ABSTRACT

METHODOLOGICAL PROBLEMS IN THE MEASUREMENT OF VALUES

by Henry James Watts

This thesis deals with some of the problems in the development and use of a quantitative instrument designed to measure values in different cultural settings. A framework for the development of such an instrument is presented. This framework is based on some of the literature dealing with concept formation, scientific method, and the definition of values. Throughout the thesis, the relationship between theory and method is emphasized. Eventually, a conceptual framework is developed which attempts to state the logical implications of an instrument which assumes that samples of varying degrees of industrialization will respond in a predicted manner depending on where they fall along a hypothetical continuum of industrialization.

The hypothetical predictions were tested by a secondary analysis of data obtained by the repeated administration of the same instrument to three different samples. The instrument used was A.O. Haller's MSU Work

Beliefs Check List. This instrument consists of 44 items which are sub-divided into six sub-scales. The six sub-scales focus on orientations toward work, structured time, physical mobility, change, internal or external determination of events and deferred gratification. All of the samples consisted of high school boys. The locations of the three samples were Lenawee County, Michigan, Turrialba, Costa Rica, and Lansing, Michigan, and the sizes were 439, 112 and 87 respectively. The boys of the Lansing sample were Mexican-Americans.

The data was analyzed by using means, variances, product moment correlations, and principle axes factor analyses with varimax rotations.

The findings indicated that only the Lenawee sample yielded scores consistent with the hypothetical predictions on all sub-scales of the instrument. Both the Turrialba and the Lansing samples showed considerable variation of responses. Possible reasons for the variations were discussed both in terms of shortcomings of the instrument and in terms of the possibility that the value orientations are not distributed as predicted. Finally, some of the implications for future research were discussed.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Current attempts to measure values indicate an increasing trend toward the development of quantitative techniques. The implication of this trend is that the use of more sophisticated techniques will improve the precision of the measurement of values. This appears to be a legitimate position when the limits and boundaries are kept in mind. In the extreme case, some researchers allow the technique to become an end rather than a means to an end. When this occurs, numerical data is sometimes believed to have actual meaning rather than symbolic meaning. Within this context, any attempt to interpret the data is ruled out on the grounds that such interpretations deviate from the scientific canon of objectivity.

However, the scientific method is usually stated in a way which includes both measurement and theory. An underlying theme of this thesis is that the controversy over "quantitative versus qualitative," is not only unnecessary, but is in fact, a false dichotomy in the domain of the measurement of values.

Regardless of the quantitative procedure employed, it is impossible to measure a non-observable variable without specifying or defining the variable. Thus, any attempt to measure values must begin with an attempt to define values. This turns out to be a difficult task since there is a wide range of definitions in the literature. Since values are inaccessible to direct measurement the researcher must concern himself with operational definitions and theoretical constructs in developing a quantitative instrument. Once the quantitative data has been gathered and analyzed by any of a variety of techniques, the meaning of the data must be imposed by relating it to other bodies of data. Meaning does not emerge from the data in a final unambiguous form no matter how sophisticated the method appears to be.

The problems of measurement and interpretation are increased when we are concerned with the measurement of values in cross-cultural samples. Following the terminology of Sears: "Transcultural variables are variables that can be measured in all cultures."[1] It is the present contention that transcultural variables in the general area of values (hereafter referred to as transcultural value variables)

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[1]Robert Sears, "Transcultural Variables and Conceptual Equivalence," in Bert Kaplan, (ed.), Studying Personality Cross-Culturally (Evanston, Ill.: Row Peterson and Co.), 1961, p. 45.

have an important place in sociology. As yet, however, we know very little about how to measure them in such a way as to account for variation among cultures and among individual participants in these cultures. Yet many of our hypotheses require tests based on valid instruments measuring such variables. The present thesis attempts to state the logical implications of a theory of transcultural value variables for the relations among responses to questionnaires designed to measure them. If the theory which predicts these relationships is valid and if an instrument designed to measure the component transcultural value variables is valid, then certain relationships among means, variances, correlation coefficients and factor structures of the responses to the questions should be found to exist. If the predicted relationships obtain, then the theory which posits the existence of the variables must be accurate, and the instrument designed to measure them is also valid (in the sense that it satisfied these--but not necessarily all--criteria of validity). If the predicted relationships do not obtain either the theory or the instrument or both are invalid.

Importance of the Problem

The problem is important, then, for several reasons. (1) The method will permit the researcher to reject as

invalid transcultural value instruments which fail to meet the criteria, thus opening the way for development of new and more precise instruments. (2) Because the method can detect items which are invalid, its use should help in refining instruments proposed to measure transcultural values. (3) When repeated attempts to measure a certain proposed transcultural value variable fail to meet the criteria, the proposed transcultural value variable itself (or the theory of which it is a part) may be called into question.

At present it is almost impossible to do any of the above. The usual external criteria of validity, prediction of variation in overt behavior or correlation with instruments of known validity, are unavailable to us. In essence the proposed criteria are an extension of internal techniques for testing validity.

The method investigated here is limited in that it does not provide a coefficient of validity, that it does not provide for external tests of validity, and that it does not test for scalability. Moreover, inasmuch as it is concerned only with validity it does not provide ways of testing other important characteristics of instruments such as reliability. It is not, therefore, a blueprint for completely evaluating instruments designed to measure transcultural value variables.

Organization of the Thesis

As pointed out above, one of the first concerns in the measurement of values is the problem of definition. However, before dealing with this problem directly, the literature on concept formation and scientific method is examined in more general terms. The purpose of this is to focus on some of the general principles which are advocated and to state the present writer's opinions in regard to some of these principles. The problem of defining values is dealt with directly in chapter three, by examining some of the literature in this area and attempting to formulate a working definition.

Chapter four examines the instrument and the samples. In addition, a series of hypothetical predictions are developed for the purpose of testing some of the underlying assumptions of the instrument. These assumptions involve the uni-dimensionality of scales as well as the relationship of the three samples (Lenawee, Turrialba and Lansing) to a hypothetical continuum of industrialization. Therefore, the chapter includes a section on the factor analysis used in the study as well as a brief discussion of the typological basis of the instrument (i.e., A. O. Haller's, The MSU Work Beliefs Check List).

The results of the data analysis are presented in chapter five. Some effort is made to assess the instrument in terms of the specific items as well as the unidimensionality of the six sub-scales. The final chapter continues the discussion of the general results. In addition, the limitations of the study are presented and the thesis concludes with a brief summary and some implications for future research.

CHAPTER II

CONCEPT FORMATION AND SCIENTIFIC METHODOLOGY

Purpose of this Chapter

The purpose of this chapter is to provide background material for the remainder of the thesis. This is accomplished by examining some of the contemporary literature on concept formation and scientific methodology. At times this discussion may appear to be somewhat general and therefore tangential to the present problem. However, as subsequent chapters will show, there are numerous unresolved problems of definition, measurement and meaning in the nebulous domain of values. Inevitably, many of these problems are amplified and new ones are added when we expand the measurement of values to more than one culture. For these reasons, this background material is viewed as essential in explicating the boundaries and limits of the present study. With this in mind, let us begin with the problem of explanation.

Explanation

Despite some lack of agreement on the aims of science, there seems to be considerable agreement that

explanation is the chief objective.[1] However, no such agreement exists on the crucial characteristics and the function of scientific explanation.[2] It is the contention of Hempel and Oppenheim that: "The decisive requirement for every sound explanation remains that it subsume the explanandum under general laws."[3] Before commenting on this statement, a more detailed look at how these authors define an explanation will be useful.

Briefly, there are two major parts to an explanation. One part is the explanandum or sentence describing the phenomena to be explained. The other part is called the explanans and consists of the class of sentences which account for the phenomena. The explanans is further subdivided into one subclass containing those sentences which state the antecedent conditions, and a second subclass containing sentences about general laws. Within this framework, an event is explained when it is shown to occur

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[1]Carl G. Hempel, "The Logic of Functional Analysis," Llewellyn Gross, (ed.) Symposium on Sociological Theory (Evanston, Ill.: Row, Peterson and Company, 1959); see also Ernest Nagel, The Structure of Science (New York: Harcourt Brace and World, Inc., 1961).

[2]Carl G. Hempel and Paul Oppenheim, "The Logic of Explanation," in Herbert Feigl and May Brodbeck (eds.), Readings in the Philosophy of Science (New York: Appleton-Century-Crofts, Inc., 1953), p. ~~412~~ 319.

[3]Ibid., p. 331.

in accordance with the general laws when the specified antecedent conditions are present.[4]

It is important to note that Hempel and Oppenheim reject the frequently cited argument that human behavior does not have the characteristic of repeatability and is thus not amenable to causal explanation. They point out that insofar as we are dealing with a single event, it is a unique event in the physical as well as the psychological and social sciences. This does not prevent such individual events from occurring in accordance with general laws and thereby being explained by such laws. Moreover, questions about the general laws may be explained by subsuming them under more general laws.[5] This point seems particularly important when we get into the question of levels of explanation for it pinpoints a frequent but misleading, ". . . insistence that explanation means the reduction of something unfamiliar to ideas or experiences already familiar to us."[6] As Hempel and Oppenheim point out, the free fall of an object is much closer to experience than the law of gravitation which explains the phenomena. In short, as we move toward the more general laws, we frequently move further away from the familiar rather than

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[4] Ibid., p. 331. [5] Ibid., p. 326. [6] Ibid., p. 330.

closer to it.[7]

After this brief discussion of the view of Hempel and Oppenheim on the nature of explanation, let us take a closer look at their conclusion that: "The decisive requirement for every sound explanation remains that it subsume the explanandum under general laws."[8] While sociologists are reluctant to use such terms as "laws" or "explanation," they seem quite willing to accept the implications of the statement. Consider such concepts as dissonance, imbalance, assymetry, incongruity, and status inconsistency. Each of these concepts is invoked in order to explain certain kinds of behavior under certain conditions. Whatever the phenomena which we are trying to explain (i.e., the explanandum), it is in essence subsumed under a general law, modified to fit a probabilistic model. Basically, the general principle states that dissonance, imbalance, assymetry, incongruity, and status inconsistency, all cause discomfort to the organism thereby forcing the organism to initiate some kind of behavior which will tend to reduce the discomfort. The exact nature of the behavior will vary depending on the specific antecedent conditions and the specific theory. Some causes of discomfort can be easily removed while others cannot. Some

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[7] Ibid.

[8] Ibid., p. 331.

are physical while others are psychological. To attempt to accurately predict the behavior under such conditions would require a more detailed spelling out of the particular theory. On the other hand, we could go to a still more general level and subsume each of the general concepts under a more general principle such as homeostasis or the equilibrium model.

A similar example could be given using the notion of functionalism as it is used in sociology and contemporary anthropology. However, the above example should suffice to illustrate the main point that social psychology and sociology appear to be in agreement with the Hempel and Oppenheim view of explanation, even though the specific terms are not congruent. Before leaving the concept of explanation, let us first examine the views of Nagel.

The reader is cautioned at the outset that the following treatment of explanation is a highly abbreviated treatment of selected aspects of Nagel's exhaustive treatment of the subject. For a true picture of Nagel's view, the original work should be consulted.

According to Nagel, there are four major patterns of explanation. These types are:[9]

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[9]Nagel, op. cit., pp. 20-26; while all four types are given for comparative purposes, the present thesis shall be concerned primarily with the probabilistic type of explanation. It should also be noted that Nagel assumes that all types strive for the deductive pattern.

1. The deductive model has the formal structure of a deductive argument, in which the explicandum is a logically necessary consequence of the explanatory premise. This type includes situations where the explicandum is either a law or a historical fact, and where both the explicandum and the premises are necessary truths.
2. Probabilistic explanations are those in which the explicandum is made more probable by the premises without asserting the absolute truth of the explicandum.
3. Functional or teleological explanations use such expressions as "in order that" or "for the sake of," to account for the performance of organs, units, individuals or institutions as a means of maintaining a system. This type is particularly prevalent in biology and in the study of social behavior.
4. Genetic explanations are essentially historical and evolutionary. They attempt to explain how certain objects, traits or characteristics have evolved from earlier forms.

According to Nagel:[10]

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[10] Ibid., pp. 503-04.

> . . . most if not all the generalizations empirical social research has succeeded in establishing are formulated in terms of familiar "common-sense" distinctions, and possess a comparatively narrow scope of valid application (or low order generality). Moreover, most if not all of these generalizations assert relations of dependence that hold between stated phenomena only in a (more or less precisely specified) fraction of the instance of those phenomena, rather than invariably or with strict universality. . . .

The two most common reasons given for the lack of universal laws in social science are that the subject matter is so complex that it is impossible to identify all of the relevant variables, or that the "free will" of humans makes perfect predictability an unattainable ideal. Where the notion of free will is rejected, the general idea is frequently restated in terms of the view ". . . that men's actions are governed by their interpretations of external stimuli, rather than by such stimuli directly."[11] Neither of these actually provides a satisfactory reason for the lack of universals in the social sciences. As Nagel points out, there are numerous examples in mathematics and physics where highly complex subject matter has been reduced to a simple level, once more effective means of dealing with them were invented. Moreover, while the question of individual volition is involved in responses to a given social

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[11] Ibid., p. 504.

situation, ". . . this fact by itself does not explain why there are no universal laws relating each of the several interpretations placed upon a given type of social stimulus to a particular form of human response."[12] Instead, Nagel contends that there are two methodological points which answer the question in a more satisfactory manner.

The first point has to do with the lack of precision in the terms which are used in the social sciences. In other branches of scientific inquiry, the terms used in the formulation of universal laws are precise enough to designate a highly homogeneous class of objects. The logical relations of propositions can be more readily seen and inconsistencies have less chance of survival when the language employed is precise. The language of social science is derived mainly from everyday discussions of social issues. These concepts are frequently vague and lacking in specificity. In other words, there is no clear demarcation of classes of things, and those distinctions which are made are too broad to deal with narrower differences which might be very important.[13]

The second point which Nagel makes to account for the development of universal laws in the natural sciences

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[12] Ibid., p. 505.

