

THE MEANING AND MEASUREMENT  
OF THE CONCEPT OF SOLIDARITY

by

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A THESIS

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OF THE CONCEPT OF SOLIDARITY

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## ABSTRACT

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### Purpose

The objectives of this thesis were threefold: (1) To explicate the concept of solidarity, (2) To define solidarity in a clear manner; and (3) To construct an instrument suitable for the measurement of solidarity.

### Methods

The data for this research were obtained from a sampling of four independent groups: (1) the employees of a large bank; (2) the faculty of a high school; (3) the congregation of a protestant church; and (4) a naval reserve training center. The members of these groups were administered a questionnaire consisting of twenty-four items derived from Seashore's Index of Group Cohesiveness and Klapp's Questionnaire for Rating Solidarity.

The questionnaire items were analyzed by the principal axis method of factor analysis and a cluster analysis.

### Findings

As operationalized, it was determined by the factor analysis of items that there is considerable overlap between solidarity and cohesion. As a means of mitigating the problem

of operational confusion between these concepts a clear definition of solidarity has been suggested. Solidarity may be defined as; a positive affective relationship existing between a group of two or more individuals, characterized by a feeling of "weness."

The factor analysis revealed several dimensions of group relations including integration, harmony, conflict, agreement and cooperation. The factorial design also suggested five other factors which were not interpreted. The cluster analysis suggested particular dimensions of group life such as perceived integration and group unattractiveness.

Finally, the cluster analysis revealed several items which were incorporated into an index of solidarity.

Approved:

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## TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION AND STATEMENT OF THE PROBLEM . . .	1
Significance of the Problem . . . . .	1
Review of the Literature . . . . .	9
Theoretical Orientation . . . . .	20
Hypothesis I . . . . .	22
Hypothesis II . . . . .	23
II. RESEARCH PROCEDURES AND PLAN OF ANALYSIS . . .	24
Source of Data . . . . .	24
Description and Analytical Design of the Sample . . . . .	24
Operational Definitions . . . . .	26
The Questionnaire . . . . .	27
Techniques of Data Analysis . . . . .	27
III. FINDINGS AND CONCLUSIONS . . . . .	35
Factor Analysis . . . . .	36
Cluster Analysis . . . . .	64
Conclusions . . . . .	71
BIBLIOGRAPHY . . . . .	75
APPENDICES . . . . .	80

## CHAPTER I

### INTRODUCTION AND STATEMENT OF THE PROBLEM

#### Significance of the Problem

This thesis is designed in view of the following three objectives:

1. The explication of the concept of solidarity.
2. The defining of solidarity in a clear manner; and
3. The measurement of solidarity and the delineation of its operational indices from those of the concept of cohesion.

The fulfillment of these objectives involves addressing certain theoretical and methodological problems. As will be apparent, many of these problems are common to other types of sociological research.

The following discussion is presented to facilitate an understanding of these issues and the way in which they relate to the research at hand.

The first problem is that of vague concepts. In the course of examining emerging group properties, one is invariably confronted with vague terminology, usually in the form of ambiguous concepts or definitions which lack

sufficient empirical indicators. This deficiency has severely impeded the development of systematic theory in small group relations. Blumer, for example, suggests that the greatest deficiency in theory today is that of vague concepts.<sup>1</sup> He states that clearly defined concepts can be empirically grounded and thus are of greatest benefit to sociology.<sup>2</sup>

The problem of conceptual vagueness is further complicated by an absence of exclusiveness of terms, or instances where the same phenomenon is identified by different concepts. For example, it is not uncommon to find the concepts of solidarity and cohesion used in similar ways. Cole and Miller have noted that, "the term itself (solidarity) is frequently used interchangeably with cohesion and integration."<sup>3</sup> Although there is a logical association between solidarity and cohesion, it can be argued that conceptual independence or exclusiveness of the concepts can and should be maintained.

The concept of cohesion appears to be used more frequently in the literature than does solidarity.<sup>4</sup> In

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<sup>1</sup>Herbert Blumer, "What Is Wrong With Social Theory," American Sociological Review, Vol. 19 (1954), pp. 3-10.

<sup>2</sup>Ibid.

<sup>3</sup>William Cole and Charles Miller, Social Problems: A Sociological Interpretation (New York: David McKay Company), 1965, p. 502.

<sup>4</sup>Edwin Hollander, Principles and Methods of Social Psychology (New York: Oxford University Press), 1967.

areas such as industrial sociology, social psychology and small group research in general, cohesion is a common term. In addition, there seems to be more general agreement among sociologists as to the meaning and measurement of cohesion. Edwin Hollander notes that "the research literature on cohesiveness is quite extensive and for the most part, tends to accept a definition of cohesiveness along the lines suggested by Festinger, Schachter, and Back as the "total forces which act on members to remain in the group."<sup>5</sup> Hollander adds that such a definition is difficult to operationalize and that research usually centers around the dimension of group attraction.<sup>6</sup>

The concept of solidarity is most often used in regard to the unity of the members of the group. Yet, the dimension of group unity that is being discussed or measured is seldom made explicit. As a consequence, the reader is left unsure as to the subject matter of the concept.

Stinchcombe notes that a concept is not justified in its existence unless it refers to some phenomenon not presently delineated by any other concept.<sup>7</sup> This is not to suggest that several concepts may not deal with a

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<sup>5</sup>Ibid., p. 362.

<sup>6</sup>Ibid.

<sup>7</sup>Arthur Stinchcombe, Constructing Social Theories (New York: Harcourt, Brace and World, Inc.), 1968, p. 40.

particular phenomenon, but rather that each concept must refer to the phenomenon from a different dimension. The concept of alienation may be used to illustrate this point.

Melvin Seeman has identified the following types of alienation which presently exist in the literature: (1) powerlessness, (2) meaninglessness, (3) normlessness, (4) isolation and (5) self estrangement.<sup>8</sup> Although each of these concepts are subsumed under a broader conceptual label, that of alienation, each maintains a conceptual independence by delineating a particular dimension or category of alienation. Thus, although the concepts are conceptually related, their subject matter is sufficiently different to merit justification for the continued use of each term.

Unfortunately, it is not always the case in sociology that conceptual boundaries are discernable. One consequence of this state of affairs is that in some cases there are two or more concepts which refer to essentially the same phenomenon. Theorists and researchers alike must then labor under the limitations imposed by unclear concepts. Measurement, and particularly the use of empirical indicators, becomes problematic. Robert Dubin, for example, suggests that an adequate empirical indicator should possess two

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<sup>8</sup>Melvin Seeman, "On the Meaning of Alienation," American Sociological Review, Vol. 24 (1959), pp. 783-791.

principal criteria:

- "1. The operation or operations involved in the relation between observer and the apparatus he uses for observing may be explicitly set forth so that it or they may be duplicated by any other equally trained observer.
2. The employment of the observing operation produces equivalent values for the same sample when employed by different observers."<sup>9</sup>

Thus, a term which is conceptually vague does not meet the above criteria and as a consequence hinders valid measurement. This is a particularly critical problem when considering the function of concepts in social research.

Stinchcombe notes that concepts must meet the requirement of accurately portraying the forces operating in the world.<sup>10</sup> Concepts are, of course, lodged at different levels of abstraction. Certain ones, such as man, women, house and car, have direct empirical referents and consequently are readily understood within the context of their usage. Other concepts, for example, solidarity and integration, exist at a higher level of abstraction and are associated with somewhat less precise empirical referents. Thus, the concept may be operationalized, and additionally, measured by differing if not contrasting means.

At this point it is perhaps appropriate to mention

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<sup>9</sup>Robert Dubin, Theory Building (New York: The Free Press), 1965, p. 185.

<sup>10</sup>Stinchcombe, op. cit., p. 40.

a distinction made by some sociologists between the terms of concept and construct. Concepts are verbal abstractions which have direct empirical referents.<sup>11</sup> Constructs, on the other hand, have no direct empirical referents.<sup>12</sup> While the former may be measured directly, the latter must be measured by way of empirical referents which allow for an inference to be drawn about the construct. The more abstract the construct is, the greater the inference must be from the set of operations that have been constructed to empirically ground it.<sup>13</sup>

Directly related to the issue of conceptual clarification is the task of determining the parameters of the concept as related to its empirical indices. This may be seen as the elimination of superfluous meaning from the concept which is to be used, or as Louis Guttman suggests, the task of "achieving progress toward internal validity."<sup>14</sup>

Hans Zetterberg has noted that perfect validity is actualized when the indicator has the same scope of content

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<sup>11</sup> John McKinney, Constructive Typology and Social Theory (New York: Appleton-Century-Crofts), 1966.

<sup>12</sup> Ibid.

<sup>13</sup> In this thesis, the author does not make the distinction between concept and construct. Thus, the term concept is used to refer to terms both with and without direct empirical referents.

<sup>14</sup> Louis Guttman, "The Problem of Attitude Measurement," in Samuel Stoffer (ed.) Measurement and Prediction (Princeton: Princeton University Press), 1950, pp. 57-59.

as the definition of the concept.<sup>15</sup> Zetterberg sets forth three types of errors which may occur in relation to internal validity. These are:

1. The definition implies the indicator and in addition, something other than the indicator.
2. The indicator implies the definition and, in addition, something other than the definition.
3. The indicator implies the definition and vice-versa.<sup>16</sup>

Zetterberg suggests that the researcher try to minimize the occurrence of these errors by combining many indicators into one index. He does caution, however, that one valid indicator is worth much more than several invalid ones.<sup>17</sup> The clarification of concepts can be seen, then, as a measure which facilitates achieving valid indicators.

Thus far it has been suggested that:

1. There is a need for clearly defined concepts; and
2. There is a need for empirical measurement of these concepts.

Let us now consider a specific application of these suggestions in the treatment of the concept solidarity.

At the onset of this thesis, it was stated that the

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<sup>15</sup>Hans Zetterberg, On Theory and Verification in Sociology (New York: The Bedminister Press), 1965, p. 115.

<sup>16</sup>Ibid., p. 116.

<sup>17</sup>Ibid.

objectives involved explicating, defining and measuring solidarity. These goals are consistent with the mitigation of the problems discussed in this section.

The first objective, that of explication, is defined by Richard Dumont and William Wilson as "the process whereby an initially vague and imprecise concept may be attributed with more exact meaning."<sup>18</sup> The rationale suggested by these authors for the use of explication is that the concept which has been explicated could be substituted for a less precise concept previously used which would, when used in propositional statements, increase the likelihood of explanation and prediction.<sup>19</sup>

In this thesis solidarity is explicated in regard to the types of situations under which it may develop. The discussion is designed to offer a distinction between the qualitative aspects of each situation.

In regard to the second objective of this research, it appears to be the rule, rather than the exception, that the majority of references to solidarity assume that the term is clearly understood. The author takes issue with this position and suggests that a clear definition must be formulated. In a review of over forty articles concerned

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<sup>18</sup>Richard G. Dumont and William J. Wilson, "Aspects of Concept Formation, Explication, and Theory Construction in Sociology," American Sociological Review, Vol. 32 (1967), p. 990.

