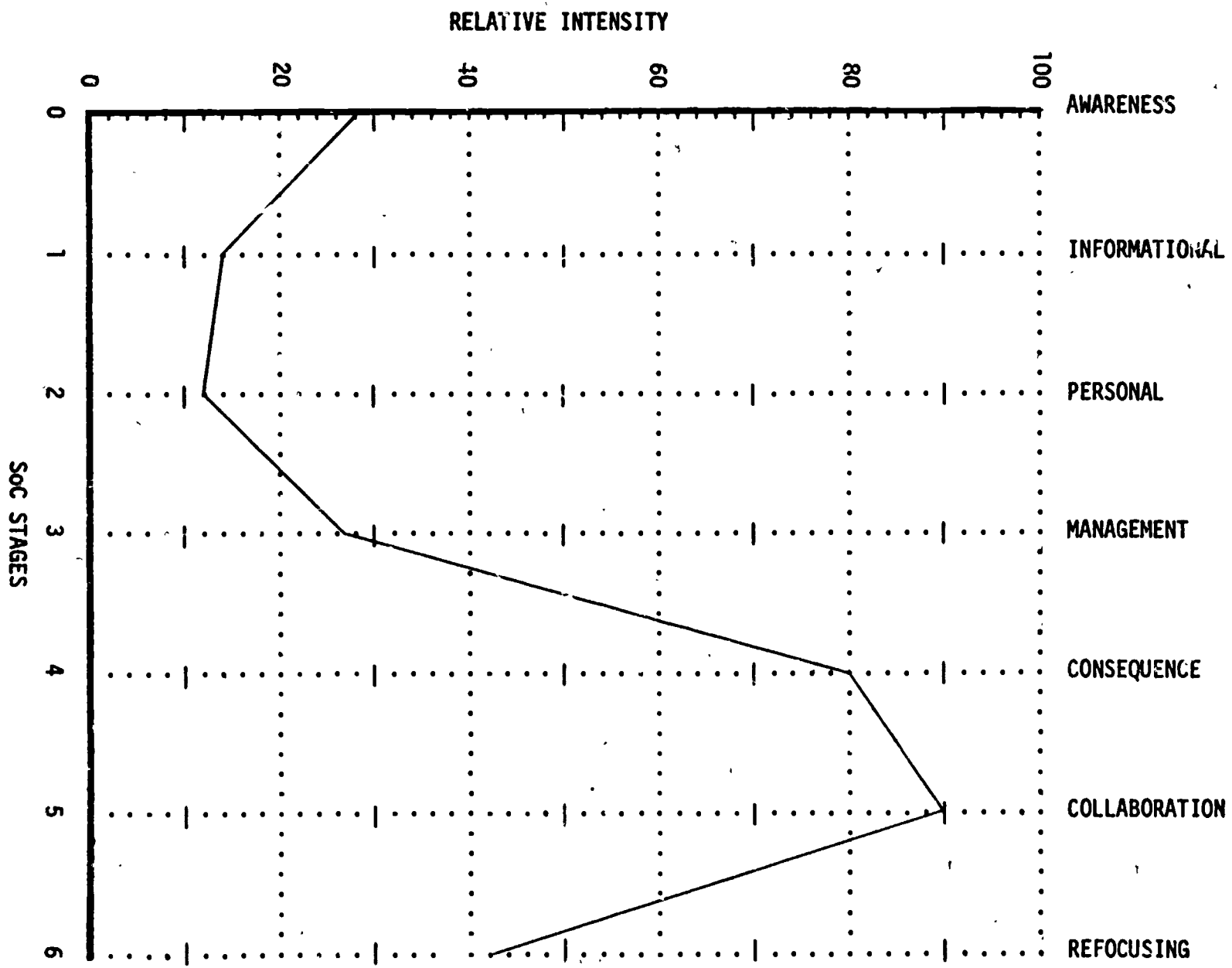


Figure IV.10. High Collaboration and Consequence Concerns Profile

Figure IV.11. Single High Collaboration Concerns Profile

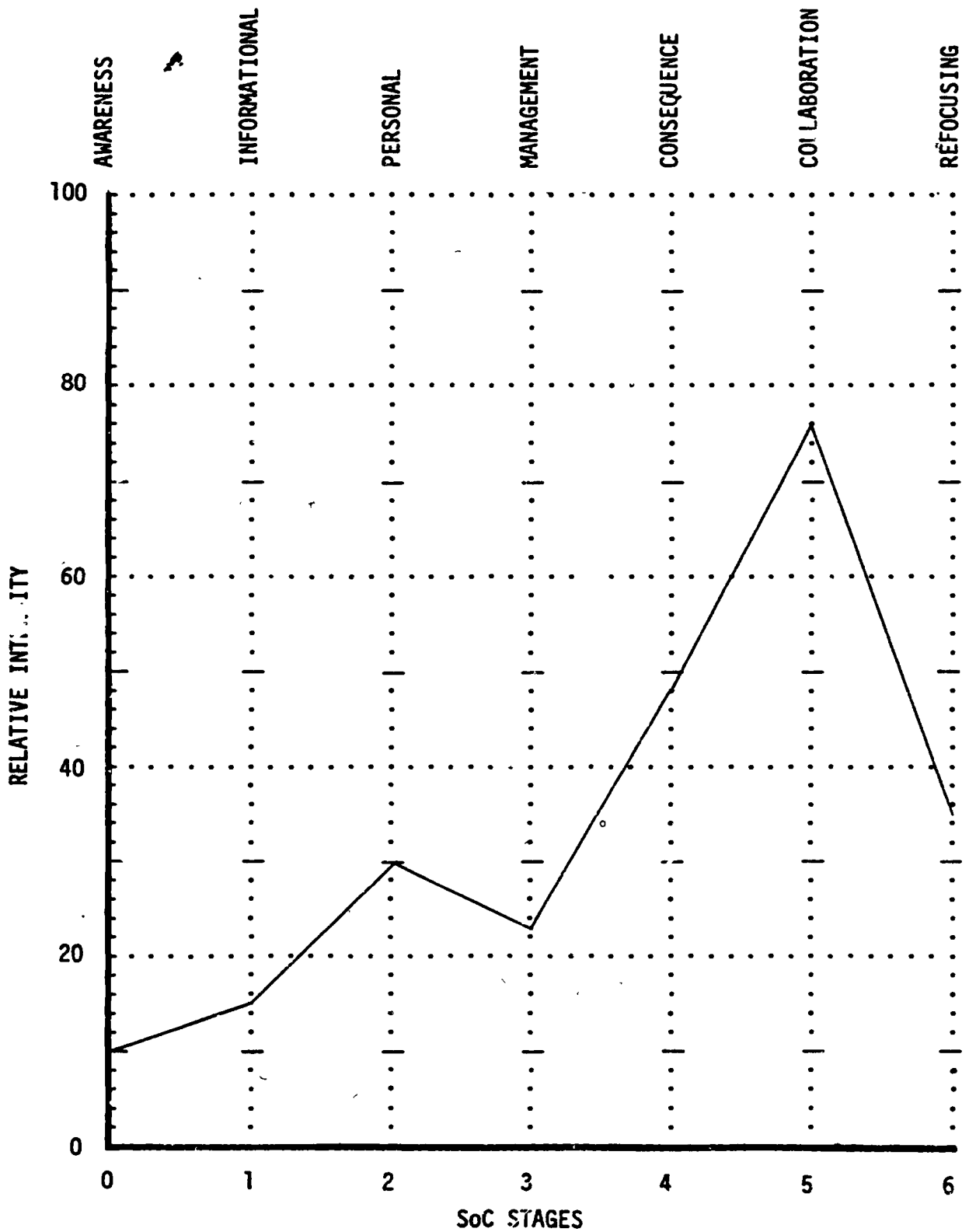
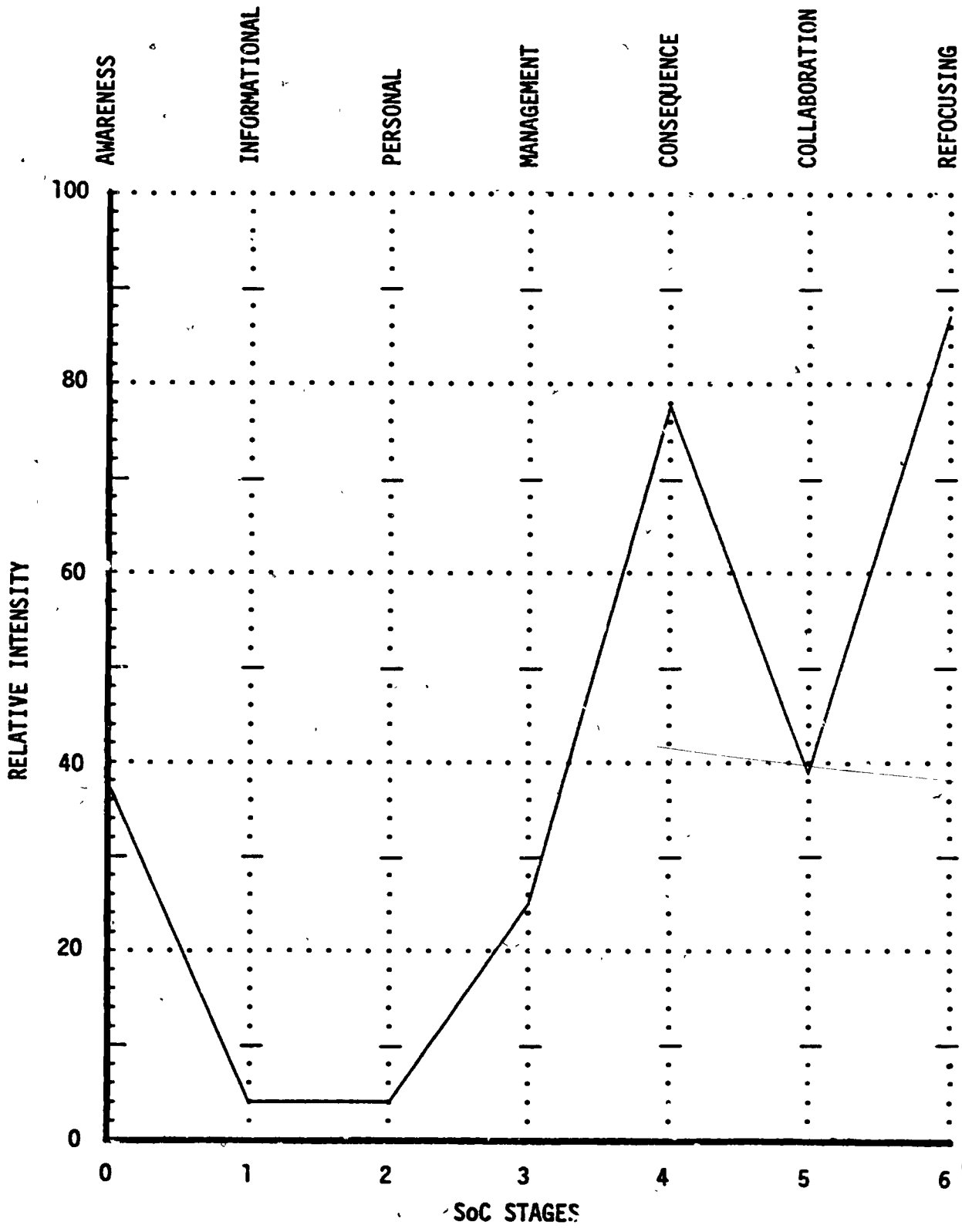