[13] Ibid., pp. 505-06.

is the use of the notion of the idealized state. By stating the universal laws in terms of "ideal" conditions, the scientist is able to systematically account for the empirical findings in terms of differences between the ideal conditions and those under which the observations occur. The use of the ideal case is much less frequent in the social sciences than in the natural sciences. Actually, Nagel tends to restrict his examples from social sciences to the field of economics, and he attributes the failure to be more successful to inadequately developed theoretical notions and assumptions for a successful bridging of the gap between the ideal case and actual.[14] Thus, Nagel concludes that: ". . . correlations between empirical data are rarely perfect, and generalizations based exclusively on such correlations are almost inevitably bound to be statistical."[15]

In the opinion of the present writer, it appears that Nagel has slightly overstated his case. While it seems undeniable that no branches of the social sciences have enjoyed any success comparable to the natural sciences with the use of the ideal case, it is not accurate to imply that only economics has attempted to use the method. The notion of the "Ideal Type" has been used in both sociology and

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[14] Ibid., pp. 508-09. [15] Ibid.

anthropology for some time. Since this subject shall be treated in greater detail in a later chapter, further comments on Nagel's view shall be postponed until that time.

In an earlier section, it was pointed out that whatever the phenomena to be explained, it is in essence, subsumed under a general law modified to fit a probabilistic model. In the light of the above discussion of Nagel and the previous discussion of Hempel and Oppenheim, this seems to be a fair synthesis of their views at a very general level. The heavy emphasis on statistics in contemporary social science research tends to indicate that the workers in this field readily accept the statistical nature of their explanations. Whether the majority of the workers in the field accept Nagel's rejection of the "complexity of social science subject matter" and "free will" as reasons for the lack of universal laws is another question. More important in the present context are Nagel's methodological points on the lack of precision of concepts, and the use of the ideal state.

To begin with Nagel's own statement about the most effective way of making concepts more precise and thereby reducing indeterminacy:

> Several devices reduce the vagueness and increase the specificity of linguistic expressions. Counting and measuring are for many purposes the most effective

> of these tecnhiques, and are perhaps the most familiar ones. . . . The artisan in metals may be content with knowing that iron is harder than lead, but the physicist who wishes to explain this fact will require a precise measure of the difference in hardness.[16]

Thus, it appears that measurement becomes a crucial factor in the development of precise concepts. The most pressing question one might ask at this point could be, "How do we use high level measurement to improve our concepts in a discipline where the ratio scale is non-existent?" Siegel contends that the most common types of measurement achieved in the behavioral sciences are nominal and ordinal,[17] thereby implying that even an interval scale is not commonly used in this area. Without quibbling over Siegel's comment, the point seems established that the level of measurement currently achieved in the social sciences is far short of the kind necessary to increase the precision of concepts. Quite frequently, the social scientist cannot even make a statement as precise as "iron is harder than lead." At least the artisan knows that all iron is harder than all lead. It has already been pointed out that the social scientist is seldom if ever, in a position to state invariate

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[16] Ibid., pp. 8-9.

[17] Sidney Siegel, Nonparametric Statistics (New York: McGraw-Hill Book Co., Inc., 1956), p. 29.

laws or generalizations. Thus, when the sociologist talks about differences between urban and rural people, he must state the differences in terms of rates, trends, proportions or means, and he must be careful to point out that he is not implying that "all" or any single case of the class urban or the class rural would demonstrate the particular qualities attributed to the class in his analysis. Therefore, the sociologist may be operating at a level of measurement no higher than ordinal measurement when he expresses a relationship. Moreover, the classes of things which he is talking about are frequently so heterogeneous that even this low order relationship cannot be expressed in terms of distinct and all inclusive classes of persons. Obviously, in this example terms such as urban and rural fall into the category of concepts which Nagel referred to as being too broad to pick up subtle but important differences. At the same time, one might wonder about the utility of attempting to improve our concepts by emulating those disciplines where measurement is highly developed, until we can at least approach the types of scales common in those disciplines. It is sufficient at this time to point out that the present writer is of the opinion that measurement in the social sciences is insufficiently developed to provide a panacea for our language problems. At the same time, it is felt

that greater care in spelling out exactly "what and how" measurement is used in the social sciences would greatly improve our communication and ultimately lead to improvement in the precision of concepts. This view should not be misconstrued as a rejection of measurement in social science. The writer considers measurement to be a very important aspect of social science, when used by careful workers and kept in proper perspective. However, it is felt that failure to recognize the gap between ordinal or interval measurement and ratio measurement leads some workers in sociology to assume that because they have numbers they have precision. The present writer does not share this view.

Nagel's second point deals with the use of the ideal case. This subject shall be treated in a later section dealing with ideal types. Since the present position will be developed at that time, it would be repetitious to do any more than remind the reader to keep the subject in mind, at this point.

At the beginning of this chapter, it was pointed out that there is frequently a time dimension to the "truth" of a proposition. The discussion on explanation has pointed out some of the problems and difficulties which arise when we attempt to improve the level of explanation in the social sciences. For the most part, the discussion

has led to frustrating dead ends. The concepts we use are vague and it was argued that one of the most useful methods of increasing precision in the "exact" sciences (i.e., measurement), is insufficiently developed to have the same utility in the social sciences. It was argued that theoretical constructs are useful and necessary, despite the explicit and implicit indications that theoretical notions in the social sciences are not highly developed.

Yet, the present writer is not too disturbed by this apparent confusion. One fact seems to emerge from the confusion with increasing clarity. While certain sciences may be exact, the philosophers of science are not. They tell us to improve our language partly by using a kind of measurement which we do not have, but they do not tell us how to acquire the measurement. They tell us to utilize the logical device of stating the ideal case but then they remind us that our theoretical notions are too primitive, at the present time, to bridge the gap between the ideal and the actual. There is no doubt that the philosophers of science recognize the needs of social science. There may be some question as to whether they recognize the solutions. It is not the intention here to suggest that they do not make constructive suggestions as to how to improve the situation, for they do make such suggestions. However,

the examples, analogies and models held up to the social sciences are seldom taken from the subject matter of social science. More frequently, the model is physics or chemistry.[18] For example, after presenting an analogy from physics, Nagel writes: "The obvious moral of this analogy is that social scientists should likewise develop more discriminating classifications of social phenomena, if strictly universal social laws are to be established."[19] Nagel then proceeds to demonstrate why it is unlikely that social sciences will refine their concepts beyond a certain point. Following this he illustrates how, if such refinement was done, we might no longer be dealing with social phenomena or we might be formulating universal laws in terms of distinctions more subtle than is necessary. Finally, he concludes that:

> . . . social scientists may find it more advantageous to establish statistical generalizations rather than strictly universal ones, if the former are more effective means than the latter for answering the sort of questions we normally ask about social phenomena. Accordingly, if the essentially "practical" nature of our current interests in

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[18]Philosophers of science such as Nagel and Hempel do use examples from the social science but this is usually as an adjunct to probabilistic and teleological explanation, rather than in their discussions of the establishment of universal laws.

[19]Nagel, op. cit., pp. 506-07.

> social phenomena is not radically altered, then, although strictly universal social laws are not inherently impossible, the prospects for establishing such laws in the foreseeable future on the basis of empirical research do not appear to be bright.[20]

Thus, while Nagel provides some justification for the use of statistical generalizations in social science, he leaves us somewhat confused as to the relative merits of universal versus statistical explanation in social science.

In concluding the discussion on explanation, a position will now be stated which the author shall attempt to strengthen and reinforce as other concepts are discussed, for it embodies the underlying principle of this entire thesis. If we wish to answer questions encompassing both "truth" and "meaning," we must proceed from the view that:

> Explanation is never ultimate in the mind of a scientist. What may be considered adequate explanation today may be relegated to theoretical purgatory tomorrow. What may seem to some to be a straightforward empirical relation may be raised by a theoretician to the level of a postulate and used (with other postulates) to explain other relationships. Thus, a cross-sectional analysis of the explanatory concepts of a science provides no more than a momentary picture, a picture which would be considerably changed by the flux which is science were a second analysis made a few years hence.[21]

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[20] Ibid., p. 508.

[21] Benton J. Underwood, Psychological Research (New York: Appleton-Century-Crofts, Inc., 1957), pp. 174-75.

Perhaps some confusion would be avoided if the first word of the above quotation were changed to the expression, "final explanation" rather than simply, "explanation." In any event, the present position should not be confused with the position of those who are fundamentally opposed to any attempts by social scientists to develop logical methods and explanatory systems similar to those of the natural sciences. The present desire is simply to caution against the danger of thinking that methodology per se obviates thoughtful interpretation. This point will become clearer as methodological problems related to the subject matter of social science are discussed.

Laws, Causality and Prediction

In the previous section the term law or laws was used quite frequently. Whether explicitly stated or not, expressions such as "scientific laws" denote a predictive aspect to the average reader. Hempel and Oppenheim, for example, write: "For all that a causal law asserts is that any event of a specified kind, i.e., any event having certain specified characteristics, is accompanied by another event which in turn has certain specified characteristics."[22]

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[22]Hempel and Oppenheim, op. cit., p. 326.

Similarly, Feigl writes: "The clarified (purified) concept of causation is defined in terms of predictability according to a law (or, more adequately, according to a set of laws)."[23] It is important to note that these statements assert merely that one event which we call A is always accompanied by another event, which we call B. Nothing is said about one event producing the other event. This point is important in order to avoid metaphysical arguments. In social psychology, for example, we may be able to change (i.e., control) the environment of a person, but we have no way of directly controlling the personality. Therefore, which variable is designated as the "independent variable" and which one is called the "dependent variable" is often an arbitrary decision dictated by our ability to control one set of conditions rather than the other set of conditions.[24]

It has already been demonstrated that in the social sciences we seldom, if ever, satisfy a criterion which requires that a relationship always hold, or where characteristics ascribed to a given class must apply to all members of the class. Thus, the above definitions of laws

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[23]Herbert Feigl, "Notes on Causality," in Feigl and Brodbeck, op. cit., p. 412.

[24]Ibid., p. 417.

seem to exclude most or all of the pronouncements of social science from the status of laws. However, Nagel does not define laws quite so simply. Instead, he talks about four types of laws. Briefly stated, these are:[25]

1. Laws which assert that there are "natural kinds." This type of law is not considered to be a causal law by Nagel, for it makes no assertion about one object preceding another.
2. Laws which assert an invariable sequential order of dependence among events or properties. These are subdivided into causal laws (e.g., stones thrown into water produce a series of expanding concentric ripples), and developmental or historical laws (e.g., lungs are never formed prior to the circulatory system in the hyman embryo).
3. Laws which assert invariable statistical (or probabilistic) relations between events or properties.
4. Laws which assert a relation of functional dependence, in the mathematical sense of function (e.g., mathematical equations).

If we consider the meaning of scientific laws in this broader sense as Nagel does, the social scientist is justified in

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[25]Nagel, op. cit., pp. 75-78.

using the term. As the previous discussion on explanation indicated, the statistical or probabilistic laws are common in the social sciences. It might be argued that social laws may be of the developmental or historical type. However, it will be shown later that the combination of time and space restrictions on social phenomena impose such serious limitations on generalizations that it is difficult to imagine "laws" about social evolution comparable to the developmental laws in biology.

Therefore, the concept of causation as defined for present purposes will denote "predictability according to a law," with the understanding that such laws in social science will, for the most part, be of a probabilistic type. Before proceeding to the next section, it seems feasible to relate the concept of prediction to the concept of explanation.

In terms of the logic involved, there seems to be no difference between prediction and explanation.[26] According to Hempel and Oppenheim, the difference between the two terms is simply a pragmatic difference, depending on whether the explanandum is given and the explanans is provided after the event has occurred, or whether the explanans are given

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[26]Feigl, op. cit., pp. 417-18.

and the explanandum is logically derived before the event occurs.[27] The formal analysis will be the same in both cases.

It should be pointed out that these terms are not always viewed as if they are logically interchangeable. When we consider certain discussions of divergent and convergent phenomena,[28] we become entangled with the implicit or explicit possibility of "explanation without prediction."[29] In essence, this position states that even though we know that a given set of antecedent conditions will be accompanied (or followed) by a given phenomena in accordance with a given law or set of laws, we may be unable to predict the occurrence of the antecedent conditions. We may know, for example, that certain kinds of behavior tend to occur in disaster areas but if we cannot predict the time or place of a disaster, we cannot predict the time or place of the behavior. Proponents of this view would argue therefore, that we can explain the behavior in terms of the disaster but we cannot predict where or when the behavior will occur.

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[27] Hempel and Oppenheim, op. cit., pp. 322-23.

[28] Ivan D. London, "Free-Will as a Function of Divergence," Psychological Review, 55, 1948, pp. 41-46.

[29] Michael Scriven, "Explanation and Prediction in Evolutionary Theory," Science, Vol. 130, pp. 477-82.

In the opinion of the present writer, this argument is not very tenable. If an invariate relationship exists between two events, failure to predict the occurrence of the necessary antecedent conditions does not invalidate the relationship. Even in the natural sciences, no such demands are made. The fact that the chemist cannot predict the time and place of every incident of combustion, does not invalidate the laws of combustion. Newton's laws governing bodies in motion are not invalidated simply by the inability of physicists to predict the time and place that each body will set in motion. When we use examples such as these, the distinction being made between explanation and prediction appear somewhat ridiculous.

Therefore, the only distinction between explanation and prediction which shall be maintained in this thesis, is the previously cited "pragmatic" distinction of Hempel and Oppenheim. However, the discussion of reasonable and unreasonable requirements of prediction provides a convenient point of departure for the next section.