<sup>19</sup>Ibid.

with the concept of solidarity, only six provided reference to a definition.<sup>20</sup> Most often a reference was made to some form of group "closeness." Some of the more relevant definitions are contained in the following section.

The third objective of measuring solidarity and delineating its operational indices from those of cohesion, is an important step in promoting a more accurate usage of solidarity in social research. The relationship between solidarity and cohesion is discussed in the theoretical section of this thesis. Suffice it to say that conceptual independence must be established before valid measurement can be accomplished. This theme will be developed in greater detail in a later section concerned with theoretical issues.

### Review of Literature

An early sociological use of the concept solidarity was in Emile Durkheim's The Division of Labor in Society.<sup>21</sup> In this work Durkheim mentions the concept of "social

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<sup>20</sup>The more precise references include: William Cole and Charles Miller, Social Problems: A Sociological Interpretation (New York: David McKay Co, Inc.), 1965; Amitai Etzioni, "Solidaric Work Groups in Collective Settlements," Human Organization, Vol. 16, 1957, pp. 2-6; Kent Geiger, "Deprivation and Solidarity in the Soviet Urban Family," American Sociological Review, Vol. 20, 1955, pp. 57-68; and Luther Jansen, "Measuring Family Solidarity," American Sociological Review, Vol. 17, 1952, pp. 727-33.

<sup>21</sup>Emile Durkheim, The Division of Labor in Society, translated by George Simpson (New York: Macmillin and Co.), 1933.

solidarity," and he suggests that two forms may be observed, namely: (1) mechanical solidarity; and (2) organic solidarity.<sup>22</sup>

Durkheim suggests that the former is that which, "comes from a certain number of states of conscience which are common to all the members of the society."<sup>23</sup> The social bond of mechanical solidarity is contrasted with organic solidarity, which according to Durkheim, evolves out of the division of labor.\*

Durkheim described the emergence of organic solidarity which characterizes more complex societies.

If moreover one recalls that even where it is most resistant, mechanical solidarity does not link men with the same force as the division of labor, and that more-

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<sup>22</sup> Ibid., p. 109.

<sup>23</sup> Ibid.

\* Annie Aitken (unpublished book review, University of Tennessee, 1971) has set forth a concise comparison of both of these forms of social solidarity. Aitken states that:

Social life comes from a double source, the likeness of consciousness and the division of labor. That is, in the first type, society is a more or less organized totality of beliefs and sentiments common to all the members of the group; this is the collective type. Solidarity coming from this organization is mechanical and can only be strong when the collective conscience completely envelops the individual conscience and coincides with it. From the second source, a type of solidarity, organic, develops which presumes a difference between individuals. In this type of society, the individual depends upon society through his relationship to the parts of which it is composed. With a greater division of labor, individual activity becomes more personal and the individual also becomes more dependent on society.

over, it leaves outside its scope the major part of phenomena actually social, it will become still more evident that social solidarity tends to become exclusively organic. It is the division of labor which more and more fills the role that was formerly filled by the common conscience. It is the principal bond of social aggregates of higher types.<sup>24</sup>

Durkheim focused upon the processual transition from mechanical to organic solidarity, as brought about by the division of labor. Thus, the division of labor is the vehicle by which organic solidarity develops.

Durkheim was careful to indicate that solidarity was not a psychological property. Although he indicated that in order to exist, solidarity must be contained within the individual, Durkheim noted that the concept is a social fact and must be measured as such.<sup>25</sup> Hence the position that "one can study the individual in regard to solidarity, but one does not then study solidarity but rather what makes it possible."<sup>26</sup>

Durkheim's work was the first, and remains as possibly the major systematic treatment of the concept solidarity. Subsequent research on the concept has yielded little by way of additional clarification or measurement solutions.

Part of Freud's research, for instance, has focused

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<sup>24</sup>Durkheim, op. cit., p. 173.

<sup>25</sup>Ibid., p. 67.

<sup>26</sup>Ibid.

upon solidarity and the sentimental ties that develop between group members and their leader.<sup>27</sup> He suggests that these ties are decisive in holding groups together. The emotional bond that is established between the leader and each member serves as much of the motivation for group solidarity. Freud concludes by stating that the ties between group members disappear at the same time that the ties with the leader are broken.<sup>28</sup> Nowhere in Freud's treatment of solidarity is there, however, a definition as to the meaning of solidarity, nor is there any suggestion for tapping the solidaric dimension of group relations.

In contrast, Homans discusses solidarity in his treatment of sentiments.<sup>29</sup> He broadly defines sentiments as referents to the internal states of the human body. Among his list of sentiments are: sentiments of affection, affective content of sympathy and indulgence, intimate sympathy, respect, pride, antagonism, affective history, score and sentimental nostalgia.<sup>30</sup>

Homans suggests that sentiments are closely related

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<sup>27</sup> Sigmund Freud, Group Psychology and the Analysis of Ego (London: Hogarth), 1922.

<sup>28</sup> Ibid., p. 49.

<sup>29</sup> George Homans, The Human Group (Harcourt, Brace and World, Inc.), 1950.

<sup>30</sup> Ibid., p. 37.

with two other forms of behavior; activity and interaction.<sup>31</sup> Sentiments, being internal to man, present the greatest problem in regard to observation and measurement, and consequently remain to a large degree unexplained.

De Voto interprets Homans' conception of sentiments as, "the sum of interior feelings, whether physical or mental, that a group member has in relation to what the group does."<sup>32</sup> Thus, he touches upon the basis of solidarity in recognizing the "internal feeling" which exists among group members. This will become more apparent in the following section which deals with the definition of solidarity.

Tamotsu Shibutani refers to Homans' use of sentiments in formulating his conception of the role of sentiments in solidarity.<sup>33</sup> In discussing solidarity, Shibutani omits any definitive statements as to the meaning of solidarity. He suggests that present research indicates much of what men see and do is dependent upon their sentimental bond with others.<sup>34</sup> Shibutani concludes by observing that

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<sup>31</sup>Ibid., p. 38.

<sup>32</sup>Homans, op. cit., p. xiv.

<sup>33</sup>Tamotsu Shibutani, "The Sentimental Basis of Group Solidarity," Sociological Inquiry, Vol. 34 (1964).

<sup>34</sup>Ibid., p. 150.

solidarity, in the last analysis, is based upon the personal loyalty of the members to the group.<sup>35</sup>

Among the writings familiar to this writer, one may note a reference to an interplay at various levels of social organization. The work of Talcott Parsons and Edward Shils is oriented toward a social order level of organization.<sup>36</sup> Their writings may be compared with the efforts of Robert Bales, whose more explicit statements may be applied to interaction situations at any level of social organization.<sup>37</sup>

Parsons and Shils note that, "solidarity is characterized by the institutionalization of shared value orientations; the values being of course oriented toward collective gratifications."<sup>38</sup>

Bales is somewhat more explicit in relating solidarity to institutionalization. He suggests that:

Solidarity in its institutionalized aspects, as we define it, consists in an obligation and a right; the obligation to identify one's self cognitively, effectively, and conatively with the other, to perceive one's self as a part of a larger whole, to feel the other's concerns as one's own, to cooperate

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<sup>35</sup> Ibid., p. 155.

<sup>36</sup> Talcott Parsons and Edward Shils (editors) Toward a General Theory of Action (Cambridge: Harvard University Press), 1951, p. 193.

<sup>37</sup> Robert Bales, Interaction Process Analysis (Cambridge: Addison Wesley Press), 1950.

<sup>38</sup> Parsons and Shils, op. cit., p. 193.

with the others, to share the other's fate; and the right to expect these attitudes and actions from the others.<sup>39</sup>

Thus Bales' conception of solidarity may be likened to a two-edged sword; one side specifying the ways by which a member is bound to the group, and the other side indicating the reciprocity of group relations.

One of the more significant studies utilizing the concept solidarity was that of Orrin Klapp's investigation of the families of college students.<sup>40</sup> In this study, Klapp focused upon the relationship of ritual to family solidarity. He defined ritual as, "symbolic behavior that develops in groups and is repeated 'for its own sake' because of the meaning and satisfaction that the members get out of it."<sup>41</sup> Unfortunately, however, Klapp failed to offer a definition of solidarity. He operationalized the concept by means of a twenty-one item scale, which, judging from the inclusiveness of the items, implies a broad conception of solidarity.<sup>42</sup> The results of the study pointed to a low correlation between ritual and family solidarity.

Luther Jansen, in his study of nuclear families,

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<sup>39</sup>Bales, op. cit., p. 79.

<sup>40</sup>Orrin E. Klapp, "Ritual and Family Solidarity," Social Forces, Vol. 37 (1959), pp. 212-214.

<sup>41</sup>Ibid., p. 212.

<sup>42</sup>Ibid., p. 213.

sought to measure solidarity through the type of interaction which existed within the family setting.<sup>43</sup> He defined solidarity as, "the closeness of family members to each other."<sup>44</sup> In his research, Jansen identified eight types of interaction which he used as measures of family solidarity. They are: (1) agreement with each other; (2) cooperation with each other; (3) concern with each other's welfare; (4) enjoyment of association with each other; (5) affection for each other; (6) esteem or admiration for each other; (7) interest in each other; and (8) confidence and trust in each other.<sup>45</sup>

Jansen then makes a relevant distinction which must be resolved before the concept of solidarity can be clearly defined and measured. He states that, "it will be noted that these types of interaction are inter-personal rather than concerned with group symbols (emphasis mine)."<sup>46</sup> Thus an important delineation is made between closeness, or solidarity as termed by Jansen, and loyalty to the symbol of family, or familism. Jansen concludes his discussion by stating:

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<sup>43</sup>Luther Jansen, "Measuring Family Solidarity," American Sociological Review, Vol. 17 (1952), pp. 727-733.

<sup>44</sup>Ibid., p. 727.

<sup>45</sup>Ibid., p. 729.

<sup>46</sup>Ibid., p. 732.

Taking solidarity to mean the closeness of the family members to each other, a distinction can be made between families in which there is a high degree of solidarity observable in the common loyalty of the individual members to family ideals . . . the second of these might be considered a special case of solidarity and may be called familism.<sup>47</sup>

Hence, a basic issue in attempting to define solidarity is: Can interpersonal interaction and interaction molded by a symbol be subsumed under the concept of solidarity, or are these conceptually independent phenomena? At this point, it is important to note that at least one additional type of interaction exists which may be included with the two previously discussed. This is the situation where there is both interpersonal interaction, and behavior molded by a symbol.

A brief discussion of these situations is useful in the conceptual clarification of solidarity.