Figure IV.12. High Refocusing Concerns Profile



generally indicate that the respondent *has* other ideas about the innovation and is concerned about seeing the ideas put into practice, or at least tried out. In many cases, persons with high Stage 6 concerns have ideas that would result in replacing or drastically altering the innovation from its present form. These individuals normally have relatively intense student-oriented concerns so their Stage 4 score may also be relatively high. In general, their Stage 0, 1, and 2 concerns are quite low.

Multiple Peak User Profiles

Multiple peaks are not as common as one might expect, although there are a few combinations that are frequently observed. One common example of multiple peaks is the profile with high Stage 3 and 6 concerns (Figure IV.13). Some individuals will have high management concerns (Stage 3) and, at the same time, have ideas (high Stage 6) about what to do about their management concerns. These individuals tend to have their management problems under control. They contrast sharply with the high Stage 3 individuals who are low on Stage 6. These individuals do not have ideas about what to do. If the management concerns appear to be insurmountable, the high 3, low 6 individual may also have relatively high Stage 2 concerns. Stage 2 concerns will tend to be lower with the individual who is high on both Stage 3 and Stage 6.

Another common multiple peak profile is that of the highly involved, broad-range impact-concerned user of the innovation. Figure IV.14 is the concerns profile of one full professor who was an experienced user of the innovation of instructional modules and coordinator of a teacher educator program involving ten to 15 faculty members. The faculty members were involved in revision of the modules to improve learning, and the professor was responsible for coordinating this revision, in addition to regular program activities. The high Stage 4, 5, and 6 concerns reflect his concerns about these various responsibilities.

It is interesting to note the very low Stage 0, 1, and 2 scores. The person is very involved in his work (low Stage 0), is highly knowledgeable about modules (low Stage 1) and is personally very comfortable (low Stage 2). Members of the CBAM staff are acquainted with this particular individual and feel that this profile was representative at the time the SoC Questionnaire was completed.

Stage 0 Scores

As mentioned previously, the interpretation of Stage 0 is not as straightforward as the interpretation of other stage scores. The Stage 0 score has a significantly different meaning for users than it does for nonusers. For nonusers of an innovation, a high score on Stage 0 is a straightforward indication of the degree of intensity of their concerns about the innovation. For nonusers, Stage 0 scores that are up in the 70th, 80th, and 90th percentiles indicate individuals who are intensely concerned about the innovation, while percentile scores that are lower, in the 50th and 40th percentiles, reflect low intensity concerns about the innovation. It is true that arithmatically a 50th percentile score is average; however, for nonusers, these are relatively low scores.

A different interpretation applies to Stage 0 scores for users of the innovation. In general, Stage 0 scores for users are low, in the 10th, 20th and 30th percentile range, while Stages 3 through 6 concerns will be relatively high. However, the Stage 0 score for established users who are no longer particularly

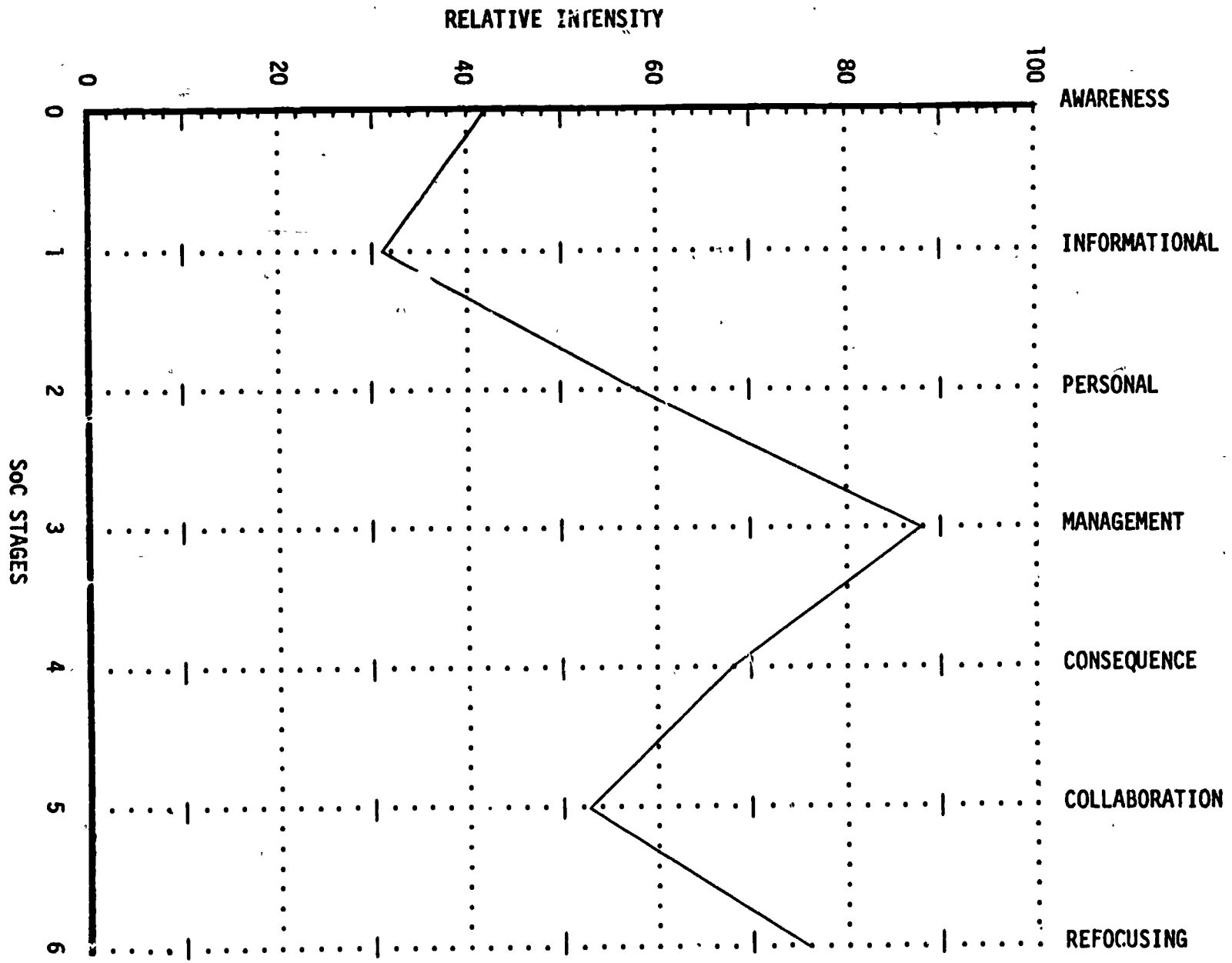
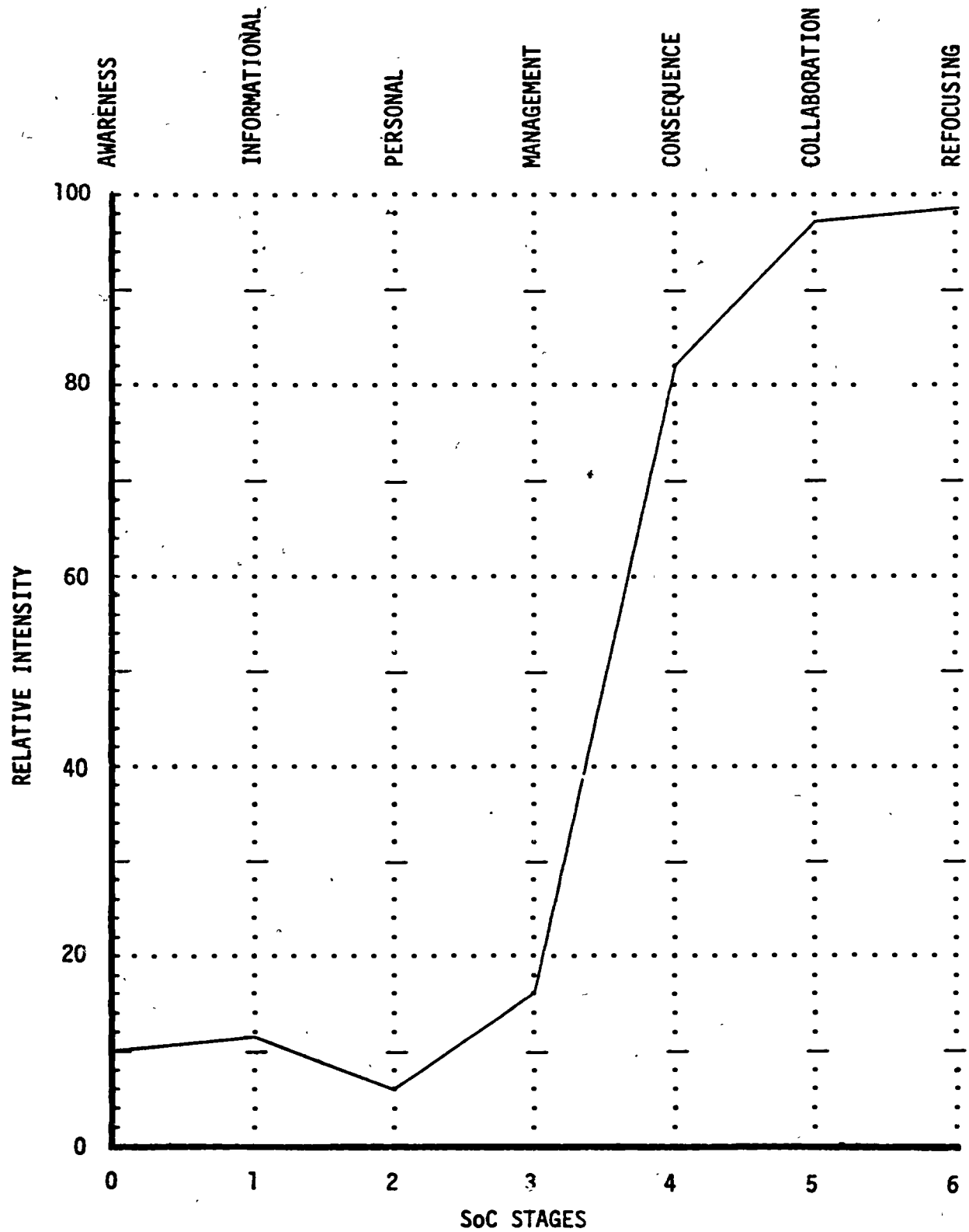