Empiricism, Operationism, Verification and Meaning

As others have pointed out, empirical evidence may answer the question, "Is it true?" but may not answer the

question, "What does it mean?" However, it is not always clear just what the differences between empirical evidence and meaning happen to be. For example, Schlick writes: ". . . there is no way of understanding any meaning without ultimate reference to ostensive definitions, and this means, in an obvious sense, reference to 'experience' or 'possibility of verification.'"[30] Other writers discuss "experience" or being "possible of verification" in relation to empiricism or operationism. According to Franck, ". . . the main principle of empiricism, or even logical empiricism as Carnap understood it, is the principle of verifiability or confirmability."[31] In a similar vein, Hempel writes: "The fundamental tenet of modern empiricism is the view that all non-analytic knowledge is based on experience."[32] It appears, therefore, that the three concepts of empiricism, verification, and meaning are not distinctly separable terms in the minds of some writers. The "purity" of the

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[30]Moritz Schlick, "Meaning and Verification," in Herbert Feigl and Wildrid Sellars (eds.), Readings in Philosophical Analysis (New York: Appleton-Century-Crofts, 1949), p. 148

[31]Philipp Franck, Philosophy of Science (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1957), p. 335.

[32]Carl G. Hempel, "The Empiricist Criterion of Meaning," in A. J. Ayer (ed.), Logical Positivism (Glencoe, Illinois: The Free Press, 1959), p.108.

concepts may become even less clear if we add the fourth concept with which this section deals. This notion, variously referred to as Operationism, operational definition or operational meaning was strongly influenced by Bridgman's book, The Logic of Modern Physics. According to this view, "In general, we mean by any concept nothing more than a set of operations; the concept is synonymous with the corresponding set of operations."[33]

Operationism in the strictest sense, indicates that any time that we alter the operations used in defining a concept, we must introduce another concept. "If we have more than one set of operations, we have more than one concept, and strictly there should be a separate name to correspond to each different set of operations."[34] Yet, Bridgman recognizes the impractical and frequently unnecessary limitations which strict adherence to this rule would impose upon the scientist. He feels that the scientist is justified in using the same concept, even though two different sets of operations are involved, as long as the numerical results of the different sets of operations do not differ beyond the level of experimental error. The last point

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[33] P. W. Bridgman, "The Logic of Modern Physics," excerpt reprinted from Bridgman's book of the same name in Feigl and Brodbeck, op. cit., p. 36.

[34] Ibid., p. 39.

brings us back to a problem already discussed in the section on explanation.

One wonders how we can be sure we are operating within the limits of experimental error when the numerical differences are not based on ratio scale measurement. To be sure, in the case of replication, where the same instrument is used, we may talk about "significant differences" or "confidence limits." This is not quite comparable to the situation to which Bridgman is referring, because the set of operations has not been changed. For example, if a specific scale designed to measure "aspiration level" is given to two separate populations, the same operations are used in arriving at a score in both cases. Thus, we are dealing with the concept "aspiration level" as measured by instrument A. If a different instrument is used to measure the concept "aspiration level," it will be designated "aspiration level," as measured by instrument B. In practice, the different instruments are usually designated by the name of the test designer. In any case, it has become a <u>sine qua non</u> of good research in the social sciences that any report describing the use of such instruments give, in addition to a description of the instrument, a detailed description of the operations performed in the administration

of the instrument, as well as relevant data on the sample, reliability and validity. In social measurement, slight changes in the wording of a question or in the test situation have been shown to affect the results. Moreover, if instrument A and instrument B is administered under "identical" conditions to the same sample, the numerical results frequently yield at best moderately high correlations. Two sets of measurements of the physical length of objects on the earth's surface, involving what Bridgman calls tactual concepts on the one hand and optical concepts (such as the angles between beams of light) on the other, are likely to show very little, if any, numerical difference.

It was noted earlier that to insist upon defining all scientific terms operationally would be overly restrictive and would prevent the use of some of the most powerful theoretical constructs.[35] A similar point is emphasized by Feigl when he writes: "To demand definition of every term used in a piece of scientific discourse would not only be unduly pedantic (beside being incapable of practical fulfillment and thus utopian) but also quite unnecessary."[36]

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[35]Hempel, Fundamentals of Concept Formation in Empirical Science (Chicago: The University of Chicago Press, 1952), p. 41.

[36]Herbert Feigl, "Operationism and Scientific Method," in Feigl and Sellars, op. cit., p. 499.

Feigl goes on to point out that for most purposes, ordinary language is sufficiently definite to permit communication, but questions concerning the exact meaning of concepts may arise when we shift to higher order constructs.

In the light of the above discussion on operationalism the following considerations are put forth. First, the notion of the operational definition of concepts is a useful principle for social science <u>if</u> the limits of the utility are recognized. By keeping the underlying principle of operationism in mind, the social scientist is constantly alerted to the possible dangers of using "factually meaningless" concepts. The reader is cautioned that high order theoretical constructs such as the super-ego, the generalized other, or the reference group, do not fall into the category of "factually meaningless," simply because they cannot be observed, or measured directly. For these concepts can be indirectly defined in terms of the observed relationships between the antecedent and consequent conditions which the concept (in the proper theoretical context) purports to explain. The expression "factually meaningless" refers to gross violation of the logic of grammar or the formulation of explanatory schemes which do not, even in <u>principle</u>, meet the criterion of verifiability. To illustrate this

point, let us consider the following example.

There have been many definitions of the concept of culture in the field of anthropology. These definitions may differ in terms of how broadly or narrowly they are defined, but they share certain features concerning the transmission of knowledge. Suppose that an anthropologist decides to define culture in such a way that only the ballet, the opera and the symphony orchestra of western civilization, qualify as examples of culture. Such a definition is not simply different from the others but in direct contradiction of all the other definitions in anthropology. The present writer would consider such a definition to be "factually meaningless" within the field of anthropology because it violates the syntactical formation-rules of the language of anthropology.[37]

The second point mentioned above in relation to "factually meaningless" terms has to do with the possibility of verification. It has already been pointed out that various writers set up this criteria of "possibility of verification" in defining both empirical science and meaning.

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[37]Herbert Feigl, "Logical Empiricism," in Feigl and Sellars, Ibid., pp. 3-26. The present writer has taken the fundamental point from Feigl but the example from anthropology is his own.

In the present context, the notion of operationism may be helpful in reminding the scientist that he is studying a real world. While certain kinds of models may be useful in this study, certain other limitations must be kept in mind. This point was noted by the Columbia Associates in Philosophy over thirty-five years ago, when they wrote:

> But one outstanding difference between the world of the actually existent in which the physicist works, and the non-existent or hypothetical world in which the mathematician is at home, lies in just this fact, that in the latter one equation is as good as another, and can be substituted for the other, whereas in the former, though for purposes of convenience we must perform this "reduction," we can never take away a single iota from the actual world with which we commenced. The geometer starts with assumptions which he can change at will; the physical scientist starts from facts which nothing can ever change.[38]

Therefore, when we begin to reduce our data to symbols or to different levels, we must be extremely careful to recognize the fact that we are no longer dealing with the same data, and the answers which are discovered may not be applicable to the original set of data. Within this context, the nature of explanation and verification may be confused. It is quite possible to explain certain facts after they have been translated into a different

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[38]Columbia Associates in Philosophy, An Introduction to Reflective Thinking (New York: Houghton-Mifflin Co., 1923), pp. 139-40.

level or form. If this form is not equivalent, the original facts have not been explained. In short, the social scientist cannot indiscriminantly substitute one set of operations for another. More specifically, he cannot build his explanatory system or model with complete disregard for the experiential world, and expect such a scheme to fulfill the canons of science.

It is hoped that this criterion of meaning will not be interpreted as permission to "push a very difficult problem aside and by stigmatizing it as meaningless to discourage further investigation."[39] It is intended to stress the importance of recognizing the difference between an explanatory scheme which meets the criteria of confirmability or rejectability, and a scheme which cannot be tested within the usual domain of empirical science, because it is founded upon a logical system such as mathematics, which is logically consistent independently of the empirical world. On the other hand, it should be clear that insistence upon a recognition of the limits and boundaries of the respective language of different areas of discourse is in no way intended as an anti-theoretical position.

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[39]Feigl, loc. cit., p. 13.

In summary, it is the present contention that empirical science must utilize the "possibility of verification" criteria if we hope to achieve "factually meaningful" explanations. In striving for this goal, the underlying principle of operationism can be very helpful, if kept in proper perspective and not allowed to become a sine qua non for all inquiry. It has been pointed out in earlier discussions that any attempt to define every scientific term "operationally" is both impractical and unnecessary. In effect, this is simply a restatement of the central theme stated in the discussion of explanation. We cannot eliminate the need for thoughtful interpretation by substituting a method.

Theory

If we acknowledge the need for convergence between method and thoughtful interpretation, we take a major step toward the marriage of theory and research. Explanation is difficult without a theoretical framework, no matter how numerous the facts. Facts alone are sometimes contradictory to our intersubjective knowledge. For we "know" that when a human being has not eaten for two days, he will be hungry and he will eat if food is available. But we also know that on occasion such human beings will not eat.

What then are the facts? The facts are a collection of data. The "truth" of the facts can be determined by controlled observation. The "meaning" of the facts must be imposed by experimental laws or theories. As Moore puts it: "It is the function of theory to impose order on what might appear to be chaos, and it does so by being in some measure abstract."[40] Stating the same idea in terms more akin to the present discussion: "The term theory, in science, denotes that conceptual apparatus which makes explanation and prediction in the area of experience possible."[41]

At the same time, while theories are not tied to definite observational data, no theory is independent of the facts. A theory which continually predicts phenomena contrary to empirical evidence is not likely to survive, no matter how abstract or abstruse the theoretical formulation may be.

Just as a method does not eliminate the need for interpretation, a theory does not eliminate the need for

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[40]Wilbert E. Moore, "Editorial Introduction," in Charles P. Loomis and Zona K. Loomis, Modern Social Theories: Selected American Writers, XXIII (Princeton, New Jersey: D. Van Nostrand Company, Inc., 1961).

[41]Joseph B. Gittler and Ernest Manheim, "Sociological Theory," in Joseph B. Gittler (ed.), Review of Sociology (New York: John Wiley and Sons, Inc., 1957), p. 1.

fact finding. Each phase is necessary and neither stands independently. The central theme is again stated. This time the notion under discussion is theory and the words are Conant's. "A scientific theory is not even the first approximation to a map; it is not a creed; it is a policy--an economical and fruitful guide to action by scientific investigators."[42]

Scientific Method

The scientific method, like most of the concepts and methods discussed thus far, is a means, not an end in itself. It is a way of bridging the gap from experience to explanation to validation. Exact statements of the scientific method may vary but in general they include:[43]

1. Collecting data systematically.
2. Analyzing and organizing these data into generalizations.
3. Arranging these generalizations, which may be drawn from different collections of facts and generalizations, into theories.
4. Drawing deductions from the theories in the form of

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[42] James B. Conant, Modern Science and Modern Man (New York: Doubleday Anchor Books, 1954), p. 97.

[43] B. R. Bugelski, A First Course in Experimental Psychology (New York: Henry Holt and Co., 1951), p. 46.

predictions (such predictions are generally known as hypotheses or theorems).

5. Testing the hypotheses by experimenting, or otherwise checking by controlled observation, trying to see if they are valid or invalid, and thereby, supporting or discrediting the theories.

A careful scrutiny of the five steps listed above will reveal the sweeping range of the scientific method. If we require that any scientist, to deserve the name, must be a master of all phases, we set up a criteria which few persons can meet in a single lifetime. Thus, Bugelski writes: ". . . we can label anyone a scientist if he is active in any or all phases of the total method."[44]

However, regardless of which phase or phases of the method a scientist works in, he must be cognizant of the total method. Failure to recognize other phases may result in excessive labor on "trivial" data collection at one end, or the building of "untestable" theories at the other.

It should be noted that the various steps are stated in very general language. No boundaries are set up defining the type of data which should be collected or the specific

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[44] Ibid.

method which should be used. In short, the method, like explanation and theory is a guide. In the hands of the careful worker, fruitful results are frequently obtained.[45] But in the final analysis, the same language which sets no limits on specific areas of inquiry, imposes one strong limitation on the scientist. In any phase of the scientific method, the investigator must constantly weigh his activity against the activity of others. Sometimes the "others" will be engaged in the same kind of activity and there may be a relatively high amount of conceptual equivalence. On other occasions, he will have to translate from the general to the specific or vice versa. In either case, there are no "ivory towers" for those who endorse the scientific method.

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[45]For a similar statement of this position, see Paul F. Lazarsfeld and Morris Rosenberg (eds.), The Language of Social Research (Glencoe, Illinois: The Free Press, 1955), p. 4.

CHAPTER III

TOWARD A WORKING DEFINITION OF VALUES

Purpose of this Chapter

This chapter is concerned with the definition of values and related concepts such as attitude, belief, opinion and value orientation. After a brief examination of the literature on the definitions of values, an attempt will be made to arrive at a working definition for the present study.

Problems in the Definition of Values

In any reasonably extensive survey of the literature on values, one cannot help being struck by the variations in the interplay between such terms as value, attitude, belief and opinion. The interplay is further complicated by the sporadic insertion of the concept of "orientation." In order to attempt to clarify the situation, it seems necessary to examine each of these concepts separately, and then to attempt a synthesis. Therefore, the present discussion shall examine first the general state of confusion, second the respective concepts individually, and finally the relation of the various terms to a working

definition of values.

Perhaps the concept which is most intricately woven with the general notion of value is the concept of the attitude. In discussing "The Changing Prominence of Values," William L. Kolb[1] points out the difficulty of distinguishing between values as objects and as elements of orientation. In this context, the work of social psychologists such as Mead and Faris becomes the bulwork for viewing values within a two dimensional framework. The objective aspect of values is maintained in the cultural super-structure, but it now becomes possible to speak of a subjective dimension of values as exemplified in such concepts as "social attitudes" and "group attitudes." This formulation involves certain additional concepts such as personality, socialization, generalized other, etc. However, the basic question which this introduces is whether an individual perceives values, once they are internalized, as externally imposed (e.g., determined by mutual agreement) or as internally determined standards or "givens."