The first situation is that in which solidarity emerges from interpersonal interaction without the presence of a unifying symbol. Some examples of this situation are "informal party groups" and individuals who recreate or otherwise "socialize" together. Since there is the absence of a tie which may require formal behavior, associations of this sort are relatively voluntary, each person having a great deal of freedom to interact with

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<sup>47</sup> Ibid.

whom he pleases. This is not to suggest that differentiation does not exist within the group. Status and role differentiation provide cues for certain responses toward particular individuals. This is, however, primarily on the interpersonal level. On the group level, with the absence of any formal unifying group symbol, affection must be directed toward the particular members since there is not usually the occasion to bestow affect because, for example, one is a "fellow rotarian."

The second type of situation in which solidarity may emerge includes those instances in which people are unified under a particular symbol. An example of this situation might be a college football group where identification with certain symbols forms a "we-they" atmosphere. It is of secondary importance as to "who" is included in the "we" group or the "they" group. Individuals are defined as belonging to a group on the basis of their identification with a particular symbol, which in this case would be that of the college or university. Interaction in these situations may be limited by such factors as group size, proximity to group members, and the existence of a central activity which holds the attention of those who are assembled. The identification with, and loyalty to, a unifying symbol provides the means for the emergence of solidarity within groups of this type. The symbol becomes the vehicle or medium by which positive affect

toward others is developed and carried.

The third type of situation in which solidarity may emerge is the instance in which there is both a unifying symbol and interpersonal interaction. The family setting provides an example of this situation. Familial members are normally aware of their constituting a specific unit with clearly defined statuses and roles. This awareness of comprising an identifiable unit solicits certain behavior appropriate to the symbol representing that unit, which in the context of the example presented, is the family.

In addition to feelings arising out of attachment of the symbol of the family, affective feelings may develop out of the interaction which takes place within the family setting. Thus both the symbol of the family and interaction with the family members account for the solidaric bonds which emerge.

Although the literature reviewed in the chapter is by no means exhaustive, and the sources cited are not necessarily the most representative of the work that has been done, it can be seen that solidarity has been utilized in the literature in diverse ways. In addition, the approach to measuring the concept varies considerably depending on the theoretical position of the researcher.

In the following section, the theoretical orientation of the author is presented. A discussion of both the conceptual and operational definitions of solidarity are

presented.

### Theoretical Orientation

This thesis is, in part, an effort to clarify the concept of solidarity. This task involves delineating the boundaries of solidarity from other concepts which are closely related to it. This may be done by: (1) arriving at a clear definition of solidarity, and (2) developing a set of valid operations to measure the concept.

Definitions have the function of setting forth the meaning of that which is to be defined. A definition of solidarity provided below is designed to possess at least two essential characteristics: (1) conceptual clarity; and (2) measurability. The importance of a definition being set forth in this manner has been noted by Selltiz, et. al., who suggested that, "they (concepts) must be defined both in abstract terms giving the general meaning they are intended to convey, and in terms of the operations by which they will be represented in the particular study."<sup>48</sup>

In accordance with the above mentioned criteria, solidarity is defined as: a positive affective relationship existing among a group of two or more individuals, characterized by a feeling of "weness." It is suggested that this

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<sup>48</sup>Claire Selltiz, Marie Jahoda, Morton Deutsch, and Stuart W. Cook, Research Methods in Social Relations (New York: Holt, Rinehart and Winston), 1959, p. 41.

definition verbally depicts the scope of content of solidarity. Further, the exclusion of ambiguous terms, such as closeness, serves to eliminate superfluous meaning from the concept which would impede accurate measurement. Finally, the definition is consistent with the principle of parsimony, as only a minimum of terms is used.

In regard to the operational measure of solidarity, it must be stated that many of the existing instruments purporting to measure solidarity are not without value. Most measures appear to be well constructed and designed to measure some form of group unity.

Using Festinger's definition of cohesion, it soon becomes apparent that the parameters of this concept are much broader than those of solidarity. Whereas solidarity encompasses only those attitudes or sentiments which are of an affective nature, cohesion subsumes under its label all factors which act to bind a group together. Examples of such factors are the function, needs, and purpose of the particular group.

If the above distinction made is valid (this is stated in hypothesis form at a later point in the thesis), it should then be the case that measuring instruments designed to indicate solidarity should tap only the affective characteristics among group members and not other dimensions of group unity. It is the contention of the author that this has not been the case in much of the previous research.

An inspection of various scales purporting to measure solidarity suggests that the indicators, i.e., the operations, imply more than the definition. An effort is made in this research to correct this deficiency. At this point the question must be asked: "Can an operational difference be shown to exist between solidarity and cohesion?" In an attempt to answer this question, the author has selected a popular measure of solidarity and also one of cohesion. They are Klapp's Questionnaire for Rating Family Solidarity, and Seashore's Index of Group Cohesiveness. These figures appear in Appendix A of the thesis.

A comparison is then to be made for the purpose of establishing whether a significant operational similarity exists between the two scales. Thus the first hypothesis may be set forth in the following form:

Hypothesis I: There is no significant difference between the parameters of Seashore's Index of Group Cohesiveness and the Klapp Questionnaire for Measuring Solidarity.

This hypothesis is critical to the argument stated earlier that the operational measures of both solidarity and cohesion are very much the same.

As suggested previously in this section, the measurement of solidarity should focus on the affective content of relations within the group situation. It may be

stated further that affective relationships between group members will function as a cohesive force. Thus it is probable that operational measures of cohesion will include items which tap the solidaric dimension of a group. From this perspective, the second hypothesis can be deduced and is stated in the following manner:

Hypothesis II: There is within Seashore's Index of Group Cohesiveness and Klapp's Questionnaire for Measuring Solidarity, a common class of items which measure the affective content of group relations.

Thus, the two hypotheses set forth above function as a theoretical framework in which the methodological procedures can be couched. The following section, Research Procedures and Plan of Analysis, includes a discussion on the procedure by which both solidarity and cohesion are operationalized, and indicates the way in which the Klapp Questionnaire for Rating Family Solidarity and Seashore's Index of Group Cohesiveness can be adapted for the measurement of any group.

## CHAPTER II

### RESEARCH PROCEDURES AND PLAN OF ANALYSIS

#### Source of Data

The data for this research was obtained from a sampling of four independent groups, all of which are located in Knoxville, Tennessee. The groups are as follows: (1) the employees of a large bank; (2) the faculty of a high school; (3) the congregation of a protestant church; and (4) the naval reserve training center. In each of the four groups an attempt was made to obtain a total sample. Listed in Table I is the result of the sampling.

It is argued in this research that any errors that might have resulted from the non-randomness of the samples will have been greatly diminished if not eliminated by the close approximation of the samples to the universes from which they were drawn.

#### Description and Analytical Design of the Sample

The Naval Reserve Training Center was chosen on the basis of its being composed of both voluntary and

TABLE I

	Universe	Sample	Per Cent
Group I Bank Employees	33	27	82
Group II School Faculty	39	32	82
Group III Church	65	41	63
Group IV Naval Reserve Training Center	127	99	78
TOTAL	264	199	75

non-voluntary members. That is, some of the members are fulfilling their military obligation while other participants elect to join the reserves having no formal obligation to do so. This is not to deny, however, that the "voluntary" members might be subject to certain pressures or expectations which would influence their participation in the reserve program. The ratio of volunteers to non-volunteers was not determined.

The reserve group is composed of both officers and enlisted men. The meetings of the group take place once a week for the entire year. Once enrolled in the program, attendance is required.

The high school faculty was selected as a career occupational group. The faculty is spatially separated only

to a small degree as the entire school is housed in one building. The school is located in a low socio-economic area of the city, and is one of the older schools in Knoxville.

The bank employees were selected for the sample as a stratified occupational group, operating in close proximity with each other. This particular group is located in the main office which is composed of four adjoining rooms. All work activities take place within eye contact of all other employees.

The church congregation was selected as a group which had a membership of voluntary participants. The church is protestant and the congregation is all-white. Only those of age thirteen and over were requested to participate in filling out the questionnaire.

### Operational Definitions

The research phase of this thesis necessitated the operationalization of two terms: (1) solidarity; and (2) cohesion.

Solidarity was operationalized by Klapp's Questionnaire for Rating Family Solidarity, while cohesion was operationalized by Seashore's Index of Group Cohesiveness.<sup>1</sup>

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<sup>1</sup>The author selected Seashore's Index from Delbert Miller, Handbook of Research Design and Social Measurement (New York: David McKay Co), 1964. Klapp's Scale appeared to be the best constructed instrument of solidarity that existed in the literature that was researched.

The Klapp Scale was used in its entirety except for the deletion of the first two items which were directed toward families only. Thus, items three through twenty-one were included on the questionnaire.

Seashore's Index was altered to be applicable to any group, rather than for work groups specifically. All items on this index were included on the questionnaire.

### The Questionnaire

The questionnaire was comprised of twenty-four items which were drawn from the instruments of Klapp and Seashore. Twenty-one of the items had five response alternatives, while three items had only three alternatives.

The questionnaire was administered to the four samples within a period of forty-eight hours. In that each group is independent and there was no overlapping membership between groups, there is no reason to believe that the data was contaminated. All the questionnaires were administered within each sample within a period of two hours.

Each respondent was requested to read the instructions carefully before answering the items. In addition, the respondents were assured that anonymity would be maintained.

### Techniques of Data Analysis

The task of comparing two independent measuring

instruments, as in the problem at hand, requires the use of some factor analytic technique. In that the purpose of the analysis is the determination of the dimensions of the concepts of solidarity and cohesion, as operationalized, rather than the prediction of a specified relationship between two or more variables, no other form of analysis was deemed proper.

Factor analysis has several limitations which should be noted at this point. Charles Wrigley has stated the more serious criticisms in summary form.

1. We do not know how many factors to extract.
2. The various tests of the significance of residuals disagree, and there is currently no conclusive evidence as to which, if any, is right and which are wrong.
3. Likewise, we do not know with any precision which methods for estimating communalities are accurate and which are not.
4. Graphical rotation is an art, depending upon the experience and good judgment of the investigator.
5. There is no consensus as to the best logic or computational procedure for recognizing a factor from one analysis to the next.
6. At the present, factor analysis fails to meet the criteria of a good statistical procedure; it remains imprecise and subjective and uses approxi-<sup>2</sup>mations whose merits or de-merits are not known.

The primary consideration that must be acknowledged is that several decisions that must be made during the course of

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<sup>2</sup>Charles Wrigley, "Objectivity in Factor Analysis," (paper at the Western Psychological Association Meetings, March 31, 1956), pp. 468-69.

analysis are quite subjective. There are, however, several conventional guidelines which exist for many of these decisions. At the appropriate places, these will be mentioned.

In the analysis of the twenty-four item questionnaire the following procedures were followed:

1. The construction of a correlation matrix of all items.
2. The estimation of communalities.
3. The factoring of the correlation matrix.
4. The testing for significance of factors.
5. The determination of salient factors for rotation.
6. The rotation of the factor matrix.
7. The cluster analysis of the factor matrix.