Figure IV.13. Profile of High Management Concerns with Ideas

Figure IV.14. Profile of Impact-Concerned User and Coordinator



concerned about the innovation begins to climb (e.g., Figure IV.15). Experienced users tend to have many other things in their lives outside of the innovation that concern them more, and their Stage 0 score reflects this fact by being up in the 60th, 70th, and perhaps even 80th percentiles. However, their Stage 1 and 2 scores are relatively low and their second highest stage score is most likely in one of the Stages 3 through 6. Figure IV.15 represents such a user who is clearly not concerned about the innovation.

One reason for this shifting in Stage 0 scores is found in the five individual Stage 0 items on the SoC Questionnaire. Item 21, for example, states, "I am completely occupied with other things." Individuals who are more experienced, comfortable, and confident users of the innovation tend to shift their concerns to other aspects of their lives. They therefore report very directly that things other than the innovation are of more concern, thereby raising their Stage 0 score. Other Stage 0 items are marked high by nonusers. As long as the reverse polarity of the interpretation of the Stage 0 score is kept in mind, interpretation again is reasonably straightforward.

Total Score

The total score has not been referred to in any of these analyses because it does not have a unique meaning. Because concerns are developmental in nature, individuals tend to score high on one or two stages and low on the others. The Total Score is usually in the same range for a person who is high on Stage 6 and another who is high on Stage 1. It is sensitive only to more extreme response patterns. A person who marks many items as being of high concern has a high Total Score, while the person who marks most of the items as being of little concern or irrelevant has a low Total Score.

The Total Score can be a straightforward indication of the intensity of concern. With either an extremely low or an extremely high Total Score, it could also be interpreted that, for the respondent, the items were not sortable according to different Stages of Concern. An alternate interpretation could be that the respondent had a "response bias" or tendency to mark the items at one extreme or the other. In any case, the Total Score may provide some clues for interpretation, but these clues should be checked out against the stage scores and the individual item responses as discussed in the next several pages.

Individual Item Analyses

Analyses of individual item responses can sometimes provide further clinical insight. For example, Figure IV.16 illustrates three sets of individuals' responses to items. Several rules can be used to interpret these responses.

First of all, and perhaps most important, one should look at the overall response pattern by stage. Did the respondent "Q-sort" the items. That is, did the individual tend to mark all the items for certain stages high and for other stages low? The distribution of items for the first individual in Figure IV.16 suggests that the individual did in fact read the items carefully. Her/his response pattern is quite consistent. The items in Stages 0, 1, and 2 are generally marked low, while the raw score values for items on Stages 4 and 5 are all marked high. This suggests that the individual did differentiate the responses. One can infer from this that attention was paid to the measure in responding.

Figure IV.15. Unconcerned Innovation User

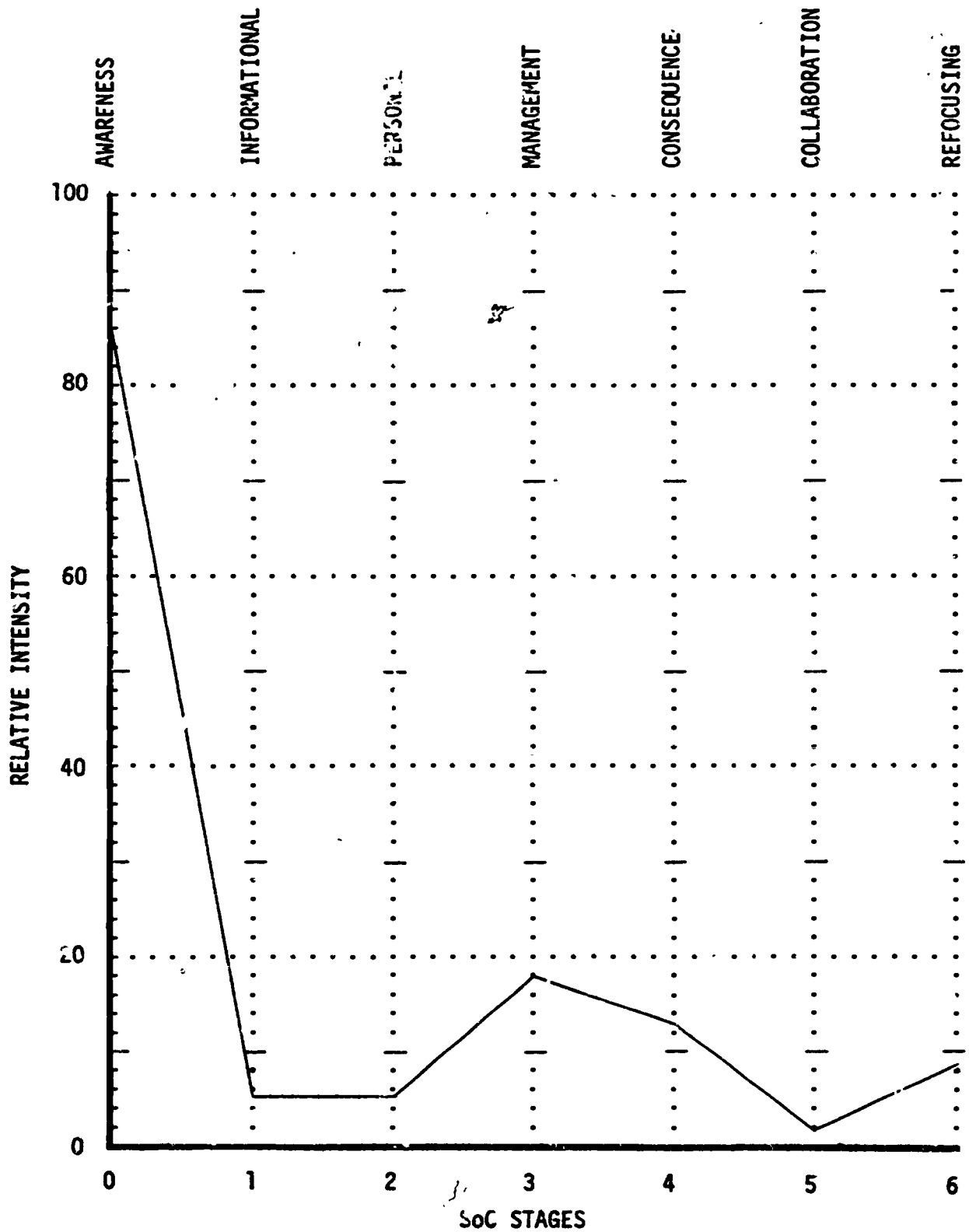


Figure IV.16. Sample Individual SoCQ Item Responses

Good Q-Sort

RAW SCORES FOR EXAMPLE 1

STAGES	0	1	2	3	4	5	6		
	0	0	1	6	7	6	1		
	0	0	6	1	7	7	5		
	0	0	0	6	7	5	1		
	0	5	0	1	6	7	5		
	0	0	1	0	5	6	6		
	0	5	8	14	32	31	18	108	RAW TOTAL
	10	27	35	52	86	91	57	54	PERCENTILE

No Clear Sort

RAW SCORES FOR EXAMPLE 2

STAGES	0	1	2	3	4	5	6		
	0	4	1	4	3	0	0		
	1	1	3	3	4	1	1		
	0	1	3	3	4	0	1		
	0	3	0	2	3	3	3		
	3	3	3	1	1	1	1		
	4	12	10	13	15	5	6	65	RAW TOTAL
	46	48	41	47	16	5	11	12	PERCENTILE

Extreme Response Tendency

RAW SCORES FOR EXAMPLE 3

STAGES	0	1	2	3	4	5	6		
	0	0	6	6	7	6	7		
	0	7	7	7	6	6	6		
	0	7	7	0	7	5	6		
	0	7	7	7	7	7	7		
	0	7	7	7	7	7	7		
	0	28	34	27	34	31	33	187	RAW TOTAL
	10	95	97	94	92	91	99	98	PERCENTILE

In many instances, when stage scores and profiles look irregular, it is possible to locate one or two items that were marked extremely differently from the general response pattern. Sometimes, by doing this, it is possible to understand what was going on in the person's mind. This kind of analysis led to the understanding of why Stage 0 scores could be high for both users and nonusers; different Stage 0 items are marked high depending on use or nonuse.