The importance of this question will be more

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[1]William L. Kolb, "The Changing Prominence of Values in Modern Sociological Theory," in Howard Becker and Alvin Boskoff (eds.), Modern Sociological Theory (New York: The Dryden Press, 1957), pp. 93-132.

obvious when we deal with the general problem of the measurement of values cross culturally. However, in order to focus the reader on the problem, let us prematurely state the bearing which this issue has on the measurement of values. If values are perceived as objects, there are tangible ways of ascertaining what these values are. In a society with a high emphasis on religious values, we would expect this to be reflected in the material culture as well as the social organization of the society. If there is an extreme emphasis on the political values, this should be evident in the social structure. Bellah, for example, has shown that the dominance of political values in Japan during the Tokugawa period, was exemplified in the social structure, the family and the Japanese religion, Shinto.[2]

On the other hand, when we introduce the subjective dimension of attitudes as orientations to action, we are no longer dealing with the observable aspects of culture but with theoretical constructs. It is not the intention here to imply that there is a clear and direct link between the observable aspects of material culture, social organization

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[2]R. N. Bellah, Tokugawa Religion: The Values of Pre-Industrial Japan (Glencoe, Illinois: The Free Press, 1957). Cited in Harry M. Johnson, Sociology: A Systematic Introduction (New York: Harcourt, Brace and Company, 1960), p. 88.

rituals, etc., and the scientific determination of the values of a given group. Nevertheless, it is felt that the area of ambiguity is increased if we add a third dimension, unless we are able to spell out some methods of tapping that dimension. For it then becomes necessary to specify the connection between cultural values, socialization, personality and behavior. As we shall see later, these relationships do not always follow expected paths. In short, if we observe a particular society in which religion permeates almost all aspects of behavior, we might say that religious values are among the most dominant in that particular system. Obviously, this does not tell us whether all members of the system unequivically accept this dominance. However, if the behavior of most of the members of the system is in accord with this religious dimension, it seems reasonable to assume that such a value exists in terms of the system as a whole. When we begin to ask whether this value is held by all members of the system, or whether the value is internalized with equal intensity we become involved with the problems of individual beliefs, differential perception and interpretation, and the divergence or convergence of subjective values with the behavior patterns followed in the face of social sanctions. Add to this the

problems inherent in the measurement of theoretical constructs and the subsequent problems in the validation of such measurement, and the extent of the problem becomes somewhat clearer.

In the preceding discussion, the terms "values" and "attitudes" have been used as if there was a clear cut distinction between them. In practice, this is not always the case. Johnson, for example, states that: "Values . . . They are inseparable from attitudes, except perhaps analytically."[3] Yet, it has already been noted in the consideration of the Kolb discussion, that Johnson's view is not an indication of even a reasonable degree of concensus on this point. Moreover, there have been considerable efforts devoted to the distinction of attitudes as cognitive elements and some verbal indicant of these elements. Therefore, let us consider some of the concepts individually before attempting any further definition of values.

Attitudes

It does not seem to be an exaggeration to say that the concept "attitude" occupies a rather prominant place in the contemporary literature of social psychology. This

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[3]Johnson, op. cit., p. 87.

concept, it must be remembered, is essentially a theoretical construct. There is no way to directly observe an attitude. In fact, there is no way to verify the existence of attitudes, directly. Yet, this concept remains a central one in the behavioral sciences. One possible explanation of this can be found in the earlier discussions of Nagel. It will be recalled that Nagel considers the failure of the social sciences to use the logical device of stating the ideal case, and attempting to account for empirical deviations from the ideal in terms of theoretical postulates and assumptions, as one of the major reasons for the paucity of universal propositions. In a later section, this criticism shall be dealt with directly in terms of the use of typologies. At the present time, however, there are certain grounds for viewing the attempts of social scientists to use the concept of attitude, as an attempt, in principle, to use the basic notion of the ideal case.

As frequently used, the term attitude has a definite action potential associated with it. Allport, for example, speaks of "a mental and neural state of readiness"[4] while Sherif and Cantril place attitudes "among those components

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[4]Gordon W. Allport, "Attitudes," in Carl Murchison (ed.), A Handbook of Social Psychology (Worcester: Clark University Press, 1935), p. 810.

of the psychological makeup of the individual which determine that he shall react not in a passive or neutral way . . ."[5] This conceptualization of an attitude as a guide or directive of behavior persists despite the difficulty of demonstrating the nature of this relationship empirically. Thurstone, for example, contends that it is an error to attempt to validate the measurement of social attitudes by overt behavior. He writes: "A man may be entirely consistent in what he says and in what he does about a controversial issue, and yet both of the indexes may be dead wrong in reflecting his attitude. . . . His personal attitude may or may not agree with what he says and what he does."[6] The same problem was pointed out some time ago by Klineberg when he noted that even though a certain kind of validity of verbal behavior is often obtained, the kind of validity which deals with the correlation of verbal and overt behavior, is a rare event.[7] The point here is that the use of the concept of attitude is, in many instances, equivalent to the postulating of an ideal case (i.e., persons holding specified attitudes, when

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[5]M. Sherif and H. Cantril, "The Psychology of Attitudes," Psychological Revue, 1945, 52, p. 300.

[6]L. L. Thurstone, The Measurement of Values (Chicago: The University of Chicago Press, 1959), p. 187.

[7]Otto Klineberg, Social Psychology (New York: Henry Holt, 1940), p. 371.

exposed to certain antecedent conditions will behave in a specified, and presumably predictable manner). If we add to this the probabilistic nature of explanation in the social science, the resultant form is a combination of the previously discussed explanations of Hempel and Oppenheim, and Nagel.[8]

However, at least one additional factor stands out. If attitudes are not necessarily correlated very highly with behavior, and certainly not perfectly correlated, it is clear that the concept of attitude is not a result of empirical observation. In short, attitudes are constructs of an idealistic type and those characteristics which are associated with or attributed to attitudes are deviations from the ideal. Thus, it is customary in the social sciences to speak of persons holding "strong, weak, or neutral attitudes" rather than simply "attitudes."

Beliefs, Opinions, and Attitudes

Thurstone makes a clear distinction between the subjective aspect of attitudes and the verbal, expressive or the measurement dimension. Attitudes for Thurstone are ". . . the sum total of a man's inclinations and feelings,

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[8]See chapter two for this discussion.

prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specified topic."[9] Thurstone then goes on to define an opinion as the verbal expression of an attitude. A considerable body of sociological literature appears to regard opinions as verbal expressions of attitudes (or beliefs). It should be noted, however, that the question of whether the opinion which an individual expresses is an indication of his true views, is not solved by this "fiat" type of definition. Additional qualifying terms such as public opinion or private opinion are sometimes used. However, these terms are also used by some writers to qualify other concepts such as attitudes or beliefs, so they do not resolve the issue.

Perhaps the simplest way to define a <u>belief</u> is to quote Loomis when he writes: "Any proposition about any aspect of the universe that is accepted as true may be called a belief."[10] This statement must be amplified for the purpose of clarification. Johnson, for example, states that a belief is neither true nor false, in empirical terms.[11] Williams, on the other hand, uses an expression

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[9]Thurstone, <u>op. cit.</u>, p. 216.

[10]Charles P. Loomis, <u>Social Systems: Essays on Their Persistence and Change</u> (Princeton, New Jersey: D. Van Nostrand, Inc., 1960), p. 11.

[11]Johnson, <u>op. cit.</u>, p. 86.

which seems to synthesize Loomis and Johnson, when he talks about "non-empirical beliefs."[12] Actually, the difference between these positions is only superficial. Both Loomis and Williams acknowledge the existence of non-verifiable beliefs. This inability to verify beliefs empirically does not require, as Johnson seems to assume, that beliefs be defined as neither true nor false. A belief can be completely false in terms of content, but completely true in terms of orientation to action for specific individuals or groups. As Loomis points out: "The belief that an eclipse of the sun is an ill omen, that tomatoes are poisonous, that capitalistic society will eventually decay and become socialistic, whether true or false, must be taken into account in explaining action."[13]

In the light of the above discussion, it seems that beliefs, opinions and attitudes are frequently distinguished analytically, but a relationship between them is usually maintained. While Thurstone makes a clear distinction between attitudes and opinions in terms of the overt-covert dimension, he regards the overt as an indication of the covert

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[12] Robin M. Williams, Jr., American Society (New York: Alfred A. Knopf, 1960).

[13] Loomis, op. cit., p. 12.

dimension.[14] Neither beliefs nor attitudes are directly demonstrable through empirical techniques. Both are inferences from verbal or some other form of overt behavior. They cannot be measured directly. It has already been pointed out that the same questions hold for the notion of opinion. In essence, attitudes, opinions and beliefs, insofar as we can measure them, are subjective components, which we "know" only through the verbal and/or non-verbal behavior of individuals under certain conditions. In this sense, all three of the concepts are cognitive elements operationalized by means such as questionnaires, interview schedules, or direct observation.

Before discussing the concept of values in a more specific manner, a brief recapitulation seems in order. First, the relationship between subjective thought processes and overt behavior is not always clear, direct or consistent. Second, in tapping the subjective level, it is necessary to rely on verbal expressions and theoretical constructs. This does not rule out the possibility of making adequate predictions of behavior, or accurately tapping the subjective dimension. It merely accentuates the necessity of constantly keeping in mind, exactly what level we are operating

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[14] Thurstone, op. cit., p. 216.

at. With this background, let us now approach the nebulous domain of the concept of values.

Values and Value Orientations

According to Kolb, the one consistent theme which permeates all treatments of values in the sociological literature has to do with the relationship of values to norms.[15] In a general sense, this seems to be true, although there may be variations on this interpretation when we consider specific details of any given theorist.

In Parson's book, The Social System, he writes: "An element of a shared symbolic system which serves as a criterion or standard for selection among the alternatives of orientation which are intrinsically open in a situation may be called a value."[16] Within this framework, values are tied to the general notion of orientation of action, in terms of a choice between norms. More specifically, Parsons writes: "Values are modes of normative orientation of action in a social system which define the main directions of action without reference to specific goals or more

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[15] Kolb, op. cit., p. 93.

[16] Talcott Parsons, The Social System (Glencoe, Illinois: The Free Press, 1951), p. 12.

detailed situations or structures."[17]

At this point, the reader is reminded of the earlier discussion on the levels of explanation, for Parsons seldom deals with a singular dimension. Values, he contends, are grounded in three main directions. One level of values deals with the individual's existential beliefs about the world. This level is equivalent to the previously mentioned non-empirical beliefs of Williams. Actually, Parsons refers to this level as the "justification of values,"[18] and states that it is grounded in philosophy and religion. There is a second level of values, according to Parsons, which deals with the meaning to the individual as a personality. This level is referred to as the "motivation of values." Finally, there is the relation of the individual to others in the society, or what Parsons calls the "legitimation of social action."

In discussing Parsons' earlier definition of values in terms of "a shared symbolic system," Becker reduces this definition to a choice between norms pointing out that: "The more profound axiological problem as to the subjective

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[17]Talcott Parsons, Structure and Process in Modern Society (Glencoe, Illinois: The Free Press, 1960), p. 171.

[18]Ibid., p. 174.

or objective character of value is not explicitly considered."[19] In this case, the criticism seems to be based on an over-simplification of Parsons which is a result of taking the definition of values cited in The Social System, and considering this definition out of context or without regard to the over-all theoretical framework. Adler, for example, follows his quotation of the same definition with the question: "How are these covert phenomena to be studied?"[20] While Becker's comment does not assume that Parsons' definition is covert (it simply fails to specify whether values are subjective or objective), both descriptions seem to disregard the numerous aspects of Parsons' theory which modify a literal interpretation of this definition. Parsons writes:

> On a cultural level we view the organized set of rules or standards as such, so to speak, from the actor who is committed to them by his own value-orientations and in whom they exist as need-dispositions to observe these rules. Thus a culture includes a set of standards. An individual's value-orientation is his commitment to these standards.[21]

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[19]Howard Becker, "Value," UNESCO Dictionary of Social Science, forthcoming.

[20]Franz Adler, "The Value Concept in Sociology," American Journal of Sociology, 62 (November, 1956), pp. 274-75.

[21]Talcott Parsons and Edward A. Shils (eds.), Toward a General Theory of Action (Cambridge: Harvard University Press, 1951), p. 60.

In reference to these standards, Parsons writes: "The value standards are various recipes or rules (usually passed from person to person and from generation to generation) which may be observed by the actor in the course of this balancing out procedure."[22] In other words, when dealing with the role of values in Parsons' theory, it seems unfair to ignore his use of different systems such as the social, personality and cultural. In interpreting Parsons, Loomis states:

> On the cultural level there are value patterns and on the personality level there are gratification-deprivation complexes which are somewhat balanced by modes of motivation. The actor, motivated to maximize his gratifications and minimize his deprivations, does so in accordance with value-orientations, derived from the cultural value pattern and internalized by the process of socialization, to become a part of personality itself.[23]

In other words, the work of Parsons cannot be simply categorized as considering values as covert phenomena. This is what Adler seems to do, but he apparently feels that the case is self evident by the quotations. In any event, he does not go beyond the abstracted definition, which does not deal with the various levels of concern to Parsons

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[22] Ibid., p. 71.

[23] Charles P. Loomis and Zona K. Loomis, Modern Social Theories (Princeton, New Jersey: D. Van Nostrand Company, Inc., 1961), p. 381.

or with the articulation of these levels through such processes as socialization. When dealing with the pattern variables, the notion of value orientations is a necessary component of the actors choice. It must be remembered, however, that the pattern variables apply at different analytical levels. Earlier, these were the concrete, the collectivity, the cultural and the value standard.[24] Thus, we have the value orientations as expressed through the pattern variables, operating at several levels, one of which is the value standard.

Another indication of the fact that while Parsons often treats different levels as analytically distinct, it does not follow that these are empirically distinct, as indicated by a later work. In this instance, Parsons distinguishes four levels. These are the primary or technical, the managerial, the institutional, and the societal.[25] Even though Parsons' makes analytic distinctions between these levels, Loomis' notion of systemic linkage is implicit in the statement that: "The technical or primary

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[24] Ibid., p. 342.

[25] Talcott Parsons, "General Theory in Sociology," in Robert K. Merton, Leonard Broom, and Leonard S. Cottrell, Jr. (eds.), Sociology Today (New York: Basic Books, 1959).

social system cannot, however, subsist alone in a differentiated society (and all societies are to some degree differentiated), it must be 'articulated' with the other units in a wider system."[26] Actually, Parsons' uses the expression "double interchange" to convey the idea of interaction between systems. Thus, it must always be kept in mind that Parsons is dealing with analytic systems and cautions must be observed to avoid the reification of such systems as well as the fallacy that only one system is involved in a concrete event.