The items were correlated using the Pearson product-moment correlation coefficient.<sup>3</sup> From the correlation matrix the factor communalities are estimated. These estimated communalities measure the predicted common variance in the observed correlations.<sup>4</sup>

The principal axis technique of factor analysis was selected for this research. The program used was developed

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<sup>3</sup>This measure was used even though the assumptions of interval data are not met by the data. Pearson's product is the standard correlation measure used in factor analysis programs. It is the measure used in all the research on factor analysis reviewed by the author.

<sup>4</sup>Edward E. Cureton, A Factor Analysis of Project TALENT Tests and Four Other Test Batteries, American Institute for Research and University of Pittsburgh, 1968.

by E. E. Cureton.<sup>5</sup> Two programs were formulated which considered the sample size, number of variables, and number of factors. Following the formula  $N - n - (m - 1)$  with  $N$  observations,  $n$  variables and  $m$  factors, if the remaining value is positive the "Prinax" system is used. If the value is negative or zero, the "Sprinax" program is substituted. The latter program was designed for small samples and cases in which a large number of variables are used in conjunction with moderate samples. The sprinax program was employed for the analysis of Groups I and II ( $N = 27, 32$ ), while the prinax system was utilized for Groups III and IV.

As noted previously, the determination of the number of factors for the initial factor solution is largely an arbitrary decision. Given the relatively small number of variables in the matrix, a ten factor solution was selected for a trial run. An inspection of this solution revealed that all of the factors would not be significant. Each factor was thus tested for significance.

There is at present, no agreed upon way to test a factor for significance. Cureton suggests that:

The simplest and best of the approximate tests appears to be the one based on Burt's formula for the standard error of a factor loading. Under the null

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<sup>5</sup>Developed on a grant from the American Institutes for Research.

hypothesis (all true loadings zero), the formula is

$$\sigma_L = \sqrt{n}/N(n-m-1)$$

for N subjects, n variables, and m factors. Vernon suggests that a factor be considered significant only if half or more of its loadings exceed twice the Burt standard error. The writer considers that criterion as too strict: he tends to consider a factor as significant if any one of its loadings exceed  $3\sigma$  or if more than two exceed  $2\sigma$ .<sup>6</sup>

In this study Burt's formula and Cureton's criteria were utilized as the guide for significance of a factor.

At this point a distinction should be made between a "significant" factor and a "salient" factor. A factor is significant if it meets the criteria set forth in the particular study, e.g., in this case Burt's formula and Cureton's criteria. A factor is salient if it can be rotated meaningfully.<sup>7</sup>

Cureton states that there is no one method for determining salience of a factor.<sup>8</sup> He suggests that the scree test developed by Cattell is the most generally useful.

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<sup>6</sup>E. E. Cureton and Bryan B. Sargent, Factor-Analytic Reanalysis of Studies of Job Satisfaction and Morale (research report done at The University of Tennessee under contract WADD-TN-60-136, May, 1960, let by the Personnel Laboratory, Wright Air Development Division, Air Research and Development Command, U. S. Air Force, Lackland Air Force Base, Texas), p. 6.

<sup>7</sup>Cureton, Factor Analysis of Project TALENT Tests, p. 10.

<sup>8</sup>Ibid.

To apply this test, the eigenvalues are listed in order of magnitude, and beside them a column of first differences. In clear cases, the differences become progressively smaller, there is then one larger difference, and the remaining differences are all appreciably smaller.<sup>9</sup>

Cureton cautions, however, that "there will still be doubtful cases, and here the only solution appears to be to rotate two or more different numbers of factors to see which number, after rotation, seems to yield the clearest interpretation."<sup>10</sup> He also suggests that "we should almost always retain enough columns to include the highest loading in every row, and more generally to keep most of the higher loadings in every row."<sup>11</sup>

The scree test was applied for the test of salience. The test did, however, appear to neglect at least one very significant factor in each of the samples. After several trial rotations, the author elected to include, in each of the samples, one factor beyond the number obtained by the scree test. These factors were then retained for rotation and interpretation.

The final analysis of the data involved the cluster analysis of the initial ten factor matrix, and the resulting factor solution.

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<sup>9</sup>Ibid., p. 12.

<sup>10</sup>Ibid.

<sup>11</sup>Ibid.

Cluster analysis is a method for selecting from a heterogeneous group of items or tests, a homogeneous subset which is composed of items which are sums of the attributes in the cluster.<sup>12</sup> Thus Cureton explains:

When we have factored the intercorrelations among a heterogeneous set of items, the clusters are the factorially homogeneous subsets of these items; the subsets which form scorable subscales. In general such subscales will not be factorially pure (each a measure of a single factor), but they do not need to be factorially pure in order to be factorially homogeneous and interpretable in their own right. A test or scale is factorially homogeneous if all its items measure the same combination of factors. The factorial homogeneity of a cluster is measured by the cosines of the angles (in a geometric model) between the items and the cluster centroids. The factorial similarity of two clusters is measured similarly by the cosines of the angle between their centroids. These cosines can be interpreted roughly as item-test correlations and inter-test correlations corrected for attenuation. The cosines are in general a little higher than the corrected correlation.<sup>13</sup>

The cluster derivation is determined by the matrix of indices of association and the cosine acceptance level. Cureton states that acceptance levels may range from

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<sup>12</sup>E. E. Cureton, Louise Cureton and Richard C. Dufree, "A Method of Cluster Analysis," Multivariate Behavioral Research, Vol. 5 (1970), pp. 101-116.

<sup>13</sup>E. E. Cureton, Dimensions of Airman Morale (research report done at the University of Tennessee under contract AF 41 (657)-247, WADD-TN-60-137, June 1960, let by the Personnel Laboratory, Wright Air Development Division, Air Research and Development Command, U. S. Air Force, Lackland Air Force Base, Texas, Appendix A: Technical Notes, Methodology of Cluster Analysis), p. 13.

.25 to .85.<sup>14</sup> In the present analysis the minimum cosine level was set at .60.<sup>15</sup>

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<sup>14</sup>Cureton, et. al., "A Method of Cluster Analysis," p. 109.

<sup>15</sup>This level was suggested by Cureton upon the basis of the data in the research. In reality, the cosines of the clusters were considerably higher than the .60 minimum.

## CHAPTER III

### FINDINGS AND CONCLUSIONS

#### Findings

In each of the four samples, ten factors were extracted utilizing the principal axis method. The ten factor solution was tested for significance in each sample utilizing Burt's formula and Cureton's criteria. In samples I, II and IV, five factors proved significant.<sup>1</sup> Group III contained six factors that appeared significant. The same number of factors were determined to be salient on the basis of the scree test, and the retention of the highest loading of each item. The remaining factors were not retained for rotation and received no further analysis.

The unreflected correlation matrix and the rotated principal axis factor matrix for each group appears in Appendix B of this thesis.

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<sup>1</sup>The values derived for the four groups were: .25, .21, .17 and .07 respectively. These values represent the standard error of the factor loadings of each of the groups. Cureton's criteria were that at least one loading must be  $3\sigma$  or two loadings at  $2\sigma$ .

### Factor Analysis

It was found that factor III of the first group, factor II of the second group, factor IV of the third group and factor I of the fourth group each had the common core items of 1, 6, 12 and 19. These items (Figure 3) are concerned with the respondent's perceived involvement and intermeshing with their respective groups. These factors are reported in Tables II through V.

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Item Number
(1) Do you feel that you are really a part of your group?
(6) I feel a part of this group.
(12) Members dislike leaving, stay around as long as they can.
(19) I sometimes feel I am "not a part" of this group.

---

FIGURE 3

It should be noted that factor I of Group IV is considerably more inclusive than the other three factors mentioned. That is to say, this factor contained the largest number of items of any factor extracted in the entire analysis. Although it cannot be considered a general factor, it is argued that this factor approaches

TABLE II  
 FACTOR III      GROUP I  
 "Integration"

Item No.	Factor Loading	Item Title
1	.788	Do you feel that you are really a part of your group?
2	.631	If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?
6	.628	I feel a part of this group.
12	.483	Members dislike leaving, stay around as long as they can.
5	.424	The way people help each other in the group.
24	.415	This group is not very important to me; I could get along without it fairly well.
19	.346	I sometimes feel I am "not a part" of this group.

All other loadings are less than .300.

TABLE III  
 FACTOR II      GROUP II  
 "Integration"

Item No.	Factor Loading	Item Title
1	.686	Do you feel that you are really a part of your group?
6	.531	I feel a part of this group.
12	.500	Members dislike leaving, stay around as long as they can.
4	.490	The way people stick together.
21	.450	The activities of the group often seem more like "chores" or obligations than things I really like to do.
7	.371	Members are close knit, stick together through thick and thin.
19	.304	I sometimes feel I am "not a part" of this group.
15	.303	Troubles and discouragements just draw us closer.

All other loadings are less than .300.

TABLE IV  
 FACTOR IV      GROUP III  
 "Integration"

Item No.	Factor Loading	Item Title
1	.720	Do you feel that you are really a part of your group?
19	.541	I sometimes feel I am "not a part" of this group.
6	.534	I feel a part of this group.
8	.434	Spend lots of time together because we prefer each other's company.
12	.301	Members dislike leaving, stay around as long as they can.

All other loadings are less than .300.

TABLE V  
 FACTOR I      GROUP IV  
 "Integration"

Item No.	Factor Loading	Item Title
24	.576	This group is not very important to me; I could get along without it fairly well.
19	.561	I sometimes feel I am "not a part" of this group.
20	.558	I doubt some of the values, beliefs, or purposes of this group.
21	.542	The activities of the group often seem more like "chores" or obligations than things I really like to do.
17	.388	We see eye-to-eye in moral matters.
10	.384	Serious conflicts or antagonisms among members.
23	.383	I don't get along well with some of the members.
6	.367	I feel a part of this group.
1	.365	Do you feel that you are really a part of your group?
22	.352	The rules of the group are irksome; I think it is all right to ignore them.
12	.307	Members dislike leaving, stay around as long as they can.

All other loadings are less than .300.

the measurement of cohesion (as defined by Festinger, et. al.) to the largest extent of any factor extracted. This is based not only on the number of items in the factor, but also the significance of the loadings. There are, of course, other interpretations that might be made, for instance, that this factor does not reflect integration but another dimension. The problem with interpreting this factor, as well as all factors in general, is discussed more fully in the Conclusion.

The next group of related factors included factor II of group one, factor IV of group two, factor I of group three and factor II of group four. Factor II - group one contained all the items of factor I - group three and factor II - group four. In addition, three of these factors contained the core items of 3, 4, 5, 7 and 14 (Figure 4) while the remaining factor (factor II - group

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Item Number	
(3)	The way people get along together.
(4)	The way people stick together.
(5)	The way people help each other in the group.
(7)	Members are close knit, stick together through thick and thin.
(14)	When we have a job to do, everyone pitches in.