As illustrated in the second set of data in Figure IV.16, some individuals do not consistently sort the items. This failure to sort the items suggests lack of differentiation according to Stages of Concern. Perhaps the respondent cannot differentiate between stages because of a general confusion about what the innovation is; or the innovation is so far removed from the respondent's life space that it has little meaning. In the case of the second individual displayed in Figure IV.16, when asked why she responded the way she did, she reported that she had filled out the measure at the end of a four-day mountain retreat, did not know a great deal about the innovation at that time, and was unable to sort out and make sense of the questionnaire.

For the third individual in Figure IV.16, there is neither a clear-cut profile nor a Q-sort. However, in this case, all of the individual item responses are extremely high. This extreme response tendency suggests the lack of ability or willingness to differentiate between the sources of concerns about the innovation; it also suggests that the person may be fairly strong-minded or extremely anxious relative to the innovation.

Comparing SoC Data with Demographic and Other Data

The demographic page attached to the SoC Questionnaire can provide data such as age, sex years of teaching experience, and cycles of experience with the innovation. All of these data can be contrasted with SoC Questionnaire data. Cross-tabulations and correlations of high Stages of Concern with demographic data can lead to further explanations and interpretations of concerns data.

It has been of interest to us, in our research to date, that there have been no outstanding relationships between standard demographic variables and concerns data. Rather, as our research unfolds, there is increasing support for the hypothesis that "interventions" and "conditions" associated with the implementation effort are more critical variables than age, sex, teaching experience, etc. As hypothesized in the Concerns-Based Adoption Model, the state of the user system appears to be significantly more important to understanding SoC than standard demographic variables. Identifying, documenting and measuring these procedures, processes and the implications of these interrelationships are the current thrusts of the PAEI/CBAM Project.

Guidelines for Interpretation of the SoC Questionnaire Data

The following guidelines emphasize the interpretation of full SoC profiles based on percentile scores, and are also useful when interpretation is limited to high and second high scores. The guidelines are abstracts of statements that have been discussed at length earlier in this section and are presented here in abbreviated form to facilitate interpretations. Divided into four parts, the guidelines include:

1. Establish a Holistic Perspective;
2. Look at High and Low Stage Scores;
3. Look at Individual Item Responses;
4. Look at the Total Score.

1. *Establish a Holistic Perspective.*

The goal of interpreting the SoC Questionnaire data is the development of an overall perspective and description of the relative intensity of the different Stages of Concern about a particular innovation for the respondent(s). The interpreter needs to strive to develop a gestalt based on all the Stages of Concern scores. In developing an interpretation, the interpreter needs to explore alternative interpretations, and check them out against other parts of the SoCQ data. The focus for interpretation should be on what stages are high and low, and what the person seems to be indicating about her/his concerns. Developing this holistic description requires practice and thought. It cannot be done mechanistically.

2. *Look at the High and Low Stage Scores.*

Look at the *relative* highs and lows for that individual, not how high or low the individual is in relation to some other SoCQ data.

Stage 0: High 0 -- Indicates either an experienced user who is more concerned about things not related to the innovation, or a nonuser who is just becoming aware of the innovation.

Low 0/high other stages -- Suggests intense involvement with the innovation

Low 0, 1, 2, and 3 -- Indicates an experienced user who is still actively concerned about the innovation.

Caution -- If the Stage 0 percentile is particularly high relative to the other scores, the other stage scores may have little significance. If there is an overall high response tendency, the high Stage 0 score may not reflect unconcern about the innovation.

Stage 1: High 1 -- Want more information about the innovation.

Low 1 -- Feel that they already know enough about the innovation.

Stage 2: High 2 -- Have intense personal concerns about the innovation and its consequences for them. While these concerns reflect uneasiness regarding the innovation, they do not necessarily indicate resistance.

Low 2 -- Feel no personal threat in relation to the innovation.

Stages 1 and 2 generally go together, but when they fall apart, check them closely.

High 1/low 2 -- Need more information about the innovation. These respondents are generally open to and interested in the innovation.

Low 1/high 2 -- Have self concerns, tend to be more negative toward the innovation and generally not open to information about the innovation *per se*.

Stage 3: High 3 -- Have logistics, time, and management concerns.

Low 3 -- Have minimal to no concerns about managing use of the innovation.

Stage 4: High 4 -- Have concerns about the consequences of use for students.

Low 4 -- Have minimal to no concerns about the relationship of students to use of the innovation.

Stage 5: A high 5 score is complex:

High 5 -- Have concerns about working with others in relation to the innovation. A high 5 will all other stages being low is likely to be an administrator, coordinator, or team leader -- one who perceives herself/himself to be in a leadership role; coordinating others is the priority.

High 5 with some combination of 3, 4, and 6 also being high -- Have concern about a collaborative effort in relation to the other high stage concerns.

High 5 with 1 being high -- Have concerns about looking for ideas from others, reflecting more a desire to learn from what others know and are doing, rather than concern for collaboration.

Stage 6: High 6 with low 1 -- Not interested in learning more about the innovation. The person is likely to feel that she/he already knows all about it and has plenty of ideas.

High 6, high 3, low 0, 1, and 2 -- Is a user who tends to be positive in attitudes toward the innovation, but has many logistics issues to take care of. The high 6 indicates that the person has ideas about how to improve use of the innovation.

Tailing-up 6 for nonusers -- Has ideas about how to do things differently and is likely to be negative toward the innovation.

3. *Look at the Individual Item Responses.*

Look at the individual item raw score distributions. Check for patterns, trends, and irregularities. Watch the flow of item scores from left to right. Do they increase or decrease by stages?

A. If it appears by the raw scores that the respondent Q-sorted according to stages, more credence can be given to the profile.

B. Lack of sorting suggests general confusion about the innovation or lack of a clear focus (perhaps the respondent did not read the items closely).

C. Nonusers do not always peak clearly on one or two stages. However, if the items for Stages 0, 1, and 2 are relatively high and Q-sorted then the respondent is likely to be a nonuser.

D. If there are no clear peak stages, then the person has multiple stages of concern or no clearly focused concerns.

Note: Our experience has suggested that some individuals whose item responses are constantly in the upper extremes (on the SoCQ, this would be the use of 5's, 6's, and 7's) tend to be outspoken with definite opinions. In some cases, consistent use of the lower extreme item responses suggests that the person will be unlikely to share her/his opinions with others. Many of those who consistently use middle range item responses tend not to be forthright in their opinions. Although these patterns have not been specifically investigated with regard to the SoCQ, there are some indications that they do apply.

4. *Look at the Total Score.*

The total score, to some degree, reflects the amount of involvement the person has with the innovation. However, the total score should not be given very large significance in the overall interpretation.

A. A low total suggests low intensity of concerns and a comfortableness with the innovation.

B. A high total percentile suggests definite feelings and involvement with the innovation. These may be either negative or positive.

SECTION V.

LIMITATIONS AND RESTRICTIONS

The most important restriction regarding the SoC Questionnaire relates to the purpose for its use. The questionnaire was designed for and is intended to be used strictly for diagnostic purposes for personnel involved in the "adoption" of a process or product innovation. It should not be used for purposes of screening or evaluation. Concerns are neither good nor bad, and it is inappropriate to analyze them in those terms. Knowing that one individual has high Stage 3 concerns and another is high on Stage 4 does not mean that one individual is somehow better than the other. It only means that, in relation to the innovation in question, the kind of assistance that would be helpful to the two persons is different.

Personality assessment cannot be accomplished with the SoC and no attempt should be made to do so. The instrument measures the concerns of individuals about specific innovations. Concerns are natural, healthy phenomena that should not be equated with personality characteristics.

It may be tempting to modify one or more of the questionnaire items to better address a particular situation or need. *Do not succumb to this temptation.* Even the slightest modification of the SoC could result in invalidation of the scoring and norming standards and ultimately to misinterpretation of the results. The Research and Development Center assumes no responsibility for the reliability or validity of the measure if any of the 35 questionnaire items are altered in any way.

The standardization sample for the SoCQ consisted of adults serving as teachers or administrators in educational institutions, grades kindergarten through higher education. Utilization of the SoC with younger age groups or with other occupational groups is not warranted.

Interpretation of the data can only be as good as the respondent was conscientious in completing the SoCQ and the interpreter is in developing *hypotheses*. As noted in earlier sections, interpretations should be treated as hypotheses and confirmed with the respondents rather than accepted as fact.

The items are known to work with nonusers of an innovation and with highly experienced "old hands." Depending on their frame of reference, individuals often will identify specific SoCQ items that are not appropriate for them, or they will point out that the "innovation" is really not new for them and that they do not think of it as an innovation. Gratefully accept their feedback; it has been our experience that their responses will still be appropriate and reflect their concerns.