To further explicate the problem of defining values in a singular or "clear" manner, let us take a brief look at the writing of Franz Adler on this concept.[27] Adler attempts to delineate four types of values. In essence, these are values as absolutes (in the mind of God), values as objects, values as located in man, and values as actions. Adler then proceeds to eliminate the first three of these types as inaccessible to the methods of empirical science, and argues that values are identical with action, since all that can be observed is actions. Perhaps the most immediate temptation here is to equate this type of reductionism to the early phases of Watsonian Behaviorism. Instead, let

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[26] Ibid., p.

[27] Adler, op. cit., pp. 272-279.

us apply Adler's line of reasoning to a couple of examples. Consider the food deprived mental patient who refuses to eat. Should we say that the patient values hunger? What about the soldier who obeys an order even though he is in a state of extreme fear? Should we say that he values the danger more than he values his fear? To attempt to account for complex behavior entirely on the basis of actions is, to the present writer, approaching the realm of absurdity. For example, Adler writes:

> Their verbal as well as their non-verbal actions are their values. It is obviously unjustifiable to give to either the verbal or the non-verbal action the greater weight, to claim that either is more expressive of values or expressive of more real values than the other. What people say is what they want to <u>say</u>; what people do is what they want to <u>do</u>. What people say in Sunday school and what they do during the week may or may not be consistent; but both sets of behavior constitute their values.[28]

But perhaps, it is in Adler's own words that we see the logical inconsistency of this view most clearly, for on the same page as the above quotation he writes:

> About thirty years ago instinct in the explanation of social and cultural behavior was dropped because it was recognized that, since the "instinct" was but an inference from some observed behavior, it could not validly be used to explain it. "Interests," "wishes," and "attitudes," all of them once inexpendable props of psychologizing sociology, like the "instincts" of

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[28] <u>Ibid</u>.

> yore and the "values" of today, were constructed by generalization from observed behavior. As such they could and did serve for the prediction of the behavior they described. They could be used effectively for explanation in the same sense in which the law of gravity explains a case of a falling body, that is, as one case among many similar ones.[29]

It would perhaps be superfluous to recapitulate the difficulties already discussed in relation to the question of "laws," or "explanation" to say nothing of the assertion that concepts such as attitudes involve nothing more than a generalization of observations. Instead, it seems necessary to point out merely, that most workers in the field of sociology would probably be gratified (albeit astonished) to learn that such concepts as attitudes, instincts and values are on the same level of explanation and prediction as the law of gravity. This apparent merging of probabilistic and universalistic forms of explanation not only violates the previously discussed criteria for explanation in the social sciences, but introduces logical inconsistency into Adler's own argument. For the cornerstone of his argument rests on the identification of sociology with the empirical natural sciences. It has already been argued by the present writer that concepts such as attitudes are not only theoretical constructs, but in addition represent idealized and

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[29] Ibid.

probabilistic components of an explanatory scheme.

In Nagel's words: "As the history of science as well as common experience amply testify, correlations between empirical data are rarely perfect, and generalizations based exclusively on such correlations are almost inevitably bound to be statistical."[30] And in Adler's words: "A generalization does not contain anything that was not already present in the cases from which it was drawn, in the principle or category of generalization, and in the method of generalization."[31] The use of the ideal case is not a generalization of what is already in the cases and if by "category of generalization" or "method of generalization," Adler is referring to what Nagel calls patterns of explanation," the concepts under discussion fall into Nagel's probabilistic type. To equate these concepts or elevate them to the same level of explanation as the law of gravity is essentially the same as the equating of statistical generalizations with invariate laws.

The primary purposes for including the above discussion of Adler's conception of values is to illustrate the notion

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[30]Ernest Nagel, The Structure of Science (New York: Harcourt, Brace and World, Inc., 1961), p. 509.

[31]Adler, op. cit., p. 278.

that the most simplified (at least superficially) definition of a concept is not necessarily the most meaningful. Any student of introductory psychology knows that under classical conditioning, the dog will eventually salivate upon the presentation of the secondary stimulus. However, few students at this level are aware of the increasing difficulties of getting the dog into the harness, the room, etc., as such processes as stimulus generalization take place. And so it seems with the concept of values. The concept, like the phenomena which it seeks to explain, is not a simple one. The present writer would contend, therefore, that if one is to criticize the complex, and seemingly shifting manner in which Parsons uses values (i.e., the articulation of different levels, and external and internal systems), the criticism is more accurately aimed at his frequent lack of clarity in writing, rather than at any alleged weakness inherent in any complex explanatory scheme.

Near the beginning of this section on values and value orientations, it was pointed out that Parsons formulates values as rooted in the non-empirical level, the level of meaning to the individual, and the relation of the individual to the society. Kolb, in discussing the non-empirical level

or "moral norms,"[32] suggests that these norms are based on "imputed" meanings, which give rise to and legitimizes such norms. It seems apparent, that this line of thinking, if it is to be empirically tested, must be done by tapping non-observable phenomena. Thurstone refers to this problem in terms of the "subjective metric." The issue is raised at this point to emphasize the previously stated position that social phenomena are not always or necessarily directly observable by currently available empirical techniques. However, Parsons is not the only writer who uses the concept of values in a variety of ways.

According to Morris[33] the term "values" is usually defined in one of three ways. The first usage is that of preference of one object over another. These are referred to as "operative values." The second usage of the term is in terms of the anticipation of the outcome of the behavior. In this case, he refers to "conceived values." Finally, there is the level of what "ought" to be preferred, regardless of what is in fact preferred. These are referred to as "object" values. This breakdown does not seem to be very

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[32]Kolb, op. cit.

[33]Charles Morris, Varieties of Human Value (Chicago: University of Chicago Press, 1956), chapter 1.

different from Parsons. We might equate operative values with Parsons' "motivation of values" and the "conceived values" are similar to the legitimation of social action. The third usage is not so amenable to substitution. While Parsons' ultimate values may be considered in terms of "ought" and "should," their basis is in the religious and philosophical realm, while Morris' object values may for example, be in reference to what one "ought" to do if he wishes to maintain his health. In this case, the imperative aspect is handed down by the physician, not the theologian, or the philosopher. At any rate, there is a consistent thread which runs through all three of the definitions used by Morris. As Catton points out: "Value may refer to the preferred, to what is conceived as preferable, or to the 'actually' preferable."

Actually, most of the sociological uses of the term "values" utilize some notion of preference, choice, or standard. There is at least an implicit similarity, based on this criteria of choice, etc., in most of the definitions. Thus, it seems that one reasonably consistent use of the concept of values, deals with some kind of a choice, according to some standard. In all cases, it seems that the definitions employed are relativistic. The choice is not absolute, or

a function of a single level of operating pressures. Parsons may postulate five (or six) choices of action which the actor may make in accordance with his value orientations. Others tend to place the notion of values in a more discernable hierarchical framework. Catton, for example, when talking about variation of field strength in his "Theory of Value," follows Maslow at one point in describing a hierarchy of needs.[34] The main point here is that values are not always equally strong, or equally important. This notion is similar to the concept of "saliency" as used by Krech and Crutchfield in relation to attitudes. The concept of saliency in this sense "refers to the fact that not all of a man's beliefs stand out with equal prominence in his cognitive field."[35] In short, values, like attitudes are multidimensional rather than unidimensional, Catton makes this point and argues that there are six dimensions to values. Included in this formulation are the distance of the object (spacial, social and temporal), the probability of achieving the goal, whether the goal is perceived as occuring "only

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[34]William R. Catton, Jr., "A Theory of Value," American Sociological Review, 24 (June, 1959), p. 311.

[35]D. Krech and R. S. Crutchfield, Theory and Problems of Social Psychology (New York: McGraw-Hill, 1948), p. 163.

once," or whether there is free selection of the choice as opposed to coercion. On the other hand, the multi-dimensional aspect of values is not necessarily a function solely of the cognitive mapping of an individual at a particular point in time. If values are considered as having a hierarchical distribution, some values will be dominant over others at all times. Whether we call these fundamental, ultimate or something else, the implication is still the same. However, we are still operating with inferential data or theoretical constructs as far as the measurement of these values is concerned.[36] Before dealing with the problem of the measurement of values, a brief consideration of the definition of Clyde Kluckhohn, seems in order.

In the words of Clyde Kluckhohn, "A value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action."[37] Kluckhohn contends that any given value becomes a part of the carrier in the same sense that culture

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[36]Clyde Kluckhohn, "Values and Value-Orientations in the Theory of Action: An Exploration in Definition and Classification," in Parsons and Shills, op. cit., p. 395.

[37]Ibid.

is "built into" its carriers. At the same time he writes, ". . . the social science abstraction 'value' is not abstracted from neurological properties but from verbal and nonverbal behavioral events. These internalized symbolic systems do have a special status as regards methodology, requiring in part, at least at present, a *verstehen* rather than an *erklären* type of interpretation."[38]

Adler bases much of his objection to this usage of the term value on the apparent subjective nature of such values and the need for "verstehen" or "empathy" in interpretation, rather than natural science observation. The issue here, seems to hang on the previously discussed question of the level of analysis. If values are equated with action, then the concept becomes useless as Adler suggests. However, this reasoning is based on the assumption that: "Even a superficial survey of the evolution of some sciences of culture indicates that their methodological progress is correlated with their growing emphasis on the study of human actions rather than on the study of cultural values abstracted from the actions in which they occurred."[39] The immediate

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[38] *Ibid.*, p. 396.

[39] Florian Znaniecki, *Cultural Science: Their Origin and Development* (Urbana: University of Illinois Press, 1952), cited by Adler, *op. cit.*, p. 279.

question which arises is whether or not the abstract analytical analysis of Parsons or Kluckhohn does, in fact, ignore the action dimension of values. Kluckhohn writes: "Acts, as has been said, are always compromises among motives, means, situations, and values."[40] While the process of inference is important in the determining of values, Kluckhohn discusses such problems as standard or formalized values as well as non-verbalized or "real" values. In terms of the analysis of values, Kluckhohn suggests the use of questionnaires, projective techniques, simple experiments as well as the observation of behavior in choice situations and under various conditions such as crises. It seems, therefore, that this approach does not ignore the action context in which the values are deduced.

Toward a Working Definition

In the preceeding discussion, certain notions have continued to be evident, even though the specific context in which they were used has varied. Whether the discussion is concerned with beliefs, opinions, attitudes or values, it is clear that at least two dimensions are involved. These are variously referred to as the internal and the

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[40]Kluckhohn, op. cit., p. 406.

external, the subjective and the objective, or the covert and the overt dimensions. The point has been made quite frequently, that all of these concepts are theoretical constructs which are defined on the basis of the observation of verbal and non-verbal behavior. Thus we arrive at a two dimensional conception of the basic concepts. One dimension has to do with the internal state of the organism. The second dimension is external to the organism and is embedded in the super-structure of the social system of a given society. Both dimensions are abstractions based on the inference of values, attitudes, systems, etc., from verbal and non-verbal behavior. All of these concepts seem to involve some notion of choice or preferential behavior. At the structural level, the preferential aspect may be inferred from the formal standards of value, as determined by expressed beliefs, attitudes, opinions and values. At the internal or cognitive level, the preference of an individual is inferred from his verbal and non-verbal behavior under specific conditions. The distinction rests on the emphasis on both verbal and non-verbal behavior at the cognitive level, whereas greater emphasis is placed on the verbal level when operating at the structural level.

This distinction is more important than it may appear at first glance. The "preferred" values of a given social system may continue to maintain a firm position in the super-structure even though these values bear little relationship to behavior. The inability of small businesses to compete with the growing giant corporations, chain stores, etc., has not removed the idea of "free-enterprise" from the formalized standards of value in the United States. Similarly, the idea of "individualism" continues to be espoused by both liberal and conservative politicians, even though numerous factors such as jobs in public office, insurance rates, bank loans, rental of apartments, etc., are all contingent upon continual conformity to rules or predictability, rather than individualism and freedom of choice. In short, the operating codes of the social system may be quite divergent from the formal codes without destroying the values exemplified in the formal codes.

On the other hand, the situation at the internal level of the individual is not the same. If an individual continually acts or behaves in a manner which is inconsistent with his expressed values, he will rapidly be dubbed as a liar or a hypocrite. Eventually, the same thing may occur at the social system level, but it is a much slower process.

At the individual level, one instance of inconsistency of expressed values and behavior, is often enough to bring about the rejection. It should be noted that in this case, the individual's actual behavior is taken as the true indication of his internal cognitive state and thus, it is the inconsistent expressed values which are rejected. This is exactly the opposite of the system level where the formally stated values remain as the true indicant even though the operating behavior is inconsistent with the expressed value system.

In view of the confusion in terminology over concepts such as attitudes, beliefs, opinions and values, no attempt shall be made to specify precise definitions which apply to each of these various terms. Instead, a single definition shall be offered which can be modified to encompass all of the terms. This is a two part definition which places one dimension at the cultural level and the other dimension at the cognitive level. It is felt that different techniques may be required to measure these dimensions, but they are not completely unrelated. If we are studying a society with strong religious values, we should be able to observe these values in the formal institutions of the society, and generally in the expressed or public values

of the individuals of that society. Where the cultural values are less intense and greater variation in beliefs is permitted, it seems reasonable to assume that the degree of correspondence between "public and private" values is relatively high. As the cultural values become more intense with greater pressure toward agreement, it is likely that the public or expressed values of an individual are a less stable indication of what he really believes.

From the measurement point of view, the present study deals only with the cognitive level. For the most part, the items of the instrument concern areas of belief or opinion, although a few of the items may be viewed as indicants of past behavior.[41] The data of the present study does not permit us to validate the instrument to a behavioral criterion. The study is limited, therefore, to the comparison of the expressed responses of subjects in three different samples. On the other hand, while the cultural dimension is not subjected to measurement directly, it must be taken into account to justify the placing of the different samples at different points along a hypothetical continuum of industrialization. Let us now consider the problem of the cross-cultural measurement of values.