---

FIGURE 4

TABLE VI  
 FACTOR II GROUP I  
 "Harmony"

Item No.	Factor Loading	Item Title
8	.730	Spend lots of time together because we prefer each other's company.
3	.726	The way people get along together.
4	.701	The way people stick together.
15	.591	Troubles and discouragements just draw us closer.
14	.578	When we have a job to do, everyone pitches in.
7	.517	Members are close knit, stick together through thick and thin.
18	.462	We agree well as to who is leader and who does what.
13	.432	We usually finish what we start.
5	.399	The way people help each other in the group.
17	.312	We see eye-to-eye in moral matters.

All other loadings are less than .300.

TABLE VII  
 FACTOR IV      GROUP II  
 "Harmony"

Item No.	Factor Loading	Item Title
14	.625	When we have a job to do, everyone pitches in.
22	.561	The rules of the group are irksome; I think it is all right to ignore them.
16	.555	Serious disagreements about major matters.
5	.519	The way the people help each other in the group.
2	.484	If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?
13	.474	We usually finish what we start.
10	.408	Serious conflicts or antagonisms among members.
3	.310	The way people get along together.
7	.306	Members are close knit, stick together through thick and thin.
1	-.317	Do you feel that you are really a part of your group?

All other loadings are less than .300.

TABLE VIII  
 FACTOR I      GROUP III  
 "Harmony"

Item No.	Factor Loading	Item Title
3	.785	The way people get along together.
5	.655	The way people help each other in the group.
4	.541	The way people stick together.
18	.393	We agree well as to who is leader and who does what.
14	.378	When we have a job to do, everyone pitches in.
7	.349	Members are close knit, stick together through thick and thin.

All other loadings are less than .300.

TABLE IX  
 FACTOR II      GROUP IV  
 "Harmony"

Item No.	Factor Loading	Item Title
3	.741	The way people get along together.
7	.622	Members are close knit, stick together through thick and thin.
4	.589	The way people stick together.
15	.320	Troubles and discouragements just draw us closer.
8	.313	Spend lots of time together because we prefer each other's company.

All other loadings are less than .300.

four) included items 3, 4, and 7. These items appear to reflect the harmonious atmosphere within the group setting, hence this group of factors is labeled "harmony".

The third group of factors extracted from the four groups included factor I of group one, factor I of group two, factor III of group three and factor III of group four. Each of these factors contained the common core items of 9, 10, 19, 20 and 23, with the exceptions that factor III of group four having a low loading on item 20 and factor III - group three indicating a low loading on item 9. In the latter instance, however, it should be noted that the loading (.107) was the second highest loading of item 9 for any factor in that group.

Each of the core items (Figure 5) indicates a type of conflict within the group. Item 9, at first inspection,

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Item Number	
(9)	Rather hard to get into as a member, clan-nish or exclusive.
(10)	Serious conflicts or antagonisms among members.
(19)	I sometimes feel I am "not a part" of this group.
(20)	I doubt some of the values, beliefs, or purposes of this group.
(23)	I don't get along well with some of the members.

---

FIGURE 5

TABLE X  
 FACTOR I      GROUP I  
 "Conflict"

Item No.	Factor Loading	Item Title
9	.718	Rather hard to get into as a member, clannish or exclusive.
16	.672	Serious disagreements about major matters.
22	.583	The rules of the group are irksome; I think it is all right to ignore them.
10	.559	Serious conflicts or antagonisms among members.
20	.442	I doubt some of the values, beliefs, or purposes of this group.
19	.402	I sometimes feel I am "not a part" of this group.
7	.354	Members are close knit, stick together through thick and thin.
23	.336	I don't get along well with some of the members.

All other loadings are less than .300.

TABLE XI  
 FACTOR I      GROUP II  
 "Conflict"

Item No.	Factor Loading	Item Title
24	.738	This group is not very important to me; I could get along without it fairly well.
23	.720	I don't get along well with some of the members
9	.644	Rather hard to get into as a member, clannish or exclusive.
18	.446	We agree well as to who is leader and who does what.
19	.428	I sometimes feel I am "not a part" of this group.
20	.408	I doubt some of the values, beliefs, or purposes of this group.
10	.396	Serious conflicts or antagonisms among members.
2	.339	If you had a chance to belong to the same type of group, how would you feel about moving?
6	.329	I feel a part of this group.
8	.307	Spend lots of time together because we prefer each other's company.

All other loadings are less than .300.

TABLE XII  
 FACTOR III      GROUP III  
 "Conflict"

Item No.	Factor Loading	Item Title
22	.748	The rules of the group are irksome; I think it is all right to ignore them.
24	.647	This group is not very important to me; I could get along without it fairly well.
23	.585	I don't get along well with some of the members.
20	.564	I doubt some of the values, beliefs, or purposes of this group.
19	.326	I sometimes feel I am "not a part" of this group.
10	-.356	Serious conflicts or antagonisms among members.

All other loadings are less than .300.

TABLE XIII  
 FACTOR III      GROUP IV  
 "Conflict"

Item No.	Factor Loading	Item Title
16	.583	Serious disagreements about major matters.
23	.563	I don't get along well with some of the members.
10	.485	Serious conflicts or antagonisms among members.
19	.310	I sometimes feel I am "not a part" of this group.
17	.301	We see eye-to-eye in moral matters.
9	-.501	Rather hard to get into as a member, clannish or exclusive.

All other loadings are less than .300.

did not seem to logically fit into the conflict factor. A closer examination revealed, however, that those individuals who reflected lower solidaric ties scored high on this item. That is, respondents who had scores indicating a low degree of solidarity within their group scored high on this statement. Conversely, those who indicated greater solidaric bonds scored low, i.e., they indicated that their group was not hard to get into or clannish. This suggests that most of the respondents interpreted the item as a negative statement in regard to solidarity within the group.

The fourth group of factors identified included factor IV of group one and factor IV of group four. Each of these factors contained the common core items of 11, 16, 17 and 18.

As indicated in Figure 6, each of the above items is related to how the group members agree on various issues,

---

Item Number	
(11)	Private interests usually give way to common ones.
(16)	Serious disagreements about major matters.
(17)	We see eye-to-eye in moral matters.
(18)	We agree well as to who is leader and who does what.

---

FIGURE 6

both specific and general. This factor is, therefore, named "agreement." This factor is presented in Tables XIV and XV.

It is worth noting that three of the items mentioned above are quite general (i.e., they pertain to a wide range of activity) while the fourth item is concerned with a specific aspect of group activity--leadership. One possible explanation is that in groups which a leader is recognized, conflict and selfish interests can be more effectively checked. It should be added that in three of the groups, the Naval Reserve Training Center, the church congregation and the bank employees, leadership is rather clearly defined. In the remaining group, the school faculty, there is no formal leadership hierarchy with the exception of the principal. It is not within the scope of this thesis to investigate the particular factors evolving from the analysis, but in regard to the "agreement" factor, it might be shown that groups having a more structured leadership hierarchy tend to show more agreement on issues facing the group.

The last group of factors to be analyzed is composed of factor II of group three and factor V of group four. These factors contain the common items of 7, 13 and 14. These statements, as shown in Figure 7, appear to be indicative of a cooperative effort within the

TABLE XIV  
 FACTOR IV      GROUP I  
 "Agreement"

Item No.	Factor Loading	Item Title
11	.686	Private interests usually give way to common ones.
18	.418	We agree well as to who is leader and who does what.
17	.367	We see eye-to-eye in moral matters.
16	.354	Serious disagreements about major matters.
7	.301	Members are close knit, stick together through thick and thin.
2	.300	If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?

All other loadings are less than .300.

TABLE XV  
 FACTOR IV      GROUP IV  
 "Agreement"

Item No.	Factor Loading	Item Title
11	.441	Private interests usually give way to common ones.
18	.431	We agree well as to who is leader and who does what.
17	.413	We see eye-to-eye in moral matters.
16	.384	Serious disagreements about major matters.
6	.358	I feel a part of this group.

All other loadings are less than .300.

various groups. This factor is, therefore, labelled "cooperation."

---

Item Number
(7) Members are close knit, stick together through thick and thin.
(13) We usually finish what we start.
(14) When we have a job to do, everyone pitches in.

---

FIGURE 7

An interesting point in regard to this factor is that it emerged only within the non-occupational groups, which include the naval reserve and the church congregation. The two occupational groups, the bank employees and the school faculty, indicated no such factor. Although no attempt is made in this thesis to explain this, one possibility is that the occupational groups have a more highly developed division of labor with tasks being specialized while the non-occupational groups in the sample rely on "shared tasks," involving many group members.

At this point in the analysis, it must be reported that five factors, which were extracted from the oblique rotation, have not been interpreted by the author. In that these factors appear not to demonstrate any logical

TABLE XVI  
 FACTOR II      GROUP III  
 "Cooperation"

Item No.	Factor Loading	Item Title
13	.687	We usually finish what we start.
16	.592	Serious disagreements about major matters.
10	.440	Serious conflicts or antagonisms among members.
8	.434	Spend lots of time together because we prefer each other's company.
21	.393	The activities of the group often seem more like "chores" or obligations than things I really like to do.
14	.341	When we have a job to do, everyone pitches in.
7	.306	Members are close knit, stick together through thick and thin.

All other loadings are less than .300.

TABLE XVII  
 FACTOR V      GROUP IV  
 "Cooperation"

Item No.	Factor Loading	Item Title
14	.555	When we have a job to do, everyone pitches in.
13	.544	We usually finish what we start.
15	.327	Troubles and discouragements just draw us closer.
7	.301	Members are close knit, stick together through thick and thin.
18	.294*	We agree well as to who is leader and who does what.

All other loadings are less than .300.

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\*This loading is considered significant in that it is the second highest loading on item 18 and approaches .300.

pattern, they are left unnamed. It was felt by the author that any "title" placed upon these factors would have been the result of "forcing the data," to fit a conceptual scheme.

There exist several possibilities as to the occurrence of this group of factors. First, they might very well be "chance factors," that is, the result of some random error in the mathematical computation utilized for the derivation of factors. Another possibility is that these factors are indeed "legitimate" and not the result of a computational or random error but due to their complexity, defy interpretation or explanation. Both of these possibilities remain viable to the author. Thus no position is taken as to which explanation is the most probable. The unnamed factors are presented in Tables XVIII through XXII.

The presentation of the factor analysis of the questionnaire leads us now to a statement in support for or against the first hypothesis stated as follows:

Hypothesis I: There is no significant difference between the parameters of Seashore's Index of Group Cohesiveness and the Klapp Questionnaire for Measuring Solidarity.