A final note about data analyses. We expect some adventurous souls will take it upon themselves to devise a "better" scoring system for the SoCQ. We

welcome improvements. However, be advised about what the measure was developed to do. If a measure is needed for some other purpose, then make the effort to develop a new measure that is designed to meet that purpose. And most importantly, the SoCQ should not be administered to a small sample of innovation users and a factor analysis performed on their data. The results will most assuredly be factors that load the items heavily on one or two of the present SoC stages and that do not distinguish the other stages. A large stratified sample of both users and nonusers is required if a factor analytic approach is to be meaningful. For example, it is highly unlikely that a sample of first-year users of an innovation will include individuals that represent intense concerns for each of the seven stages.

With consideration of these limitations and restrictions, it is highly likely that the SoC Questionnaire will provide valuable data to those interested in researching and facilitating change. Problems and questions should be addressed to the authors of this manual.

APPENDIX A

SAMPLE SoC QUESTIONNAIRE

A.1 SAMPLE INTRODUCTORY PAGE

NHS
SoCQ20
Teaming

Concerns Questionnaire

Name (Optional) _____

Date Completed _____

It is very important for continuity in processing this data that we have a unique number that you can remember. Please use:

Last 4 digits SS# ____ ____ ____ ____

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various innovations to many years experience in using them. Therefore, a good part of the items may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale, according to the explanation at the top of each of the following pages.

For example:

0	1	2	3	4	5	6	(7)	This statement is very true of me at this time.
0	1	2	3	(4)	5	6	7	This statement is somewhat true of me now.
0	(1)	2	3	4	5	6	7	This statement is not at all true of me at this time.
(0)	1	2	3	4	5	6	7	This statement seems irrelevant to me.

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with TEAMING. We do not hold to any one definition of this innovation, so please think of it in terms of your own perception of what it involves. Since this questionnaire is used for a variety of innovations, the name TEAMING never appears. However, phrases such as "the innovation," "this approach," and "the new system" all refer to TEAMING. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with TEAMING.

Thank you for taking time to complete this task.

A.2 SoC QUESTIONNAIRE ITEMS

0	1	2	3	4	5	6	7	
Not true of me now				Somewhat true of me now			Very true of me now	
0	1	2	3	4	5	6	7	I am concerned about students' attitudes toward this innovation.
0	1	2	3	4	5	6	7	I now know of some other approaches that might work better.
0	1	2	3	4	5	6	7	I don't even know what the innovation is.
0	1	2	3	4	5	6	7	I am concerned about not having enough time to organize myself each day.
0	1	2	3	4	5	6	7	I would like to help other faculty in their use of the innovation.
0	1	2	3	4	5	6	7	I have a very limited knowledge about the innovation.
0	1	2	3	4	5	6	7	I would like to know the effect of reorganization on my professional status.
0	1	2	3	4	5	6	7	I am concerned about conflict between my interests and my responsibilities.
0	1	2	3	4	5	6	7	I am concerned about revising my use of the innovation.
0	1	2	3	4	5	6	7	I would like to develop working relationships with both our faculty and outside faculty using this innovation.
0	1	2	3	4	5	6	7	I am concerned about how the innovation affects students.
0	1	2	3	4	5	6	7	I am not concerned about this innovation.
0	1	2	3	4	5	6	7	I would like to know who will make the decisions in the new system.
0	1	2	3	4	5	6	7	I would like to discuss the possibility of using the innovation.
0	1	2	3	4	5	6	7	I would like to know what resources are available if we decide to adopt this innovation.
0	1	2	3	4	5	6	7	I am concerned about my inability to manage all the innovation requires.
0	1	2	3	4	5	6	7	I would like to know how my teaching or administration is supposed to change.
0	1	2	3	4	5	6	7	I would like to familiarize other departments or persons with the progress of this new approach.

0	1	2	3	4	5	6	7	
Not true of me now				Somewhat true of me now				Very true of me now
0	1	2	3	4	5	6	7	I am concerned about evaluating my impact on students.
0	1	2	3	4	5	6	7	I would like to revise the innovation's instructional approach.
0	1	2	3	4	5	6	7	I am completely occupied with other things.
0	1	2	3	4	5	6	7	I would like to modify our use of the innovation based on the experiences of our students.
0	1	2	3	4	5	6	7	Although I don't know about this innovation, I am concerned about things in the area.
0	1	2	3	4	5	6	7	I would like to excite my students about their part in this approach.
0	1	2	3	4	5	6	7	I am concerned about time spent working with nonacademic problems related to this innovation.
0	1	2	3	4	5	6	7	I would like to know what the use of the innovation will require in the immediate future.
0	1	2	3	4	5	6	7	I would like to coordinate my effort with others to maximize the innovation's effects.
0	1	2	3	4	5	6	7	I would like to have more information on time and energy commitments required by this innovation.
0	1	2	3	4	5	6	7	I would like to know what other faculty are doing in this area.
0	1	2	3	4	5	6	7	At this time, I am not interested in learning about this innovation.
0	1	2	3	4	5	6	7	I would like to determine how to supplement, enhance or replace the innovation.
0	1	2	3	4	5	6	7	I would like to use feedback from students to change the program.
0	1	2	3	4	5	6	7	I would like to know how my role will change when I am using the innovation.
0	1	2	3	4	5	6	7	Coordination of tasks and people is taking too much of my time.
0	1	2	3	4	5	6	7	I would like to know how this innovation is better than what we have now.

A.3 SAMPLE DEMOGRAPHIC PAGE

PLEASE COMPLETE THE FOLLOWING:

1. What percent of your job is:

   teaching ____% administration ____% other (specify) _____ %

2. Do you work: full time ____ part time ____

3. Female ____ Male ____

4. Age: 20-29 ____ 30-39 ____ 40-49 ____ 50-59 ____ 60-69 ____

5. Highest degree earned:

   Associate ____ Bachelor ____ Masters ____ Doctorate ____

6. Year degree earned: _____ 7. Total years teaching: _____

8. Number of years at present school: _____

9. In how many schools have you held full time appointments?

   one ____ two ____ three ____ four ____ five or more ____

10. How long have you been involved in teaming, not counting this year?

    never ____ 1 year ____ 2 years ____ 3 years ____ 4 years ____ 5 years or more ____

11. In your use of teaming, do you consider yourself to be a:

    nonuser ____ novice ____ intermediate ____ old hand ____ past user ____

12. Have you received formal training in teaming (workshops, courses)?

    yes ____ no ____

13. Are you currently in the first or second year of use of some major innovation or program other than teaming?

    yes ____ no ____

    If yes, please describe briefly.

14. Please check to see that you have written the last four digits of your Social Security number on the front page of this questionnaire. Thank you for your help.

APPENDIX B

SAMPLE COVER LETTER

The Research and Development Center for Teacher Education
University of Texas Austin 78712

November 10, 1976

Dear Teacher:

Thank you for your willingness to assist us in one of our research efforts. We are currently involved in studying the process of change in education, what happens to individuals involved in change and why. Because your school is working with several innovative programs, we feel you are one of the best sources of information for us as we seek to learn more about the process of change. At this time, the program we would like to focus on is teaming.

We are asking you to fill out the attached questionnaire which seeks to measure your present concerns about teaming. Please place the completed questionnaire in the envelope included and hand it in to the office. They will then be sent to us. As you will notice, we do not ask for your name, but we would like a number to use in our data processing. We ask that you use the last four numbers of your Social Security number for this.

Thank you for your help. We will be certain to report our findings to you in the hope that they will be of value in your teaching.

Sincerely,

Gene Hall

Gene E. Hall, Project Director
Procedures for Adopting Educational Innovations/CBAM Project

GEH/sh

Attachments

APPENDIX C

COMPUTER SCORING THE SoCQ

C.1 INSTRUCTIONS FOR USING FORTRAN PROGRAM TO SCORE SoCQ'S

Program XSCORE

App ndix C contains a listing of the computer program used to score the SoCQ. The program was written in ANSI Standard FORTRAN, and has been successfully run on several computers with very minor modifications. This program generated the Raw Score Tables and Group Reports which are scattered throughout the manual. Other examp.es of the output can be seen in Appendix C.3 following the program.

The program was written using "Tape 1" as input and "Tape 3" as output. Some installations may have logical unit numbers which specify the input and output devices. In such cases, the logical unit numbers would be substituted into *all* READ and WRITE statements in the program. For instance, if your computer accesses a card reader designated as logical unit number 5 and a line printer designated as logical unit number 6, then "READ(1,10)" should be "READ(5,10)" and WRITE(3,20)" should be "WRITE(6,20)."

The program expects a card-image record on the input file which contains at least four cards: a title card, a format card, an option card, and a group header card.

The title card should be used to label the output according to the circumstances of the SoCQ administration (e.g., "spring inservice workshop, third grade teachers, pre-assessment"). The contents of the entire title card, columns 1 through 80, will appear on the first page of the output only.

The format card must contain a valid FORTRAN format specification (e.g., "(2A5,13X,35I1)"). The program expects two five-character alpha fields to be specified in this format and also 35 *integer* fields. The first two alpha fields should be used for identification (ID) purposes (name or number of the person who provided the SoCQ responses). The 35 *integer* fields must contain the 35 responses to the SoCQ, valid responses being the numbers 0 through 7. The format is thus "variable" and the punching of the SoCQ data can be modified to suit the needs of various processing requirements. The data cards may contain information besides the ID and SoCQ data, but this program should not be expected to process such data.

The option card specifies whether or not a Raw Table is to be printed out *for each individual* whose data is processed. If such a table is desired, the five letters "TABLE" must be punched into card columns (CC) 1 through 5 on this card. If CC1-5 are blank or contain any other information, the Raw Tables will not be output. We suggest using the rest of the option card, CC6-80, for any information the user would like to have printed *near the top of every page of the entire output*, such as the *date* of the computer run or data collection.