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[41]The instrument will be discussed in greater detail in the following chapter.

CHAPTER IV

METHOD

Purpose of this Chapter

This chapter examines the instrument, samples and methodology of the present study. The examination of the instrument goes beyond a simple description of items and grapples with the underlying assumption that samples approaching a high degree of industrialization will score at one end of the sub-scales, while samples with a low degree of industrialization will score at the opposite end of the scales. A series of predictions are set forth in this chapter. However, it should be kept in mind that these predictions are not intended as substantive hypotheses. Instead, the predictions are used as a hypothetical framework for examining the assumptions of the instrument and the procedure.

The Instrument

The MSU Work Beliefs Check-List (WBCL) is a 44 item instrument developed by A. O. Haller.[1] According to the

[1]The instrument, instructions for administration, and the scoring key are included in Appendix C.

instructions: "This check-list is made up of statements people often say they believe. You will probably find that you agree with some and disagree with others. If you agree with a statement, circle Agree; if you disagree with a statement, circle Disagree. Do not omit any." It seems apparent that the instrument is designed to tap what has been defined in this thesis as the internal cognitive dimension of values.[2]

The 44 items of the check-list are analytically clustered into six sub-scales. Since a certain amount of familiarity with the instrument is necessary to comprehend the results of the data analysis, each of the sub-scales shall be briefly examined at this time.

Sub-Scale 1: Belief that work has intrinsic versus instrumental value

1.1	The only purpose of working is to make money.	Agree	Disagree
1.2	I believe a man needs to work in order to feel that he has a real place in the world.	Agree	Disagree
1.3	I feel sorry for people whose jobs require that they take orders from others.	Agree	Disagree
1.4	Every man should have a job that gives him a steady income.	Agree	Disagree

[2]It will be recalled that beliefs are subsumed under the definition of values developed in the preceding chapter.

1.5	The happiest men are those who work only when they need money.	Agree	Disagree
1.6	Doing a good job day in and day out is one of the most satisfying experiences a man can have.	Agree	Disagree
1.7	A regular job is good for one.	Agree	Disagree
1.8	I feel sorry for rich people who never learn how good it is to have a steady job.	Agree	Disagree

In this scale, as in those that follow, the underlined responses are scored one point each. The responses which are not underlined are scored zero points each. Consequently, the mean score for any single item falls between zero and one. Moreover, since the only possible scores are zero or one, the mean score for any given item is equivalent to the proportion of boys receiving a score of one. The sub-scale total score is determined by adding the individual item scores. Therefore, this scale has a possible range of zero to eight. The higher scores are considered as indicative of the intrinsic value of work. From a close scrutiny of the items, it appears obvious that the basic assumption underlying this scale is that persons with a belief that work has intrinsic value will agree with items espousing the value of work and disagree with items which imply that work is simply a means to a financial end.

In the opinion of the present writer, all of the items do not have equal face validity. Thus, the immediate question which comes to mind is whether we should expect a unidimensional scale. This question can be answered better after the results have been presented so it shall be postponed until chapter six. It should be noted, also, that assumptions about the relationship of responses to the level of industrialization of the sample is reserved for a later section of the present chapter.

Sub-Scale 2: Positive versus negative evaluation of structured time

2.1	I don't like people who are always right on time for every appointment they have.	Agree	Disagree
2.2	I feel sorry for people who have to do the same thing every day at the same time.	Agree	Disagree
2.3	I don't like to have to make appointments.	Agree	Disagree
2.4	I believe that promptness is a virtue.	Agree	Disagree
2.5	I usually schedule my activities.	Agree	Disagree
2.6	I'd rather let things happen in their own way rather than scheduling them by a clock.	Agree	Disagree
2.7	It makes me feel bad to be late for an appointment.	Agree	Disagree

2.8 I expect people who have appointments with me to be right on time. Agree Disagree

In this scale, the items deal with promptness, appointments, and the scheduling of time. The high scores indicate a positive evaluation of structured time. In the case of sub-scale one, there is an assumption that there is a linkage between the intrinsic evaluation of work and a high degree of industrialization. A similar assumption exists for this sub-scale in relation to industrialization and the positive evaluation of structured time.

Sub-Scale 3: Positive versus negative evaluation of physical mobility

3.1 I would be unhappy living away from my relatives. Agree Disagree

3.2 I hope to move away from here within the next few years. Agree Disagree

3.3 People who can't leave their hometowns are hard for me to understand. Agree Disagree

3.4 A man's first loyalty should be to his home community. Agree Disagree

3.5 When a boy becomes a man, he should leave home. Agree Disagree

3.6 I like to see new things and meet new people. Agree Disagree

On this scale, the high end of the range indicates a positive evaluation of physical mobility. An underlying

assumption here is that more industrialized samples will have a more positive evaluation of physical mobility. A close look at the items of this scale will show that five of the six items deal with family and community ties rather than any pure notion of physical mobility. This point will be discussed in greater detail in the next two chapters so the reader should keep it in mind for future reference.

Sub-Scale 4: Positive versus negative evaluation of change

4.1	I like to try new things.	Agree	Disagree
4.2	On the whole, the old ways of doing things are the best.	Agree	Disagree
4.3	Life would be boring without new experiences.	Agree	Disagree
4.4	I like people who are willing to change.	Agree	Disagree
4.5	On the whole, most changes make things worse.	Agree	Disagree
4.6	The happiest people are those who do things the way their parents did.	Agree	Disagree
4.7	New things are usually better than old things.	Agree	Disagree

This scale has a positive range of zero to seven. Once again, the higher scores indicate a more positive evaluation of change, and it is assumed that the more

industrialized samples will have a positive evaluation of change.

Sub-Scale 5: Belief in internal versus external determination of events

5.1	I believe that a person can get anything he wants if he's willing to work for it.	Agree	Disagree
5.2	Man should not work too hard, for his fortune is in the hands of God.	Agree	Disagree
5.3	A man shouldn't work too hard because it won't do him any good unless luck is with him.	Agree	Disagree
5.4	With a little luck I believe I can do almost anything I really want to do.	Agree	Disagree
5.5	A person shouldn't hope for much in this life.	Agree	Disagree
5.6	If a man can't better himself it's his own fault.	Agree	Disagree
5.7	Practically everything I try to do turns out well for me.	Agree	Disagree
5.8	I usually fail when I try something important.	Agree	Disagree

High scores on this scale are indicative of belief in the internal determination of events. The underlying assumption of this scale is that the more industrialized samples will tend to believe in the internal determination of events.

Sub-Scale 6: Positive versus negative evaluation of deferred gratification

6.1	I would rather work than go to school.	Agree	Disagree
6.2	Money is made to spend, not to save.	Agree	Disagree
6.3	I think there's something wrong with people who go to school for years when they could be out earning a living.	Agree	Disagree
6.4	One gains more in the long run if he studies than if he gets a job.	Agree	Disagree
6.5	The more school a person gets the better off he is.	Agree	Disagree
6.6	Generally speaking, things one works hard for are the best.	Agree	Disagree
6.7	When I get a little extra money I usually spend it.	Agree	Disagree

Positive evaluation of deferred gratification is indicated by high scores on this scale. More industrialized samples are assumed to place a high evaluation on deferred gratification. It should be carefully noted that the items of this scale deal with questions of studying, going to school or spending versus saving money. There are no items which deal directly with how the money is spent or what kind of job is involved. The scale is defined therefore, in terms of broad values generally associated with the

middle class in the United States. Essentially, these values are extended education, thrift and hard work. We shall return to this point in chapter six.

Each of the six sub-scales is defined in polar terms such as positive versus negative, internal versus external, or intrinsic versus instrumental. As pointed out above, there is an underlying assumption that highly industrialized samples will fall at one end of the polar continuum, and non-industrialized samples will fall at the opposite end. It is to this assumption that we now direct our attention.

The Typological Basis of the Work Beliefs Check List

In an earlier chapter, it was noted that in Nagel's opinion, the only social science which attempts to use the logical device of stating the ideal case is economics. The present writer is in complete disagreement with this view. As a matter of fact, the literature of sociology and anthropology suggests a long history of the use of the ideal type. It is not the purpose of this thesis to provide a detailed coverage of the history of the ideal type. It will suffice to point out that the basic concept of the ideal type or some modification of it, has been prominant in the writings of Toennies, Durkheim, Weber, Sorokin,

Becker and Parsons, to mention a few.

While the various typologies are not identical, there does appear to be certain common features which emerge from some of them. In general, one end of the continuum is viewed as rural, non-industrial with a strong emphasis on kinship, traditional and sacred values. At the other end of the continuum, there is the urban, industrial type with weakened kinship ties beyond the nuclear family, and an emphasis on changing and secular values.

It is this kind of milieu which forms the basis of the Work Beliefs Check List. Out of the literature on success, achievement, stratification and even mental illness, has grown a certain image of the "necessary" value orientations for success in complex industrial societies. This image generally requires a positive evaluation of structured time, physical mobility, change and deferred gratification. In addition, there is usually an emphasis on individualism and the internal determination of events. It should be noted that individualism and the internal determination of events is not necessarily viewed as part of the same value dimension. Florence Klukhohn, for example, has both a man-nature orientation and a relational orientation (which deals with man's relationship to other men).[3]

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[3]Florence R. Kluckhohn, Fred L. Strodtbeck, Variations in Value Orientations (Evanston, Illinois: Row Peterson Co., 1961).

In any case, there is usually an expectation that the more industrial societies will be close to the above image in value orientations. Consequently, it is not too difficult to understand the assumptions concerning the relationship between level of industrialization and value orientations for sub-scales two through six. Whether the specific items of any given scale are unidimensional or in accord with the orientations designated by a given scale is another question. This question shall be examined in the next chapter where the results of the data analysis are presented.

The assumption that the more industrialized societies will have an intrinsic rather than an instrumental orientation to work seems less firmly grounded. Many writers have contended that with industrialization there is increased division of labor and specialization. These writers would argue that an intrinsic valuation of work is more likely among the older skilled craftsmen who could derive job satisfaction in a complex article, than among the button pushers of the large factory. Even if we shift to the middle-class, the same question arises. Some contemporary writers such as Riesman[4] or Whyte[5] paint a picture of the

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[4]David Riesman, Nathan Glazer, and Reuel Denney, The Lonely Crowd (Garden City, N.Y.: Doubleday & Co., Inc., 1956).

[5]William H. Whyte, Jr., The Organization Man (New York: Simon and Schuster, 1956).

middle class as being more concerned with security and the opinions of others than with individual innovation. If the intent of this value orientation is that all work, regardless of what it is, has intrinsic versus instrumental value, it seems difficult to understand why garbage collectors or shoe shine boys are consistently given low occupational evaluation scores in inudstrialized societies. If the intent is to imply that "doing the kind of work one enjoys" has intrinsic value, then the individual's personal criteria are important. The items of this sub-scale are not geared to provide this kind of information. It is not the intention to argue at this point whether one group of writers is correct and another incorrect, but simply to alert the reader to the present contention that the assumption of a stronger belief in industrial societies, that work has intrinsic value, does not appear to be as firmly anchored to the literature as the other scales.

The typological tradition in social science, however imperfect, forms the basis of the underlying assumptions of the Work Beliefs Check List. Perfection, however, is never an actual feature of social research. As stated earlier, neither theory nor method provides us with a map but only guides. In the case of the polar-type used in the

check list, a general statement by Loomis and McKinney best summarizes the purpose.

> The polar-type formulations, implicitly at first, but in recent years with increasing explicitness, have firmly established the point that the continuum is a vital notion in the comparative analysis of social phenomena. The types establish the "outer limits" or standards by means of which the process of change or intermediate structural forms can be comprehended from the perspective of the continuum.[6]

Within this context, let us consider the samples of the present study, and the hypothetical predictions based on the assumptions of the instrument.

The Samples

The subjects in all three samples of the present study were male high school students. The ages included in the respective samples were not exactly comparable. One sample included all seventeen-year-old boys in school in Lenawee County, Michigan, during the spring of 1957. The original size of this sample was 441 but the final size of the sample used in the analysis was 439.[7] The Turrialba

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[6]Charles P. Loomis and John C. McKinney, "The Application of Gemeinshaft and Gesellschaft As Related to Other Typologies," in F. Tonnies, Community and Society (translated and edited by Charles P. Loomis, East Lansing: Michigan State University Press, 1957), p. 12.

[7]A few cases were dropped in both the Lenawee and the Turrialba samples. However, since this was due to the method for handling "no response" answers, it shall be explained in greater detail under the section on method of analysis.

sample consisted of all boys in high school in Turrialba in 1959. The age range was thereby expanded to include those between 14 and 18. The Lansing sample consisted of all Mexican-American boys between the ages of 15 and 18 living in the metropolitan area of Lansing, Michigan, in 1958 and who were attending high school. Thus, it is immediately obvious that the three samples were not matched samples on the variable of age. This was in part a practical necessity, since a strict chronological matching would have reduced the size of the Lansing and Turrialba samples to a point where any attempted analyses or comparisons would have been futile. In addition, it was felt that any attempt to achieve strict matching of samples on a chronological basis would be of doubtful utility when the norms governing education, and the type of education available is not directly comparable in the respective samples.

The predictions of the present study require the positioning of the samples at different points along a hypothetical continuum of industrialization. The Lenawee sample is viewed as the most highly industrialized and the Turrialba sample is viewed as the least industrialized. The Lansing sample consists of Mexican-Americans. It is assumed that this sample includes persons from both ends

of the continuum and, therefore, the sample as a whole is placed in a transitional position between the Lenawee and the Turrialba samples. If we think in terms of the urban rural breakdown, it is apparent that the samples do not represent "pure" types and, therefore, the assignment of a particular sample to a particular position can be questioned. However, the samples are assigned on the basis of the degree of industrialization which the system as a whole has achieved. Therefore, it is felt that even though the Lenawee sample contains both urban and rural youth, the proximity to such urban-industrial areas as Detroit, Michigan, and Toledo, Ohio, together with a paved highway system and the existence of a flourishing light industry in 1957, tends to push this sample toward the industrial end of the continuum. In addition, the high development of the mass media in the United States, tends to reduce isolation and increase the probability of the inculcation of industrial value orientations.