The factors which were extracted clearly lead the author to reject the hypothesis. Of the five factors which were interpreted, integration, harmony, conflict, agreement and cooperation, items for Seashore's Index were contained in only two of them: integration and harmony. Items from

TABLE XVIII  
 FACTOR V      GROUP I  
 "Unnamed"

Item No.	Factor Loading	Item Title
21	.630	The activities of the group often seem like "chores" or obligations than things I really like to do.
23	.565	I don't get along well with some of the members.
17	.535	We see eye-to-eye in moral matters.
13	.504	We usually finish what we start.
18	.488	We agree well as to who is leader and who does what.
20	.427	I doubt some of the values, beliefs, or purposes of this group.
24	.393	This group is not very important to me; I could get along without it fairly well.

All other loadings are less than .300.

TABLE XIX  
 FACTOR III      GROUP II  
 "Unnamed"

Item No.	Factor Loading	Item Title
17	.694	We see eye-to-eye in moral matters.
15	.672	Troubles and discouragements just draw us closer.
21	.500	The activities of the group often seem like "chores" or obligations than things I really like to do.
20	.446	I doubt some of the values, beliefs, or purposes of this group.
19	.424	I sometimes feel I am "not a part" of this group.
9	.392	Rather hard to get into as a member, clannish, or exclusive.
13	.389	We usually finish what we start.
1	.382	Do you feel that you are really a part of your group?
2	-.399	If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?

All other loadings are less than .300.

TABLE XX  
 FACTOR V      GROUP II  
 "Unnamed"

---

Item No.	Factor Loading	Item Title
4	.668	The way people stick together.
11	.447	Private interests usually give way to common ones.
5	.407	The way the people help each other in the group.
17	.396	We see eye-to-eye in moral matters.
7	.336	Members are close knit, stick together through thick and thin.

---

All other loadings are less than .300.

---

TABLE XXI  
 FACTOR VI      GROUP III  
 "Unnamed"

---

Item No.	Factor Loading	Item Title
17	.556	We see eye-to-eye in moral matters.
2	.517	If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?
18	.429	We agree well as to who is leader and who does what.
15	.370	Troubles and discouragements just draw us closer.
9	.344	Rather hard to get into as a member, clannish or exclusive.
10	.300	Serious conflicts or antagonisms among members.

---

All other loadings are less than .300.

---

TABLE XXII  
FACTOR V      GROUP III  
"Unnamed"

---

Item No.	Factor Loading	Item Title
11	.750	Private interests usually give way to common ones.
12	.387	Members dislike leaving, stay around as long as they can.

---

All other loadings are less than .300.

---

Klapp's Scale, however, appeared in all of the above factors. Thus the operational parameters of "solidarity" were considerably broader than those of cohesion. Additionally, these operations of solidarity are not consistent with the definition set forth earlier in this report. The second part of the data analysis should suggest a homogeneous group of items which provide a set of empirical indicators consistent with this definition.

### Cluster Analysis

The cluster analysis of four groups resulted in a five cluster solution for the first group, a six cluster solution for the second and fourth groups and a four cluster solution for the third group.

In each case, every variable clustered with the exception of item eleven in group one. The statement did, however, cluster in the remaining three groups. A possible explanation as to why this item failed to cluster in only one sample is that the statement may have been misunderstood or misinterpreted by several respondents which would lead to inaccurate answers. The analysis, in this case, would then also be inconsistent.

The cluster analysis was performed as the means by which the second hypothesis could be supported or rejected. This hypothesis reads as follows:

Hypothesis II: There is, within Seashore's Index of Group Cohesiveness and Klapp's Scale for Measuring Solidarity, a common class of items which measure the affective content of group relations.

As indicated by Tables XXIII through XXVI, there was little consistency in the way in which the items were clustered. This tends to indicate that the clustering is unreliable for the most part. There were, however, some clusters which were similar across groups.

The closest correlations were between groups three and four. Cluster 2 of group three was identical with cluster 1 of group four, and cluster 3 of group three corresponded identically with cluster 4 of group four.

The group of items composing cluster 2 - group three and cluster 1 - group four (Figure 8) appears to

---

Item Number	
(20)	I doubt some of the values, beliefs or purposes of this group.
(22)	The rules of the group are irksome; I think it is all right to ignore them.
(23)	I don't get along well with some of the members.
(24)	This group is not very important to me; I could get along without it fairly well.

---

FIGURE 8

TABLE XXIII  
FINAL CLUSTER STATE  
GROUP I

No.	Cluster Variables	Non-Cluster Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1	1						1
2	2						2
3	3		3				
4	4		4				
5	5				5		
6	6						
7	7		7				
8	8		8				
9	9					9	
10	10					10	
11	11	11					
12	12						12
13	13			13			
14	14		14				
15	15		15				
16	16					16	
17	17			17			
18	18				18		
19	19						19
20	20					20	
21	21			21			
22	22					22	
23	23			23			
24	24				24		
TOTAL	23	1	6	4	3	5	5

TABLE XXIV  
FINAL CLUSTER STATE  
GROUP II

No.	Cluster Variables	Non-Cluster Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
1	1							1
2	2					2		
3	3					3		
4	4						4	
5	5				5			
6	6							6
7	7					7		
8	8					8		
9	9		9					
10	10				10			
11	11						11	
12	12						12	
13	13				13			
14	14				14			
15	15					15		
16	16				16			
17	17					17		
18	18			18				
19	19			19				
20	20				20			
21	21				21			
22	22						22	
23	23			23				
24	24			24				
TOTAL	24	0	5	4	6	4	3	2

TABLE XXV  
 FINAL CLUSTER STATE  
 GROUP III

No.	Cluster Variables	Non-Cluster Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4
1	1				1	
2	2				2	
3	3		3			
4	4		4			
5	5		5			
6	6				6	
7	7		7			
8	8					8
9	9				9	
10	10					10
11	11					11
12	12		12			
13	13					13
14	14		14			
15	15				15	
16	16					16
17	17					17
18	18		18			
19	19				19	
20	20			20		
21	21		21			
22	22			22		
23	23			23		
24	24			24		
TOTAL	24	0	8	4	6	6

TABLE XXVI  
 FINAL CLUSTER STATE  
 GROUP IV

No.	Cluster Variables	Non-Cluster Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
1	1					1		
2	2					2		
3	3				3			
4	4				4			
5	5				5			
6	6					6		
7	7							
8	8						8	
9	9					9		
10	10						10	
11	11							11
12	12				12			13
13	13							
14	14				14			
15	15						15	
16	16							16
17	17							17
18	18				18			
19	19						19	
20	20							
21	21		20					21
22	22		22					
23	23		23					
24	24		24					
TOTAL	24	0	4	4	3	6	4	3

measure the dimension of "dislike" for the group. Each of the items consists of an undesirable feature of the group from the perspective of the respondent. This cluster of items 20, 22, 23 and 24 is thus named "unattractiveness of the group."

The second pair of matching clusters contained the items of 1, 2, 6, 9, 15 and 19. These items (Figure 9)

---

Item Number
(1) Do you feel that you are really a part of your group?
(2) If you had a chance to belong to the same type of group in place of this one, how would you feel about moving?
(6) I feel a part of this group.
(9) Rather hard to get into as a member, clan-nish or exclusive.
(15) Troubles and discouragements just draw us closer.
(19) I sometimes feel I am "not a part" of this group.

---

FIGURE 9

focus on the individual's perceived integration with the group, thus illuminating one dimension of group integration. Hence, the cluster is labelled "integration." This cluster is similar to the factor "integration" which was observed

in each of the four samples. The factor "integration" had the common items of 1, 6, 12 and 19. The cluster "integration" contains three of these items: 1, 6 and 19.

The remaining clusters are labelled "unnamed" due to the inconsistency of the analysis. The differences resulting in clusters between groups suggests that to a great extent the cluster analysis was unreliable. It is the author's position that any inference drawn from this portion of the analysis would be unwarranted.

Notably absent from the cluster analysis is a subset of items which measure the affective content of group relations. Thus the second hypothesis set forth previously must be rejected. An analysis of this finding is contained in the concluding section.

### Conclusions

In a study of this nature, utilizing factor analytic techniques and dealing with conceptually vague phenomena, conclusions that are reached can be at best, only tentative. Nonetheless, if progress is to be enjoyed in the understanding of behavioral events and processes, then findings must be presented in a form whereby they can be further verified or refuted. In either case, knowledge is gained.

This study supports the value of factor analysis and cluster analysis as useful forms of multivariate

analysis. Although these techniques are more widely used in psychology and educational testing, they promise usefulness in sociological research as well. Factor analysis, for instance, can be a useful tool for constructing or revising measuring instruments. Researchers who wish to tap specific attitudes can sort out from perhaps hundreds of items, a reasonable number for incorporation into a questionnaire with more than "chance" assurance that these attitudes are being measured. Factor analysis can also be used in the development of an index or in the comparison of independent, unlike variables or tests. Cluster analysis may be used in a similar fashion to factor analysis. The major purpose of this technique is to determine subsets of items which are highly inter-correlated and tend to measure the same attribute. All items in a cluster are closely correlated whereas items in a general or group factor may or may not be.

This brings us to the major contribution of this research effort. A set of indices is offered which, it is suggested, taps the affective content of group relations. These items have been selected on the basis of both the factor analysis and cluster analysis of the items of Klapp's Scale and Seashore's Index which comprised the questionnaire used in this research. In addition, this research has attempted to point to aspects of solidarity which did not appear to be measured by any of the items on the questionnaire.

The author has developed items to fill this void. The items included are designed to be appropriate to administer to groups in each of the three types of situations suggested earlier. Thus dimensions of: (1) interpersonal interaction; (2) interpersonal interaction with the presence of a unifying symbol; and (3) attachment to a unifying symbol with limited interpersonal interaction have each been considered and statements designed to measure these have been incorporated into the index.

The items suggested for an index of solidarity include the following:

- (1) The way people get along together.
- (2) The way people stick together.
- (3) I prefer this group to any other of its kind.
- (4) We spend lots of time together because we prefer each other's company.
- (5) Troubles and discouragements draw us closer.
- (6) Serious conflicts or antagonisms among members.
- (7) As far as I'm concerned, it's the group first and me second.
- (8) In our group, everyone is concerned with each other.

Items 1, 2 and 3 were taken from Seashore's Index, items 4, 5 and 6 from Klapp's Scale and statements 7 and 8 were added by the author.

The construction of the above index is the outgrowth, and, hopefully, a logical consequence of a theoretical concern

with the conceptual clarification of solidarity. The author is hopeful that this research might precipitate additional inquiry into the nature of solidarity in group situations, and that greater precision and meaning can be applied to solidarity in both theory and research.