The group header card contains the number of individual SoCQ's in the group and any information the user wishes to have printed on each page of output which contains data from that group. The number must be *right justified* in CC 1 through 5, since the program uses this number to determine how many SoCQ's are to be processed. When that number of SoCQ's have been processed, the program expects to

find another group header card on the input record and reads CC1-5 of that card. If CC1-5 are blank or contain only zeros, the program stops. If CC1-5 contain a number, another group is processed. Thus, multiple groups may be processed by preceding each group with an appropriate group header card. A blank card should follow the last card in the last group.

A typical card deck for a batch processing system would be as follows:

< System Control Cards >

End of Record

< FORTRAN Program >

End of Record

< Title Card >

< Format Card >

< Option Card >

< Group Header Card >

[SoCQ
data
cards

< Group Header Card >

[SoCQ
data
cards

< Blank Card >

End of Record

End of File

An example of the program control cards is included in this appendix immediately following the FORTRAN listing. We strongly recommend that anyone implementing the program use at least this set of data to test the program. The output should appear exactly as shown on the following pages. Be especially careful to check that the percentiles provided by your implementation agree with those shown here.

C.2 LISTING OF FORTRAN COMPUTER PROGRAM, WITH TEST DATA

```
      PROGRAM XSCORE (TAPE3,OUTPUT,PUNCH,TAPE1)                          A    1
C*****************************************************************C    A    2
C                                                                      C    A    3
C PROGRAM XSCORE GENERATES A GROUP REPORT WITH OPTIONAL RAW SCORE       A    4
C TABLES FOR EACH INDIVIDUAL                                           C    A    5
C                                                                      C    A    6
C INPUT FILE: TAPE1 (LOGICAL UNIT 1)                                   C    A    7
C OUTPUT FILE: TAPE3 (LOGICAL UNIT 3)                                  C    A    8
C                                                                      C    A    9
C TAPE1 CONTAINS:                                                      C    A   10
C   CARD 1...TITLE CARD (COLUMNS 1-80)                                 C    A   11
C                                                                      C    A   12
C   CARD 2...FORMAT CARD  E.G., (2A5,13X,35I1)                         C    A   13
C                                                                      C    A   14
C   CARD 3...OPTION CARD                                               C    A   15
C          CC 1-5  PRINT *TABLE* FOR INDIVIDUAL RAW SCORE TABLE        C    A   16
C                  LEAVE BLANK FOR GROUP REPORT ONLY                   C    A   17
C          CC 6-80 DATE AND REMARKS, E.G., DATE = 04 JUL 76            C    A   18
C                                                                      C    A   19
C   CARD 4...GROUP HEADER CARD                                         C    A   20
C          CC 1-5  NUMBER OF SUBJECTS (MAX:150)                        C    A   21
C                  RIGHT JUSTIFIED, E.G., 00150                        C    A   22
C          CC 6-80 SUBTITLE FOR GROUP                                  C    A   23
C                                                                      C    A   24
C MULTIPLE GROUPS CAN BE PROCESSED BY PRECEDING EACH GROUP WITH        C    A   25
C AN APPROPRIATE GROUP HEADER CARD.                                    C    A   26
C                                                                      C    A   27
C NOTE: A BLANK CARD MUST FOLLOW THE LAST DATA GROUP FOR SINGLE        C    A   28
C       OR MULTIPLE GROUPS.                                            C    A   29
C                                                                      C    A   30
C ONLY ONE TITLE CARD, DATA FORMAT CARD AND OPTION CONTROL CARD CAN    C    A   31
C BE USED WITH SINGLE OR MULTIPLE GROUPS.                              C    A   32
C                                                                      C    A   33
C                                                                      C    A   34
C                        COPYRIGHT,1977                                C    A   35
C       PROCEDURES FOR ADOPTING EDUCATIONAL INNOVATIONS                C    A   36
C         CONCERNS BASED ADOPTION MODEL(CBAM PROJECT)                  C    A   37
C  THE RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION           C    A   38
C              THE UNIVERSITY OF TEXAS AT AUSTIN                       C    A   39
C                                                                      C    A   40
C                                                                      C    A   41
C*****************************************************************C    A   42
      DIMENSION IPROF(150,10), IT(7), KEY(35), IK(5,7), NT(15), KF(16)     A   43
      DIMENSION ITITLE(16), ISCALE(36,7), ITOT(35,2), X(8), S(8), IX(35)   A   44
      DIMENSION IY(35), ID(2), NDATE(15)                                   A   45
C*********                                                                 A   46
C                                                                          A   47
      DATA ISCALE/10,23,29,37,46,53,60,66,72,77,81,84,86,89,91,93,94,95,   A   48
     *96,97,98,98,99,99,99,99,99,99,99,99,99,99,99,99,99,99,99,05,12,16,19,A   49
     *23,27,30,34,37,40,43,45,48,51,54,57,60,63,66,69,72,75,80,84,88,90,   A   50
     *91,93,95,96,97,98,99,99,99,99,05,12,14,17,21,25,28,31,35,39,41,45,   A   51
     *48,52,55,57,59,63,67,70,72,76,78,80,83,85,87,89,91,92,94,95,96,96,   A   52
     *97,99,02,05,07,09,11,15,18,23,27,30,34,39,43,47,52,56,60,65,69,73,   A   53
     *77,80,83,85,88,90,92,94,95,97,97,98,98,99,99,99,01,01,01,02,02,03,   A   54
     *03,04,05,05,07,08,09,11,13,16,19,21,24,27,30,33,38,43,48,54,59,63,   .   55
     *66,71,76,82,86,90,92,96,01,02,03,03,04,05,07,09,10,12,14,16,19,22,   A   56
     *25,28,31,36,40,44,48,52,55,59,64,68,72,76,80,84,88,91,93,95,97,98,   A   57
     *01,02,03,05,06,09,11,14,17,20,22,26,30,34,38,43,47,52,57,60,65,69,   A   58
     *73,77,81,84,87,90,92,94,96,97,98,99,99,99/                           A   59
      DATA ITOT/1,42,55,60,66,72,74,78,80,83,86,89,92,95,98,101,104,107,   A   60
     *110,112,114,118,122,125,127,132,136,141,144,150,156,161,173,189,24   .   61
```

```
     *5,8,3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,57,60,63,66  A   62
     *,69,71,74,77,80,83,86,89,92,95,98,99/                               A   63
      DATA KEY/3,12,21,23,30,6,14,15,26,35,7,13,17,28,33,4,8,16,25,34,1,  A   64
     *11,19,24,32,5,10,18,27,29,2,9,20,22,31/                             A   65
      DATA ITABLE/5HTABLE/                                                A   66
      DATA IBLANK/5H     /                                                A   67
      DATA NZERO/00000/                                                   A   68
C                                                                         A   69
C*********                                                                A   70
      READ (1,10) ITITLE,KF                                               A   71
   10 FORMAT (16A5/16A5)                                                  A   72
      WRITE (3,20)                                                        A   73
   20 FORMAT (1H1)                                                        A   74
      WRITE (3,30) ITITLE,KF                                              A   75
   30 FORMAT (X,16A5/X,16A5)                                              A   76
      READ (1,40) LC,NDATE                                                A   77
   40 FORMAT (A5,15A5)                                                    A   78
      IF (LC.EQ.ITABLE) WRITE (3,50)                                      A   79
   50 FORMAT (1X,36HRAW TABLE AND GROUP REPORT REQUESTED)                 A   80
      IF (LC.NE.ITABLE) WRITE (3,60)                                      A   81
   60 FORMAT (1X,17HGROUP REPORT ONLY)                                    A   82
      WRITE (3,70) NDATE                                                  A   83
   70 FORMAT (/51X,15A5)                                                  A   84
      NG=0                                                                A   85
      ICNT=1                                                              A   86
   80 READ (1,90) NS,NT                                                   A   87
   90 FORMAT (I5,15A5)                                                    A   88
      IF (NS.EQ.NZERO) GO TO 160                                          A   89
C                                                                         A   90
C                                                                         A   91
      DO 150 IR=1,NS                                                      A   92
         READ (1,KF) ID(1),ID(2),IX                                       A   93
C******* *                                                                A   94
C  CODE FOR GENERATING RAW TABLE DATA                                     A   95
C                                                                         A   96
         DO 100 I=1,35                                                    A   97
            J=KEY(I)                                                      A   98
            IY(I)=IX(J)                                                   A   99
  100    CONTINUE                                                         A  100
         L=1                                                              A  101
         DO 110 I=1,7                                                     A  102
         DO 110 J=1,5                                                     A  103
            IX(J,I)=IY(L)                                                 A  104
            L=L+1                                                         A  105
  110    CONTINUE                                                         A  106
         DO 120 J=1,7                                                     A  107
            IT(J)=0                                                       A  108
         DO 120 I=1,5                                                     A  109
            IT(J)=IX(I,J)+IT(J)                                           A  110
  120    CONTINUE                                                         A  111
         LTOT=0                                                           A  112
         DO 130 I=1,7                                                     A  113
  130    LTOT=LTOT+IT(I)                                                  A  114
C                                                                         A  115
C  END OF RAW TABLE GENERATION                                            A  116
C*********                                                                A  117
         IF (LC.EQ.ITABLE) CALL RAWTAB (IX,IT,ID,LTOT,ICNT,NT,NDATE)      A  118
         CALL CENT (IT,LTOT,ISCALE,ITOT,LC)                               A  119
         DO 140 K=1,7                                                     A  120
            IPROF(IR,K)=IT(K)                                             A  121
  140    CONTINUE                                                         A  122
         IPROF(IR,8)=LTOT                                                 A  123
```

```
            IPROF(IR,9)=ID(1)                                          A  124
            IPROF(IR,10)=ID(2)                                         A  125