While the Turrialba sample does not constitute a "pure" example of the non-industrialized end of the continuum, it does approach this end, since it is primarily an agricultural area.

Among the Mexican-Americans, we find both acculturated and unacculturated persons. Some of the boys were born in

Michigan while others were born in Texas. Only three boys were born in Mexico; however, language and cultural contact with Mexico is assured through parents.[8] Interactional ties with relatives and friends in Mexico are frequently maintained and in some cases return visits to Mexico are made. The Lansing sample is, therefore, expected to contain individuals with a range of exposure to the values of industrial society, from high to low exposure. It is for these reasons that the Lansing sample was placed between the Lenawee and the Turrialba samples along the hypothetical continuum of industrialization.

The size of the samples used in the analysis was 439, 112, and 87 for Lenawee, Turrialba, and Lansing respectively. The subjects were given the choice of agreeing or disagreeing with a statement and were instructed not to omit any answers. Nevertheless, some of the items were left blank. On the basis of the distribution of the blank or "no answer" responses, it was decided that only those persons with a total of 4 or less than 4 such responses out of a total of 44 items would be retained in the samples. This resulted

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[8]See Arturo De Hoyos, Occupational and Educational Levels of Aspiration of Mexican-American Youth (unpublished Ph.D. dissertation, Michigan State University, 1961), esp. pp. 64 and 87.

in changing the sample size of Lenawee from 441 to 439 and changing the Turrialba sample size from 118 to 112. The Lansing sample was not affected by this criteria.[9]

In addition, to the three samples discussed above, the data were analyzed in terms of a fourth sample. This consisted of the Lenawee, Turrialba and the Lansing samples combined. The size of this pooled sample was 638. Although this sample is not discussed in the text of the thesis, the results are included in Appendices A and B.

Predictions and Method of Analysis

The predictions of this study are hypothetical rather than substantive. In other words, while substantive data are used, it is in the context of testing a series of hypothetical conditions and predictions which should occur if the sub-scales of the instrument are unidimensional and if the assumptions about the industrial continuum are valid. The predictions are thus, intended for methodological purposes rather than any substantive findings. Most of the data are analyzed by primary axes factor analysis with

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[9]It should be noted, however, that the 87 cases in the Lansing sample represent a reduction of four cases from the original 91. This was done because the four cases were no longer in school. Unfortunately, five such cases remained in the sample.

varimax rotations. Before considering the method of analysis in any greater detail, the hypothetical predictions shall be presented.

Hypothetical Model and Predictions

Industrial - Gesellschaft - Lenawee

The Belief Value Areas scores for this sample are expected to fall at the high end of the score range. Thus, the predictions are for high means, low variances and low correlation coefficients, when the Belief Value Areas scores are compared with each other.

Intermediate - Turrialba

The predictions here are for middle range mean scores, low variance scores and low correlation coefficients.

Gemeinschaft to Gesellschaft - Lansing

The predictions are for middle range mean scores, high variance and high correlation coefficients.

Gemeinschaft

The predictions here are for low means, low variance and low correlation coefficients.

Specific Conditions, Predictions and Rationale

If the items within each sub-scale are tapping a unidimensional continuum, there should be positive correlation between items within each sub-scale and a one factor solution accounting for much of the variance. However, the correlations and the factor loadings should not be the same for all three samples, but should differ according to where the sample falls along the hypothetical continuum of industrialization.

Condition A: Inter-item relationships within each sub-scale

Prediction A_1: There will be a one factor solution for each sub-scale within each sample.

Prediction A_2: The Lenawee sample will have high means, low variances and low correlation coefficients.

Prediction A_3: The Turrialba sample will have middle range means, low variance and low correlati on coefficients.

Prediction A_4: The Lansing sample will have middle range mean scores, high variances and high correlation coefficients.

Condition B: All items irrespective of sub-scales within samples

Prediction B: There will be a seven factor solution with one

large factor accounting for much of the variance and six small factors corresponding to the six sub-scales.

Condition C: Sub-Scale total scores within samples

Prediction C: There will be a one factor solution for all three samples on the sub-scale total scores within samples.

General Propositions and Alternative Conclusions

The above predictions are expected to occur if: the following three hypothetical statements are true:

1. There exists a set of value orientations which differentiate among those in the industrial versus those in the non-industrial market.
2. The Work Beliefs Check List is an adequate measure of these orientations.
3. The samples under investigation are distributed according to these value orientations.

In addition to the gross predictions of one factor or seven factor solutions, the factor analysis affords us an opportunity to examine the internal structure of the instrument. Thus, an effort will be made to interpret the factors as well as to ascertain whether they are unidimensional. This will be done in the light of the earlier discussions of

concept formation and values. This data together with the means and variances will enable us to decide whether or not the scales are measuring what they are supposed to measure and whether the respective samples actually fall at the predicted positions along the hypothetical continuum of industrialization. If the expected relationships are not obtained, one or more of the three "if" propositions may be rejected within the following framework.

1. If the instrument fulfills the criteria of unidimensionality of scales but the expected relationships are not obtained, then either the assumption of the existence of a continuum of value orientations congruent with industrial society will be rejected, or it will be concluded that the samples under investigation are not distributed along such a continuum.
2. If the instrument does not fulfill the criteria of unidimensionality of sub-scales, it will be concluded that some or all of the sub-scales are invalid.
3. If the instrument fulfills the criteria and the results are in accordance with expectation, it will be concluded that the initial "if" propositions are valid.

Techniques for Data Analysis

It has already been pointed out that the data was analyzed in terms of means, variances, correlations and factor analyses. All of the analyses were performed by the computer MISTIC. All correlations were product moment correlations, and the factor analyses were principle axes with varimax rotations. The communality estimation was based on Burt's scheme for modified highest. For this purpose, MISTIC library routine M23-M (which either places the highest entry of each column of a correlation matrix in the diagonal, or modifies this entry and places it in the diagonal) was used.

Most of the results are discussed in terms of the principle axes factor matrices. This immediately opens the controversial door of whether factors should or should not be rotated. The major justification for the use of unrotated factors lies in the nature of the predictions. It will be recalled from the prior section that most of the predictions involving the factor matrices are stated in terms of one factor solutions. With the principle axes method, "each factor extracts the maximum amount of variance (i.e., the sum of squares of factor loadings is maximized on each factor) and gives the smallest possible residuals."[10]

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[10]Benjamine Fruchter, Introduction to Factor Analysis (New York: D. Van Nostrand Co., Inc., 1954), p. 99.

Consequently, it seemed more likely that a large common factor, if it existed, would show up in the unrotated factors. This logic seems particularly valid when varimax rather than quartimax rotations are used. As Kaiser points out, the quartimax criterion aims to simplify the row or test of the factor matrix rather than the column. Consequently, a general factor will often result from the quartimax rotation, particularly when there is a large general factor in the unrotated matrix. Since the varimax rotation maximizes inequalities in the column, the probability of a large common factor is diminished.[11] This suggests that it may have been more fruitful to use quartimax rotations. However, it must be kept in mind that we were interested not only in whether large common factors exist, but also in which items were defining the factor in each of the six sub-scales and in the complete instrument when all of the scales are included. According to Wrigley, Saunders, and Neuhaus: "To summarize these comparisons, present evidence

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[11]This discussion is based mainly on Henry F. Kaiser, "The Varimax Criterion for Analytic Rotation in Factor Analysis," Psychometrika, 23 September, 1958, pp. 187-200. See also Charles Wrigley, David R. Saunders and Jack O. Neuhaus, "Application of the Quartimax Method of Rotation to Thurstone's Primary Mental Abilities Study," Psychometrika, 23, June, 1958, pp. 151-70. And Harry H. Harmon, Modern Factor Analysis (Chicago: The University of Chicago Press, 1960), pp. 301-08.

suggests the quartimax results are the more parsimonious and may be the more stable when the number of factors for rotation is increased, and that the varimax results are more stable when the number of tests in the battery is increased. . . ."[12] Since there are two schools of thought as to whether factors should or should not be rotated, it seemed reasonable to use the principle axes loadings for the predictions about the number of factors which appeared in a solution, and to supplement this with the varimax rotations when trying to ascertain the factorial structure of the instrument, in terms of specific items. Some unanticipated problems occurred in relation to the method of ranking the unrotated factors prior to their rotation by MISTIC. These problems shall be discussed further in the final chapter under limitations of the study. For the present, it is sufficient to say that the end result was a heavier reliance on the principle-axes loadings than was originally anticipated.

Finally, a few words should be said about the criterion for how many factors to rotate. Guilford suggests that: "When any factor has one or more loadings of plus or minus .20 or higher, there is enough variance present to aid

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[12] Wrigley, Saunders and Neuhaus, op. cit., p. 168.

in the rotations."[13] Where possible, an effort was made to adhere to this criterion. However, as Wrigley points out: "When factors are rotated, increasing their number causes the larger factors to split into smaller . . ."[14] Consequently, not all factors which meet Guilford's suggested criteria, were rotated. The reason for this will be clearer when the limitations of the study are discussed in chapter six.

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[13] J. P. Guilford, Psychometric Methods (New York: McGraw-Hill Book Co., Inc., 1954), p. 500.

[14] Charles Wrigley, "The Distinction Between Common and Specific Variance in Factor Theory," The British Journal of Statistical Psychology, 10, November, 1957, p. 86.

CHAPTER V

RESULTS

Purpose of this Chapter

In this chapter the results of the data analysis are presented and discussed in relation to the theoretical predictions. While there is some effort to interpret the results in this chapter, a more general attempt to deal with the findings within the context of the present thesis is reserved for chapter six.

For purposes of this analysis, all items with loadings of .20 or greater were retained as significant contributions to the factor. As previously pointed out, the predictions will be discussed in terms of the principal axes loadings, but the varimax rotations will also be considered where such consideration will aid in the clarification of the factorial structure.

Condition A: Inter Item relationships within each sub-scale.

Prediction A_1: There will be a one factor solution for each Sub-scale within each sample.

Prediction A_2: The Lenawee sample will have high means, low variances and low correlation coefficients.

Prediction A_3: The Turrialba sample will have middle range means, low variances and low correlation coefficients.

Prediction A_4: The Lansing sample will have middle range mean scores, high variances and high correlation coefficients.

Sub-Scale 1: Belief that work has intense versus instrumental value

From Table 1, it can be seen that the first factor accounts for 50 percent of the total variance in the Lenawee sample. This factor is defined by items two through seven. Items one and eight do not have significant loadings on this factor. The highest loadings are on items two, four, five and seven. In the varimax rotation, significant loadings for the first factor are retained on items two, four and seven. While the rotation provides us with a three factor solution, it should be noted that the only change in the items with significant loadings is the addition of item one to the second factor. Item eight still does not have a significant loading on any of the factors.

The Turrialba sample, as indicated in Table 2, has a two factor solution. The first factor is defined by items one, five and seven; while the second factor is defined by items three, four, five and eight. However, the second factor is a bi-polar factor.

Table 1. Factor matrix for WBCL Sub-Scale 1, Lenawee sample (N-439).

Items (Sub-Scale 1)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
1.1	12	-34	-08	-19	32	00
1.2	54	-10	07	22	41	30
1.3	25	-16	17	-02	21	27
1.4	37	27	-16	47	16	-01
1.5	45	-22	-20	13	53	03
1.6	27	01	25	11	08	34
1.7	38	32	-01	47	08	13
1.8	12	06	13	09	00	17
% Total Variance	50	20	10	30	33	17

Table 2. Factor matrix for WBCL Sub-Scale 1 Turrialba sample (N-112).*

Items (Sub-Scale 1)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
1.1	62	08	-13	64	-05	-06
1.2	15	02	-42	20	-01	-40
1.3	-16	43	-02	-06	46	-03
1.4	-08	-21	09	-13	-19	07
1.5	28	32	17	32	25	21
1.6	00	00	00	00	00	00
1.7	39	-03	25	34	11	29
1.8	16	-50	-00	05	-51	-00
% Total Variance	31	27	31	31	27	13

*Decimal points omitted.

In accordance with predictions, the Lansing sample, as indicated in Table 3, provides a fairly clear cut one factor solution. Also, in accordance with prediction A_2 and A_3, the factor loadings for the Lansing sample are higher than for the Lenawee or the Turrialba samples. The first factor for the Lansing sample accounts for 55 percent of the total variance and is defined by items two, four, five six, seven and eight. The same factorial structure is retained in the rotations and in both the principal axes and the varimax rotation, items four and seven have very high loadings.

Table 3. Factor matrix for WBCL Sub-Scale 1, Lansing sample (N-87).*

Items (Sub-Scale 1)	Principal Axes Loadings				Varimax Loadings			
	I	II	III	IV	I	II	III	IV
1.1	-05	34	30	16	-05	47	07	07
1.2	49	-31	-16	20	32	-35	34	25
1.3	04	-22	15	22	-04	-04	34	-03
1.4	87	-14	-01	-14	83	-21	18	17
1.5	52	39	-08	28	36	22	07	57
1.6	43	-20	33	19	35	06	49	00
1.7	78	17	16	-31	86	12	-03	07
1.8	33	13	-38	12	20	-17	-10	45
% Total Variance	55	13	11	9	47	12	13	16

*Decimal points omitted.

Thus, is appears that the prediction of a one factor solution is confiremd in the Lenawee and the Lansing samples but not in the Turrialba sample where a two factor solution is obtained. Only items five and seven contributed significantly to the first factor in all three samples. However, for the Lenawee and the Lansing samples, the first factor was determined, in part, by the same five items (two, four, five, six and seven).

For sub-scale 1, it seems that items one, three and eight have the least transcultural relevance. A close look at the items of this scale gives us a possible clue to the reasons. This scale attempts to differentiate between intrinsic and instrumental evaluations of work. However, both items three and eight appear to deal with two dimensions. Item three states: "I feel sorry for people whose jobs require that they take orders from others." Disagreement with this item is scored as intrinsic evaluation of work. However, the item deals with orientation to authority, rather than orientation to work. To illustrate this distinction, let us consider the following example.