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## APPENDICES

APPENDIX A

QUESTIONNAIRE USED TO RATE FAMILY SOLIDARITY

		(Of the Time):				Not
		All	Most	Some	Little	At All
1.	When the family gets together I am there	_____	_____	_____	_____	_____
2.	When attending, I take an active part	_____	_____	_____	_____	_____
		(Applies to My Group):				Not
		Very Much	Much	Some	Little	At All
3.	I feel a part of this group	_____	_____	_____	_____	_____
4.	Members are close knit, stick together through thick and thin	_____	_____	_____	_____	_____
5.	Spend lots of time together because we prefer each other's company	_____	_____	_____	_____	_____
6.	Rather hard to get into as a member, clannish or exclusive	_____	_____	_____	_____	_____
7.	Serious conflicts or antagonisms among members	_____	_____	_____	_____	_____
8.	Private interests usually give way to common ones	_____	_____	_____	_____	_____
9.	Members dislike leaving, stay around as long as they can	_____	_____	_____	_____	_____
10.	We usually finish what we start	_____	_____	_____	_____	_____

	<u>Very Much</u>	<u>Much</u>	<u>Some</u>	<u>Little</u>	<u>Not At All</u>
11. When we have a job to do, everyone pitches in	_____	_____	_____	_____	_____
12. Troubles and discouragements just draw us closer	_____	_____	_____	_____	_____
13. Serious disagreements about major purposes	_____	_____	_____	_____	_____
14. We see eye-to-eye in moral matters	_____	_____	_____	_____	_____
15. We agree well as to who is leader and who does what	_____	_____	_____	_____	_____

(Applies To Me):

	<u>Very Much</u>	<u>Much</u>	<u>Some</u>	<u>Little</u>	<u>Not At All</u>
16. I sometimes feel I am "not a part" of this group	_____	_____	_____	_____	_____
17. I doubt some of the values, beliefs or purposes of this group	_____	_____	_____	_____	_____
18. The activities of the group often seem more like "chores or obligations than things I really like to do	_____	_____	_____	_____	_____
19. The rules of the group are irksome; I think it is all right to ignore them	_____	_____	_____	_____	_____
20. I don't get along well with some of the members	_____	_____	_____	_____	_____
21. This group is not very important to me; I could get along without it fairly well	_____	_____	_____	_____	_____

SEASHORE'S INDEX OF  
GROUP COHESIVENESS

1. Do you feel that you are really a part of your work group?

- Really a part of my work group  
 Included in most ways  
 Included in some ways, but not in others  
 Don't feel like I really belong  
 Don't work with any one group of people  
  
 Not ascertained

2. If you had a chance to do the same kind of work for the same pay, in another work group, how would you feel about moving?

- Would want very much to move  
 Would rather move than stay where I am  
 Would make no difference to me  
 Would rather stay where I am than move  
 Would want very much to stay where I am  
  
 Not ascertained

3. How does your work group compare with other work groups on each of the following points?

	Better Than Most	About The Same As Most	Not As Good As Most	Not Ascertaind
The way men get along together	_____	_____	_____	_____
The way the men stick together	_____	_____	_____	_____
The way the men help each other on the job	_____	_____	_____	_____

APPENDIX B

"Questionnaire"

Age \_\_\_\_ Sex \_\_\_\_ Race/Ethnic Group \_\_\_\_\_

Occupation \_\_\_\_\_ Years of Education \_\_\_\_\_

Marital Status \_\_\_\_\_ Number of Children \_\_\_\_\_

Length of Time With This Group \_\_\_\_\_ (Years & Months)

In regard to the following three questions, please check the response that best indicates your feelings toward the questions. Check only one (1) response per question.

1. Do you feel that you are really a part of your group?

- \_\_\_\_ Really a part of my group
- \_\_\_\_ Included in most ways
- \_\_\_\_ Included in some ways, but not in others
- \_\_\_\_ Don't feel like I really belong
- \_\_\_\_ Don't associate with any one group of people

2. If you had a chance to belong to the same type of group, in place of this one, how would you feel about moving?

- \_\_\_\_ Would want very much to move
- \_\_\_\_ Would rather move than stay where I am
- \_\_\_\_ Would make no difference to me
- \_\_\_\_ Would rather stay where I am than move
- \_\_\_\_ Would want very much to stay where I am

3. How does your group compare with other groups of the same kind on each of the following points?

	Better Than Most	About the Same As Most	Not As Good As Most
The way people get along together	_____	_____	_____

	Better Than Most	About the Same As Most	Not As Good As Most
The way people stick together	_____	_____	_____
The way the people help each other in the group	_____	_____	_____

Below is a list of nineteen (19) statements. After each statement there is a choice of five (5) responses. Choose the one (1) response which best indicates your feeling toward the statement.

	Very Much	Much	Some	Little	Not At All
1. I feel a part of this group	_____	_____	_____	_____	_____
2. Members are close knit, stick together through thick and thin	_____	_____	_____	_____	_____
3. Spend lots of time together because we prefer each other's company	_____	_____	_____	_____	_____
4. Rather hard to get into as a member, clannish or exclusive	_____	_____	_____	_____	_____
5. Serious conflicts or antagonisms among members	_____	_____	_____	_____	_____
6. Private interests usually give way to common ones	_____	_____	_____	_____	_____
7. Members dislike leaving, stay around as long as they can	_____	_____	_____	_____	_____
8. We usually finish what we start	_____	_____	_____	_____	_____

	Very Much	Much	Some	Little	Not At All
9. When we have a job to do, everyone pitches in	_____	_____	_____	_____	_____
10. Troubles and discouragements just draw us closer	_____	_____	_____	_____	_____
11. Serious disagreements about major matters	_____	_____	_____	_____	_____
12. We see eye-to-eye in moral matters	_____	_____	_____	_____	_____
13. We agree well as to who is leader and who does what	_____	_____	_____	_____	_____
14. I sometimes feel I am "not a part" of this group	_____	_____	_____	_____	_____
15. I doubt some of the values, beliefs, or purposes of this group	_____	_____	_____	_____	_____
16. The activities of the group often seem more like "chores" or obligations than things I really like to do	_____	_____	_____	_____	_____
17. The rules of the group are irksome; I think it is all right to ignore them	_____	_____	_____	_____	_____
18. I don't get along well with some of the members	_____	_____	_____	_____	_____
19. This group is not very important to me; I could get along without it fairly well	_____	_____	_____	_____	_____

APPENDIX C

UNREFLECTED CORRELATION MATRIX

GROUP I

---

Item Numbers	1	2	3	4	5	6	7	8	9
1									
2	.670								
3	.243	-.097							
4	.474	.241	.576						
5	.763	.427	.552	.686					
6	.874	.498	.283	.455	.741				
7	.455	.252	.374	.788	.619	.515			
8	.329	.241	.563	.791	.456	.363	.624		
9	.342	.212	.189	.390	.536	.434	.612	.416	
10	.495	.231	.265	.389	.651	.596	.646	.205	.730
11	.032	.205	-.208	.113	.035	.091	.237	.036	.079
12	.518	.535	.187	.334	.563	.516	.366	.225	.198
13	.336	.287	.358	.528	.584	.359	.591	.438	.455
14	.424	.222	.617	.542	.667	.500	.651	.494	.355
15	.468	.095	.556	.558	.625	.458	.634	.528	.468
16	.408	.298	.240	.447	.560	.514	.728	.312	.768
17	.324	.232	.102	.412	.375	.403	.468	.436	.241
18	.445	.327	.397	.620	.580	.450	.666	.475	.291
19	.638	.425	.105	.360	.590	.726	.565	.219	.534
20	.503	.277	.141	.302	.537	.690	.466	.253	.685
21	.113	.152	.066	.030	.174	.211	.145	.275	.323
22	.000	-.011	-.118	.046	.092	.305	.292	.203	.602
23	.335	.126	.033	.154	.394	.438	.339	-.004	.488
24	.684	.446	.191	.391	.572	.789	.461	.350	.552

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UNREFLECTED CORRELATION MATRIXGROUP I


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Item Numbers	10	11	12	13	14	15	16	17	18
10									
11	.163								
12	.367	.118							
13	.652	.092	.323						
14	.503	.123	.450	.488					
15	.453	-.232	.268	.408	.594				
16	.797	.403	.356	.585	.518	.445			
17	.318	.317	.329	.553	.495	.382	.388		
18	.555	.301	.332	.808	.566	.379	.572	.668	
19	.678	.215	.359	.471	.341	.462	.785	.348	.534
20	.788	.172	.300	.584	.365	.235	.678	.527	.571
21	.403	-.041	-.149	.560	.323	.222	.223	.403	.343
22	.422	.100	-.011	.298	.076	.000	.461	.214	.168
23	.684	.017	.118	.559	.267	.165	.530	.523	.549
24	.658	.077	.335	.483	.321	.259	.538	.517	.573

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UNREFLECTED CORRELATION MATRIXGROUP I

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Item Numbers	19	20	21	22	23	24
19						
20	.647					
21	.257	.472				
22	.306	.613	.389			
23	.482	.803	.429	.545		
24	.662	.865	.391	.412	.722	

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UNREFLECTED CORRELATION MATRIXGROUP II


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Item Numbers	1	2	3	4	5	6	7	8	9
1									
2	.196								
3	.349	.640							
4	.477	.387	.496						
5	.316	.422	.611	.450					
6	.709	.534	.595	.433	.475				
7	.332	.469	.573	.627	.591	.591			
8	.395	.534	.598	.345	.413	.518	.437		
9	.359	.223	.486	.067	.315	.526	.204	.333	
10	.279	.511	.618	.165	.632	.656	.453	.395	.656
11	-.126	-.054	.002	-.342	-.090	-.078	-.183	-.121	.119
12	.405	.297	.311	.337	.182	.308	.389	.321	.013
13	.237	.338	.403	.131	.437	.593	.468	.329	.395
14	.298	.476	.564	.265	.722	.660	.582	.377	.389
15	.433	.073	.314	.264	.408	.556	.478	.173	.406
16	.244	.579	.551	.189	.564	.571	.508	.340	.325
17	.360	.047	.198	.293	.419	.346	.209	.101	.435
18	.281	.394	.316	.025	.369	.466	.298	.470	.588
19	.482	.365	.569	.264	.516	.823	.615	.406	.720
20	.392	.269	.561	.108	.256	.703	.411	.281	.691
21	.499	.179	.401	.254	.263	.595	.374	.269	.390
22	.082	.520	.427	.061	.476	.454	.377	.247	.416
23	.265	.477	.397	.209	.199	.429	.226	.359	.667
24	.275	.577	.454	.075	.168	.616	.234	.408	.525

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UNREFLECTED CORRELATION MATRIXGROUP II


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Item Numbers	10	11	12	13	14	15	16	17	18
10									
11	.036								
12	.177	.112							
13	.569	.032	.140						
14	.734	.041	.225	.890					
15	.367	-.020	.260	.616	.604				
16	.597	.137	.252	.646	.699	.445			
17	.306	-.010	.045	.447	.483	.662	.219		
18	.642	.003	.105	.550	.611	.417	.384	.484	
19	.727	-.043	.190	.567	.631	.660	.501	.441	.618
20	.610	.063	.021	.557	.509	.550	.414	.385	.383
21	.438	-.025	.357	.609	.496	.578	.503	.462	.396
22	.655	.017	.095	.680	.723	.448	.615	.518	.499
23	.490	-.092	-.062	.331	.331	.258	.319	.235	.597
24	.553	-.023	-.034	.293	.315	.253	.279	.055	.484