            IF (LC.NE.ITABLE) GO TO 150                                A  126
            ICNT=ICNT+1                                                A  127
            IF (IR.EQ.NS.OR.ICNT.EQ.4) CALL CREDIT (ICNT)              A  128
  150 CONTINUE                                                         A  129
      CALL REPORT (NS,IPROF,NT,NDATE)                                  A  130
      ICNT=1                                                           A  131
      GO TO 80                                                         A  132
  160 CONTINUE                                                         A  133
C                                                                      A  134
      END                                                              A  135
      SUBROUTINE REPORT (NS,IPROF,NT,NDATE)                            B    1
      DIMENSION IX(7), ID(2), IPROF(150,10), NT(15), NDATE(15)         B    2
      DIMENSION X(8), S(8), SS(8), KX(8), KS(8)                        B    3
      ICNT=0                                                           B    4
      NP=1                                                             B    5
      NSL=NS                                                           B    6
   10 CONTINUE                                                         B    7
      WRITE (3,20) NP                                                  B    8
   20 FORMAT (1H1,50X,4HPAGE,I3)                                       B    9
      WRITE (3,30) NT                                                  B   10
   30 FORMAT (/X,15A5)                                                 B   11
      WRITE (3,40) NDATE                                               B   12
   40 FORMAT (/51X,15A5)                                               B   13
      WRITE (3,50)                                                     B   14
   50 FORMAT (/X,7HSUBJECT,9X,34HSTAGE OF CONCERN PERCENTILE SCORES/X,6H B   15
     1NUMBER,9X,1H0,5X,1H1,5X,1H2,5X,1H3,5X,1H4,5X,1H5,5X,1H6,5X,5HTOTAL B   16
     2/)                                                               B   17
      II=ICNT+1                                                        B   18
      NL=40                                                            B   19
      IF (NSL.LT.40) NL=NSL                                            B   20
      IN=NL+ICNT                                                       B   21
      DO 60 I=II,IN                                                    B   22
         LTOT=IPROF(I,8)                                               B   23
         ID(1)=IPROF(I,9)                                              B   24
         ID(2)=IPROF(I,10)                                             B   25
         DO 60 J=1,7                                                   B   26
            IX(J)=IPROF(I,J)                                           B   27
   60    CONTINUE                                                      B   28
         WRITE (3,70) ID(1),ID(2),IX,LTOT                              B   29
   70 FORMAT (X,2A5,3X,7(I3,3X),2X,I3)                                 B   30
   80 CONTINUE                                                         B   31
      LS=48-NL                                                         B   32
      NSL=NSL-NL                                                       B   33
      IF (NSL.GT.0) GO TO 140                                          B   34
      DO 90 I=1,8                                                      B   35
         KS(I)=0                                                       B   36
         KX(I)=0                                                       B   37
         X(I)=0.0                                                      B   38
         S(I)=0.0                                                      B   39
         SS(I)=0.0                                                     B   40
   90 CONTINUE                                                         B   41
      DO 110 J=1,NS                                                    B   42
         DO 100 N=1,8                                                  B   43
            X(N)=IPROF(J,N)                                            B   44
            S(N)=S(N)+X(N)                                             B   45
            SS(N)=SS(N)+X(N)**2                                        B   46
  100    CONTINUE                                                      B   47
  110 CONTINUE                                                         B   48
      SN=NS                                                            B   49
      DO 120 J=1,8                                                     B   50
```

```
      X(J)=S(J)/SN                                                      B   51
      S(J)=SQRT(SS(J)/SN-X(J)**2)                                       B   52
      KX(J)=X(J)+0.5                                                    B   53
      KS(J)=S(J)+0.5                                                    B   54
  120 CONTINUE                                                          B   55
      WRITE (3,130) NT,NS,KX,KS                                         B   56
  130 FORMAT (/X,15A5//20X,17HGROUP PROFILE  N=,I3//X,4HMEAN,6X,7(3X,I3)  B   57
     1,5X,I3/X,7HSTD DEV,3X,7(3X,I3),5X,I3)                             B   58
      LS=LS-7                                                           B   59
  140 NP=NP+1                                                           B   60
      ICNT=ICNT+NL                                                      B   61
      DO 160 I=1,LS                                                     B   62
         WRITE (3,150)                                                  B   63
  150 FORMAT (1H )                                                      B   64
  160 CONTINUE                                                          B   65
      WRITE (3,170)                                                     B   66
  170 FORMAT (2X,35HPROCEDURES FOR ADOPTING EDUCATIONAL,20H INNOVATIONS  B   67
     1PROJECT/3X,29HRESEARCH AND DEVELOPMENT,29H CENTER FOR TEACHER EDUC  B   68
     2ATION/13X,33HTHE UNIVERSITY OF TEXAS AT AUSTIN)                   B   69
      IF (NSL.EQ.0) RETURN                                              B   70
      GO TO 10                                                          B   71
C                                                                       B   72
      END                                                               B   73
      SUBROUTINE CENT (IT,LTOT,ISCALE,ITOT,LC)                          C    1
      DIMENSION IT(7), ISCALE(36,7), ITOT(35,2)                         C    2
      DATA ITABLE/5HTABLE/                                              C    3
      LT=LTOT                                                           C    4
      DO 10 I=1,7                                                       C    5
         J=IT(I)+1                                                      C    6
   10 IT(I)=ISCALE(J,I)                                                 C    7
      DO 20 K=1,35                                                      C    8
         L1=ITOT(K,1)                                                   C    9
         IF (LT.LE.L1) GO TO 30                                         C   10
   20 CONTINUE                                                          C   11
   30 LT=ITOT(K,2)                                                      C   12
      IF (LC.NE.ITABLE) RETURN                                          C   13
      WRITE (3,40) IT,LT                                                C   14
   40 FORMAT (11X,8(I2,4X),10HPERCENTILE/)                              C   15
      LTOT=LT                                                           C   16
      RETURN                                                            C   17
C                                                                       C   18
      END                                                               C   19
      SUBROUTINE RAWTAB (IK,IT,IO,LT,ICNT,NT,NDATE)                     D    1
      DIMENSION IX(35), IK(5,7), IT(7), IY(35), IO(2), NT(15), NDATE(15)  D    2
      IF (ICNT.EQ.1) WRITE (3,10) NT                                    D    3
   10 FORMAT (1H1,15A5)                                                 D    4
      IF (ICNT.EQ.1) WRITE (3,20) NDATE                                 D    5
   20 FORMAT (/51X,15A5/)                                               D    6
      WRITE (3,30) IO(1),IO(2)                                          D    7
   30 FORMAT (///9X,15HRAW SCORES FOR  ,2A5//X,6HSTAGES,5X,1H0,5X,1H1,  D    8
     1 5X,1H2,5X,1H3,5X,1H4,5X,1H5,5X,1H6/)                             D    9
      WRITE (3,40) ((I,J,IK(J,I),I=1,7),J=1,5)                          D   10
   40 FORMAT (4(10X,7(I3,3X),/),10X,7(I3,3X))                           D   11
      WRITE (3,50)                                                      D   12
   50 FORMAT (10X,7(3H---,3X))                                          D   13
      WRITE (3,60) IT,LT                                                D   14
   60 FORMAT (10X,8(I3,3X),X,9HRAW TOTAL/)                              D   15
      RETURN                                                            D   16
C                                                                       D   17
      END                                                               D   18
      SUBROUTINE CREDIT (ICNT)                                          E    1
      NL=(ICNT-1)*17+7                                                  E    2
```

```
      LS=60-NL                                                          E    3
      DO 20 I=1,LS                                                      E    4
         WRITE (3,10)                                                   E    5
   10 FORMAT (1H )                                                      E    6
   20 CONTINUE                                                          E    7
      WRITE (3,30)                                                      E    8
      ICNT=1                                                            E    9
   30 FORMAT (2X,35HPROCEDURES FOR ADOPTING EDUCATIONAL,20H INNOVATIONS  E   10
     1PROJECT/3X,24HRESEARCH AND DEVELOPMENT,29H CENTER FOR TEACHER EDUC E   11
     2ATION/13X,33HTHE UNIVERSITY OF TEXAS AT AUSTIN)                   E   12
      RETURN                                                            E   13
C                                                                       E   14
      END                                                               E   15
```

```
..END-OF-RECORD..      1
```

```
 TEST DATA FOR XSCORE
(2A5,35I1)
TABLE       DATE  =  14 DEC 1976
00007  GROUP OF 7 TEST CASES
TEST 1     46035123654021132546064431525064231
TEST 2     50146234065132243650101542636105342
TEST 3     01250345106243354061212653040216453
TEST 4     02301456210354465102323064151320564
TEST 5     13402560321465506213434105262431605
TEST 6     24513601432506610324545216303542016
TEST 7     35624012543610064365632041465312 0
00003  GROUP OF 3 TEST CASES
TEST 8     11111122222223333333  44444555555
TEST 9     01230123012301230123  30123012301 2
TEST 10    45674567456745674567456745674567456
                BLANK CARD
```

C.3 OUTPUT FROM TEST RUN

```
 TEST DATA FOR XSCORE
(2A5,35I1)
RAW TABLE AND GROUP REPORT REQUESTED

                                        DATE = 14 DEC 1976
```

GROUP OF 7 TEST CASES

DATE = 14 DEC 1976

RAW SCORES FOR SUBJECT NUMBER TEST 1

STAGES	0	1	2	3	4	5	6		
	0	1	2	3	4	5	6		
	0	1	2	3	4	5	6		
	0	1	2	3	4	5	6		
	0	1	2	3	4	5	6		
	0	1	2	3	4	5	6		
	0	5	10	15	20	25	30	105	RAW TOTAL
	10	27	41	56	30	68	96	51	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 2

STAGES	0	1	2	3	4	5	6		
	1	2	3	4	5	6	0		
	1	2	3	4	5	6	0		
	1	2	3	4	5	6	0		
	1	2	3	4	5	6	0		
	1	2	3	4	5	6	0		
	5	10	15	20	25	30	0	105	RAW TOTAL
	53	43	57	77	54	88	1	51	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 3

STAGES	0	1	2	3	4	5	6		
	2	3	4	5	6	0	1		
	2	3	4	5	6	0	1		
	2	3	4	5	6	0	1		
	2	3	4	5	6	0	1		
	2	3	4	5	6	0	1		
	10	15	20	25	30	0	5	105	RAW TOTAL
	81	57	72	90	76	1	9	51	PERCENTILE

PROCEDURES FOR ADOPTING EDUCATIONAL INNOVATIONS PROJECT
RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION
THE UNIVERSITY OF TEXAS AT AUSTIN

GROUP OF 7 TEST CASES

DATE = 14 DEC 1976

RAW SCORES FOR SUBJECT NUMBER TEST 4

STAGES	0	1	2	3	4	5	6		
	3	4	5	6	0	1	2		
	3	4	5	6	0	1	2		
	3	4	5	6	0	1	2		
	3	4	5	6	0	1	2		
	3	4	5	6	0	1	2		
	15	20	25	30	0	5	10	105	RAW TOTAL
	93	72	85	97	1	5	22	51	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 5

STAGES	0	1	2	3	4	5	6		
	4	5	6	0	1	2	3		
	4	5	6	0	1	2	3		
	4	5	6	0	1	2	3		
	4	5	6	0	1	2	3		
	4	5	6	0	1	2	3		
	20	25	30	0	5	10	15	105	RAW TOTAL
	98	98	94	2	3	14	42	51	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 6

STAGES	0	1	2	3	4	5	6		
	5	6	0	1	2	3	4		
	5	6	0	1	2	3	4		
	5	6	0	1	2	3	4		
	5	6	0	1	2	3	4		
	5	6	0	1	2	3	4		
	25	30	0	5	10	15	20	105	RAW TOTAL
	99	97	5	-15	7	28	65	51	PERCENTILE

PROCEDURES FOR ADOPTING EDUCATIONAL INNOVATIONS PROJECT
RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION
THE UNIVERSITY OF TEXAS AT AUSTIN

GROUP OF 7 TEST CASES

DATE = 14 DEC 1976

RAW SCORES FOR SUBJECT NUMBER TEST 7

STAGES	0	1	2	3	4	5	6		
	6	0	1	2	3	4	5		
	6	0	1	2	3	4	5		
	6	0	1	2	3	4	5		
	6	0	1	2	3	4	5		
	6	0	1	2	3	4	5		
	30	0	5	10	15	20	25	105	RAW TOTAL
	99	5	25	34	16	48	84	51	PERCENTILE

GROUP OF 7 TEST CASES

DATE = 14 DEC 1976

SUBJECT NUMBER	STAGE OF CONCERN PERCENTILE SCORES 0	1	2	3	4	5	6	TOTAL
TEST 1	10	27	41	56	30	68	96	51
TEST 2	53	43	57	77	54	88	1	51
TEST 3	81	57	72	90	76	1	9	51
TEST 4	93	72	85	97	1	5	22	51
TEST 5	98	90	94	2	3	14	42	51
TEST 6	99	97	5	15	7	28	65	51
TEST 7	99	5	25	34	16	48	84	51

GROUP OF 7 TEST CASES

GROUP PROFILE N= 7

MEAN	76	56	54	53	27	36	46	51
STD DEV	31	31	30	34	26	31	34	0

GROUP OF 3 TEST CASES

DATE = 14 DEC 1976

RAW SCORES FOR SUBJECT NUMBER TEST 8

STAGES	0	1	2	3	4	5	6		
	1	1	1	1	1	1	1		
	2	2	2	2	2	2	2		
	3	3	3	3	3	3	3		
	4	4	4	4	4	4	4		
	5	5	5	5	5	5	5		
	15	15	15	15	15	15	15	105	RAW TOTAL
	93	57	57	56	16	28	42	51	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 9

STAGES	0	1	2	3	4	5	6		
	2	1	2	3	0	0	1		
	3	1	0	3	2	1	0		
	0	2	0	3	2	1	3		
	2	1	3	0	3	2	1		
	1	2	0	1	3	0	2		
	8	7	5	10	10	4	7	51	RAW TOTAL
	72	34	25	34	7	4	14	6	PERCENTILE

RAW SCORES FOR SUBJECT NUMBER TEST 10

STAGES	0	1	2	3	4	5	6		
	6	5	6	7	4	4	5		
	7	5	4	7	6	5	4		
	4	6	4	7	6	5	7		
	6	5	7	4	7	6	5		
	5	6	4	5	7	4	6		
	28	27	25	30	30	24	27	191	RAW TOTAL
	99	93	85	97	76	64	90	99	PERCENTILE

PROCEDURES FOR ADOPTING EDUCATIONAL INNOVATIONS PROJECT
RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION
THE UNIVERSITY OF TEXAS AT AUSTIN

GROUP OF 3 TEST CASES

DATE = 14 DEC 1976

SUBJECT NUMBER	STAGE OF CONCERN PERCENTILE SCORES 0	1	2	3	4	5	6	TOTAL
TEST 8	93	57	57	56	16	28	42	51
TEST 9	72	34	25	34	7	4	14	6
TEST 10	99	93	85	97	76	64	98	99

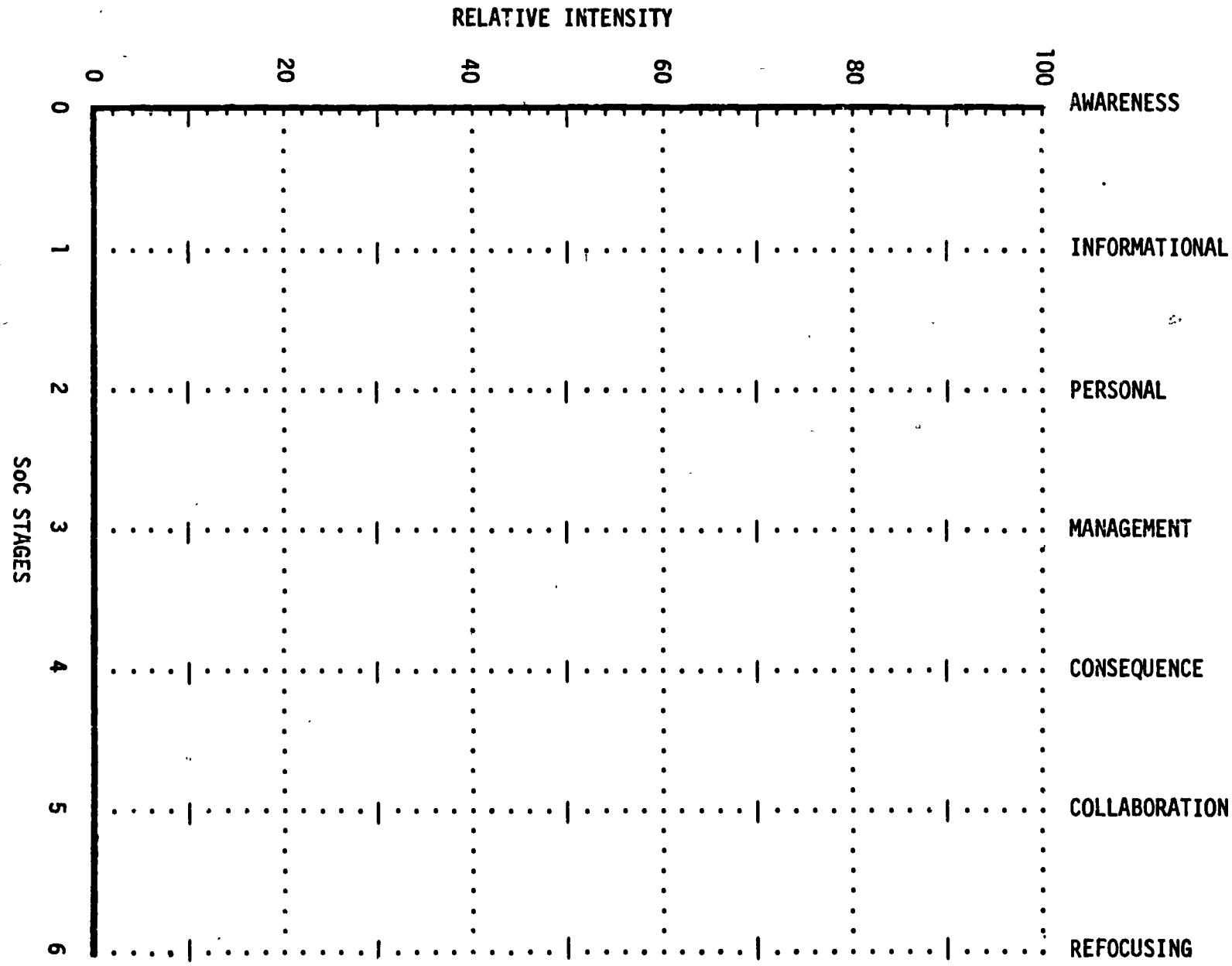
GROUP OF 3 TEST CASES

GROUP PROFILE N= 3

MEAN	88	61	56	62	33	32	49	52
STD DEV	12	24	25	26	31	25	31	38

APPENDIX D

GRAPH FOR PLOTTING SoC PROFILE SCORES


RELATIVE INTENSITY
0
20
40
60
80
100
SoC STAGES
0
1
2
3
4
5
6
AWARENESS
INFORMATIONAL
PERSONAL
MANAGEMENT
CONSEQUENCE
COLLABORATION
REFOCUSING

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