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UNREFLECTED CORRELATION MATRIXGROUP II

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Item Numbers	19	20	21	22	23	24
19						
20	.742					
21	.534	.601				
22	.490	.535	.399			
23	.522	.391	.158	.440		
24	.590	.570	.301	.369	.648	

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UNREFLECTED CORRELATION MATRIX

GROUP III

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Item Numbers	1	2	3	4	5	6	7	8	9
1									
2	.376								
3	.182	.394							
4	.398	.379	.622						
5	.293	.411	.790	.586					
6	.618	.427	.338	.430	.423				
7	.484	.407	.564	.519	.679	.627			
8	.439	.169	.221	.285	.395	.541	.676		
9	.297	.542	.282	.191	.299	.444	.486	.447	
10	.143	.176	.320	.178	.386	.149	.429	.507	.274
11	-.061	-.152	.112	.278	.181	.018	.135	.411	.027
12	.335	.255	.377	.303	.456	.329	.509	.422	.286
13	.127	.227	.225	.112	.303	.446	.573	.632	.256
14	.272	.318	.551	.551	.663	.612	.714	.578	.271
15	.460	.554	.359	.367	.480	.607	.567	.524	.555
16	.208	.354	.301	.264	.398	.478	.555	.675	.350
17	.252	.361	.049	.292	.255	.344	.439	.525	.365
18	.222	.537	.599	.522	.596	.476	.636	.379	.426
19	.631	.538	.364	.322	.501	.794	.616	.562	.609
20	.103	.447	.338	.355	.315	.411	.431	.308	.328
21	.212	.267	.405	.179	.392	.330	.532	.240	.180
22	.107	.498	.208	.219	.280	.434	.301	.127	.221
23	.083	.239	.357	.222	.472	.419	.366	.198	.265
24	.164	.355	.350	.045	.507	.514	.387	.259	.332

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UNREFLECTED CORRELATION MATRIXGROUP III


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Item Numbers	10	11	12	13	14	15	16	17	18
10									
11	.466								
12	.305	.387							
13	.451	.238	.313						
14	.419	.292	.388	.619					
15	.415	.214	.445	.388	.554				
16	.526	.285	.156	.746	.568	.376			
17	.567	.378	.202	.430	.474	.567	.573		
18	.390	.022	.303	.502	.571	.635	.423	.496	
19	.192	.008	.473	.464	.493	.593	.490	.414	.514
20	.172	.261	.374	.424	.392	.378	.429	.470	.444
21	.331	.104	.283	.535	.520	.271	.454	.205	.225
22	-.147	.066	.244	.352	.330	.372	.303	.220	.330
23	.029	.089	.205	.376	.407	.342	.315	.120	.436
24	.068	.076	.249	.434	.411	.442	.321	.238	.462

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UNREFLECTED CORRELATION MATRIXGROUP III

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Item Numbers	19	20	21	22	23	24
19						
20	.544					
21	.318	.360				
22	.500	.747	.249			
23	.572	.498	.276	.607		
24	.669	.596	.360	.672	.766	

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UNREFLECTED CORRELATION MATRIXGROUP IV


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Item Numbers	10	11	12	13	14	15	16	17	18
10									
11	.043								
12	.240	.065							
13	.247	.054	.311						
14	.231	.015	.193	.706					
15	.111	-.056	.064	.343	.393				
16	.360	.123	-.059	.326	.187	.149			
17	.326	.057	.206	.360	.306	.216	.353		
18	.140	.220	.195	.472	.432	.134	.448	.439	
19	.390	.059	.256	.346	.364	.240	.315	.500	.344
20	.391	-.150	.382	.527	.550	.309	.316	.524	.396
21	.359	-.068	.348	.423	.418	.330	.288	.322	.294
22	.387	.001	.215	.555	.529	.196	.339	.286	.416
23	.545	-.013	.183	.371	.298	.252	.426	.365	.259
24	.321	-.163	.389	.382	.406	.389	.232	.354	.255

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UNREFLECTED CORRELATION MATRIXGROUP IV


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Item Numbers	1	2	3	4	5	6	7	8	9
1									
2	.282								
3	.084	.091							
4	.178	.148	.550						
5	.308	.135	.264	.199					
6	.732	.320	.280	.359	.306				
7	.255	.163	.507	.438	.312	.365			
8	.377	.315	.326	.286	.179	.443	.476		
9	-.126	-.130	.238	.115	.092	-.109	.173	-.148	
10	.276	.171	.062	.074	.094	.261	.208	.196	.200
11	-.100	.056	.056	.044	-.160	.141	.029	.125	.072
12	.115	.010	.110	.100	.170	.130	.062	.187	-.109
13	.493	.261	.126	.263	.350	.515	.395	.415	.012
14	.512	.179	.145	.262	.406	.530	.351	.488	-.099
15	.249	.155	.143	.310	.296	.316	.528	.221	.090
16	.236	.162	-.104	-.036	.011	.227	.127	.050	.165
17	.455	.290	.152	.300	.145	.541	.228	.390	.039
18	.316	.037	.111	.195	.166	.450	.242	.254	-.019
19	.444	.267	.182	.138	.306	.623	.244	.394	.023
20	.572	.169	.096	.241	.368	.596	.220	.346	-.084
21	.528	.237	.090	.220	.351	.453	.252	.381	-.025
22	.537	.234	.016	.176	.235	.553	.172	.276	-.132
23	.447	.190	.011	-.024	.368	.462	.220	.189	.249
24	.536	.241	.055	.184	.261	.461	.261	.363	-.075

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ROTATED PRINCIPAL AXIS FACTOR MATRIX

GROUP I

Item Numbers	Factor Numbers				
	I	II	III	IV	V
1	-.053	.055	.788	-.041	-.021
2	-.124	-.109	.631	.298	.033
3	-.097	.726	-.033	-.273	-.028
4	.011	.701	.058	.184	-.026
5	.102	.399	.424	-.045	-.011
6	.145	.036	.628	-.056	.053
7	.354	.517	-.035	.301	-.036
8	-.053	.730	-.078	.080	.105
9	.718	.101	-.088	-.040	-.045
10	.559	.087	.091	.038	.141
11	.163	-.101	-.036	.686	.017
12	-.032	.111	.483	.215	-.110
13	.096	.432	-.068	.208	.504
14	.022	.578	.080	.088	.115
15	.110	.591	.079	-.218	-.071
16	.672	.120	-.019	.354	-.043
17	-.088	.312	.041	.367	.535
18	-.042	.462	.052	.418	.488
19	.402	-.033	.346	.162	.028
20	.442	-.078	.162	.051	.427
21	.057	.146	-.155	-.094	.630
22	.583	-.158	-.245	.023	.256
23	.336	-.110	.040	-.007	.565
24	.201	-.044	.415	-.012	.393

ROTATED PRINCIPAL AXIS FACTOR MATRIX

GROUP II

Item Numbers	Factor Numbers				
	I	II	III	IV	V
1	.154	.686	.382	-.317	.289
2	.339	.056	-.399	.484	.029
3	.272	.294	-.088	.310	.106
4	-.054	.490	.024	.015	.668
5	-.036	.048	.081	.519	.407
6	.329	.531	.286	.031	.068
7	-.036	.371	.064	.306	.336
8	.307	.271	-.131	.169	.159
9	.644	.068	.392	-.074	-.047
10	.396	-.007	.122	.408	-.054
11	.056	.089	-.003	-.087	.447
12	-.219	.500	-.006	.058	.061
13	-.013	.008	.389	.474	-.061
14	-.020	-.013	.274	.625	.096
15	-.035	.303	.672	.038	.203
16	.002	.079	.035	.555	-.116
17	-.003	.045	.694	.053	.396
18	.446	-.109	.279	.238	.073
19	.428	.304	.424	.049	.084
20	.408	.290	.446	-.040	-.192
21	.003	.450	.500	-.006	-.061
22	.162	-.215	.198	.561	-.034
23	.720	-.100	.058	.074	.105
24	.738	.096	-.030	.002	-.179

ROTATED PRINCIPAL AXIS FACTOR MATRIX

GROUP III

Item Numbers	Factor Numbers					
	I	II	III	IV	V	VI
1	-.006	-.077	-.113	.720	.022	-.025
2	.154	-.117	.109	.064	-.272	.517
3	.785	-.005	-.036	-.111	-.009	.037
4	.541	-.225	-.067	.119	.227	.162
5	.655	.062	.023	.034	.077	.007
6	.019	.111	.180	.534	-.015	-.008
7	.349	.306	-.073	.288	.006	.050
8	-.074	.434	-.117	.434	.234	.021
9	-.019	.050	.028	.245	-.123	.344
10	.179	.440	-.356	-.065	.125	.291
11	.127	.057	.093	-.018	.750	-.011
12	.175	-.056	.122	.301	.387	-.054
13	-.021	.687	.085	.013	-.049	.020
14	.378	.341	.008	.102	.108	.018
15	.079	.029	.058	.273	.051	.370
16	.011	.592	-.031	.026	-.051	.191
17	-.150	.237	-.053	.024	.117	.556
18	.393	.121	.007	-.081	-.177	.429
19	-.062	.058	.326	.541	-.006	.058
20	-.015	-.037	.564	-.057	.210	.255
21	.240	.393	.051	.004	-.055	-.088
22	-.084	-.147	.748	-.013	.090	.124
23	.127	.045	.585	-.004	.050	-.096
24	.013	.089	.647	.050	.002	-.036

ROTATED PRINCIPAL AXIS FACTOR MATRIX

GROUP IV

Item Numbers	Factor Numbers				
	I	II	III	IV	V
1	.365	-.010	.053	.126	.151
2	.214	.079	.040	.162	-.016
3	.057	.741	-.008	.028	-.049
4	.055	.589	-.081	.047	.074
5	.087	.261	-.014	-.236	.254
6	.367	.166	.112	.358	.104
7	-.057	.622	.072	-.024	.301
8	.223	.313	-.092	.202	.075
9	.096	-.286	-.501	.035	-.040
10	.384	-.003	.485	.145	-.071
11	-.087	.014	.189	.441	-.003
12	.307	.033	-.034	-.046	-.060
13	-.020	.056	.057	.143	.544
14	-.025	.083	-.104	.051	.555
15	-.002	.320	.016	-.177	.327
16	.096	-.241	.583	.384	.193
17	.388	.107	.297	.413	-.061
18	.035	-.050	.228	.431	.294
19	.561	.067	.310	.238	-.112
20	.558	-.024	.107	.002	.065
21	.542	.022	.094	-.124	.039
22	.352	-.165	.131	.120	.209
23	.383	-.061	.563	.087	.082
24	.576	.028	.028	-.166	-.012

Vita removed during scanning.