In setting up classifications for promotions, the United States Air Force categorizes non-commissioned officers as either supervisors or technicians. The distinction is

written up in terms which acknowledge the fact that some individuals may be highly competent workers, but do not wish to supervise others. In short, it seems difficult to equate the willingness to take orders with the intrinsic evaluation of work. Examples from art, literature and science seem to indicate that the opposite is often true.

In a similar manner, item eight seems to be a two dimensional item. It seems reasonable to assume that a person may place a positive evaluation on having a steady job, without feeling sorry for rich people. Since the item states: "I feel sorry for rich people who never learn how good it is to have a steady job.", the implication seems to be in line with the stereotype of the "idle rich." One is reminded here of Weber's treatment of the Protestant ethic. From this point of view, the accumulation of wealth and the maintenance of a steady job do not appear as diametrically opposed ends.

Item one, which fails to contribute to a one factor solution in all three samples, states: "The only purpose of working is to make money." The first temptation here is to attribute the failure of this item to the "all or none" wording of the item. Most of the significant items are worded in terms of one among several alternatives. However,

item five is also worded in a way similar to item one. The meaning of the two items may still be quite different, for the respective samples. The first item makes a clear distinction between intrinsic and instrumental evaluation of work, implying that work is highly undesirable for itself. The fifth item implies a similar distinction, but the negative implication of work seems much less clearly defined. The statement that the only purpose of working is to make money could be interpreted as the accumulation of excessive wealth. On the other hand, the statement that the happiest men are those who work only when they need money could be interpreted in terms of being satisfied with the fulfillment of the minimum needs, rather than the accumulation of money as a value in its own right.

It must be noted that we have been dealing with the correlation of items to a common factor and not with how the respective samples responded in terms of the hypothetical continuum of industrialization. The means and variances for all three samples on sub-scale 1 are presented in Table 4. It appears that the high mean scores and the low variance scores for the Lenawee sample is consistent with the predictions for that sample. The mean and variance scores for the Turrialba and Lansing samples are less clear cut.

Table 4. Means and variances for all samples for subscale 1.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
1.1	74	19	59	24	56	25
1.2	90	09	97	03	84	14
1.3	80	16	49	25	72	20
1.4	94	06	96	04	97	03
1.5	03	06	88	10	83	14
1.6	86	12	100	00	79	16
1.7	93	07	83	14	93	06
1.8	49	25	50	25	55	25

Middle range mean scores were predicted for both of these samples but high variance scores were predicted for Lansing and low variance for Turrialba. The mean scores for both the Turrialba and the Lansing sample appear to have more of a tendency than the Lenawee sample to approach the midpoint of .50, but their actual range extends upward to 1.00. While this extended range is in accord with expectations for the Lansing sample, it is not consistent with predictions about the homogeneous nature of the Turrialba sample. Moreover, variance scores are not consistently high for the Lansing sample, or consistently low for the Turrialba sample. We might account for this in the Lansing sample by the expected cultural variation in this group.

It seems, therefore, that only the Lenawee sample appears to have scores consistent with the predictions of

falling at the high end of the continuum. The scores indicate that for some of the items, the Turrialba sample tends to fall as close or closer to the industrial end of the continuum than the Lenawee sample. On other items this is not the case. The implication of this is that all of the items do not represent a single factor for the Turrialba boys. This conclusion seems consistent with the failure to obtain a one factor solution in the Turrialba sample.

Sub-Scale 2: Positive versus Negative Evaluation of Structured Time

The principal axes loadings in Table 5 indicate that one factor accounts for 52 percent of the matrix variance in the Lenawee sample. This factor is defined by all of the items of sub-scale 2, except items two and six. Actually, item two has a loading of .19 or just below the .20 level used in this analysis. In other words, only item six approaches zero and may be considered as not contributing to this factor. The highest loadings are on items one, three, five, seven and eight.

In the Turrialba sample, the first factor accounts for 38 percent of the matrix variance. As indicated in Table 6, this factor is defined by items one, two, three, six and seven. Six, however, is a negative loading. The highest

Table 5. Factor matrix for WBCL Sub-Scale 2, Lenawee sample (N-439).*

Items (Sub-Scale 2)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
2.1	34	-24	-10	09	31	28
2.2	19	10	02	21	02	05
2.3	38	-09	-34	20	47	08
2.4	24	-22	26	02	40	13
2.5	50	37	-00	62	06	02
2.6	06	33	06	66	07	13
2.7	36	-22	24	14	02	47
2.8	42	-35	23	10	11	58
% Total Variance	52	22	13	39	20	28

*Decimal points omitted.

Table 6. Factor matrix for WBCL Sub-Scale 2, Turrialba sample (N-112).*

Item (Sub-Scale 2)	Principal Axes Loadings				Varimax Loadings			
	I	II	III	IV	I	II	III	IV
2.1	59	24	-12	04	02	19	59	21
2.2	48	01	31	-20	-03	18	15	56
2.3	23	30	-36	-06	-03	-16	49	-06
2.4	-15	-12	-13	00	-12	-05	-10	-17
2.5	-11	38	13	28	49	-00	06	-11
2.6	-23	40	24	-10	41	-31	-09	12
2.7	41	-24	14	23	-08	51	09	14
2.8	00	00	00	00	00	00	00	00
% Total Variance	38	22	15	8	18	19	27	18

*Decimal points omitted.

loadings are on items one, two and seven. A second factor accounts for 22 percentof the variance while the third accounts for 15 percent. In addition to not obtaining a one factor solution for the Turrialba sample, each of the factors is complicated by having both positive and negative loadings. The varimax rotation of the first four factors did not simplify this situation. Instead, the matrix variance accounted for by a single factor was more evenly spread over all four factors. The rotations failed to change all of the loadings of a given factor to the same sign. It is true that after rotation, most of the negative loadings are below the .20 significance level. However, the remaining positive loadings of .20 or higher are limited to one or two items for each of the four factors.

In the light of the failure to obtain a one factor solution on the principal axes loadings and the additional confusion of the rotated factors, the unidimensionality of sub-scale 2 for the Turrialba sample seems questionable.

The Lansing sample again failed to produce a one factor solution but there is less of a problem with bi-polar factors. The first factor accounts for 38 percent of the matrix variance and the second factor accounts for 26 percent so that the first two factors account for 64 percent of the total

variance. As indicated in Table 7, the first unrotated factor is defined by items one, two, five, six, seven, and eight. Only items three and four do not contribute to this factor.

Table 7. Factor matrix for WBCL Sub-Scale 2, Lansing sample (N-87).*

Items (Sub-Scale 2)	Principal Axes Loadings				Varimax Loadings			
	I	II	III	IV	I	II	III	IV
2.1	35	21	32	12	41	-07	17	29
2.2	42	29	-26	-17	-07	34	37	33
2.3	12	11	22	-23	27	12	19	-08
2.4	04	63	04	-09	04	-12	62	07
2.5	46	-31	06	00	24	32	-26	28
2.6	44	-28	-17	-18	05	50	-17	22
2.7	57	14	11	29	08	08	07	65
2.8	28	-19	27	-09	38	19	14	06
% Total Variance	38	26	11	8	15	18	24	26

*Decimal points omitted

It appears therefore, that the prediction of a one factor solution is supported only for the Lenawee sample. While certain items contribute significantly to the first factor in all three samples, the prediction of a one factor solution is not upheld in either the Turrialba or the Lenawee samples.

Only items one and seven have significant loadings for all three samples. Item one states: "I don't like

people who are always right on time for every appointment they have." Persons who disagree with this item are scored as having a positive evaluation of structured time. Similarly, to score at the same end on item seven, one must agree with the statement: "It makes me feel bad to be late for an appointment." It is interesting to note what happens when we attempt to achieve meaningful interpretations from these data.

Both the Turrialba and the Lansing samples have non-significant loadings on item four which states: "I believe that promptness is a virtue." Yet both of these samples have significant loadings on items one and seven which imply a positive evaluation of promptness. How do we determine the meaning in such a case? There seems to be no simple answer to this problem but at least two alternatives seem plausible.

First, the Lenawee sample is the only one where a large common factor was obtained. In addition, seven out of the eight items made significant contributions to this factor in the Lenawee sample. The failure to obtain a large common factor in both the Turrialba and the Lansing samples suggests that either the orientations toward structured time are less solidified in these samples, or that some of the items have differential meanings for the three groups of boys.

From Table 8, we see that the Lansing sample does not have generally higher variances than the Lenawee and Turrialba samples on all of the items. However, it does appear that more of the items have higher variances than in the Lenawee and Turrialba samples. In short, there appears to be more consistently high variance items in the Lansing sample than in the other two. The prediction that the Lenawee sample would have high mean scores while the mean scores for both the Turrialba and the Lansing samples would be in the middle range is again not clearly supported. The mean scores for the Lenawee sample are generally toward the high end of the scale. However, they are not as high as they were for the same sample on sub-scale 1. In addition, two of the items on sub-scale 2 fall below the midpoint of the possible range. Again, the Turrialba scores cover a wide range from .42 to 100. Thus, while some of the scores do cluster around the middle of the possible range, this sub-scale also contains three items on which 88, 92, and 100 percent of the boys scored at the industrial end of the scale. There is more consistency on the means of the Lansing sample since the means fall between .53 and .77 on all of the items except one.

It appears, therefore, that the three samples do not show a consistent and clear cut tendency to have the

Table 8. Means and variances for all samples for sub-scale 2.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
2.1	92	08	64	23	93	06
2.2	45	25	47	25	63	23
2.3	60	24	56	25	71	20
2.4	86	12	88	11	77	18
2.5	66	22	87	12	53	25
2.6	49	25	42	24	53	25
2.7	83	14	92	07	76	18
2.8	77	17	100	00	77	18

predicted kinds of mean scores, although certain items appear to be consistent with predictions. Thus, only the Lenawee sample supports the prediction of a one factor solution and provides some support for the prediction of high mean scores for the more industrialized sample.

Sub-Scale 3: Positive versus Negative Evaluation of Physical Mobility

The prediction of a one factor solution on sub-scale three is supported by all three samples. In Table 9, we see that the first unrotated factor accounts for 56 percent of the matrix variance. Items one through four contribute significantly to the factor and item five with a loading of .19 falls just below our cutting point. Items one and two have the highest loadings and these are increased by the varimax rotation.

Table 9. Factor matrix for WBCL Sub-Scale 3, Lenawee sample (N-439).*

Items (Sub-Scale 3)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
3.1	42	-28	12	48	-16	14
3.2	59	-14	-15	60	15	05
3.3	29	31	-13	13	40	15
3.4	38	21	23	19	13	43
3.5	19	19	-05	09	23	12
3.6	01	-08	-18	08	05	17
% Total Variance	56	20	10	47	20	20

*Decimal points omitted.

From Table 10 we see that in the Turrialba sample, the first factor accounts for 65 percent of the matrix variance. Once again, there are significant loadings on the first five items.

Table 10. Factor matrix for WBCL Sub-Scale 3, Turrialba sample (N-112).*

Items (Sub-Scale 3)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
3.1	63	02	03	44	37	26
3.2	25	07	11	11	17	20
3.3	47	-31	-16	59	07	02
3.4	39	33	-14	12	51	02
3.5	28	-04	28	15	97	36
3.6	-02	07	-08	-03	06	08
% Total Variance	65	15	10	41	31	17

*Decimal points omitted.

The same general pattern is illustrated in Table 11 for the Lansing sample. The first factor accounts for 61 percent of the matrix variance. However, the loading for item three is not significant in the Lansing sample. In fact, this loading approaches zero. In addition, item six has a high negative loading in the Lansing sample. As seen in Tables 9 and 10, the loading for item six approaches zero in both the Lenawee and the Turrialba samples. Tables A-7, A-8, and A-9, of Appendix A show that item six is completely uncorrelated with the other five items in the Lenawee and Turrialba samples. In addition, these tables show that item six is inversely correlated with items one, two, four and five in the Lansing sample. Item six is uncorrelated with item three in the Lansing sample.

Table 11. Factor matrix for WBCL Sub-Scale 3, Lansing sample (N-87).*

Items (Sub-Scale 3)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
3.1	21	34	07	39	-12	-01
3.2	47	-37	14	15	58	14
3.3	-06	-18	05	-15	13	-05
3.4	48	-09	-33	20	19	52
3.5	42	20	00	43	06	17
3.6	-67	-07	-11	-57	-33	-20
% Total Variance	61	18	8	40	28	19

*Decimal points omitted.

The prediction of a one factor solution is thus supported in all three samples. It appears, therefore, that this scale is unidimensional for all three samples. The previously noted pattern of sub-scale 1 and 2 does not occur on this scale. That is the tendency for the respective samples to have mean scores between the midpoint of .50 and the maximum score of 1.00 on all of the items on the scale. A close look at Table 12 will verify the fact that the trend here is for low mean scores on all items except item six. For the moment, let us consider only the first five items. The mean scores for the Lenawee sample range from a high of .52 to a low of .37. The corresponding range for the Turrialba sample is .59 to .10 and the Lansing sample range is .31 to .22.

Table 12. Means and variances for all samples for Sub-Scale 3.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
3.1	52	25	36	23	31	21
3.2	40	24	59	24	28	20
3.3	37	23	48	25	29	20
3.4	51	25	10	09	23	18
3.5	44	25	36	23	22	17
3.6	95	05	98	02	93	06

The prediction for high mean scores in the Lenawee sample is not supported. Actually, the means for the Lenawee sample tend to fall at the middle of the range or at the point where the predictions placed the Lansing and Turrialba samples. The mean scores for both the Turrialba and the Lansing samples falls below the predicted areas. It appears, therefore, that except for item six, none of the samples indicate a strong positive evaluation of physical mobility. On the contrary, both the Turrialba and the Lansing samples tend to indicate a negative evaluation of physical mobility. Let us now consider the items of the scale in order to account for the lack of correlation between item six and the rest of the scale.

The first five items deal with moving away from relatives, homes, hometowns or with loyalty to the home community. In general, we might expect persons from less industrialized or gemeinshaft types of cultures to have strong family and community ties on the basis of the typological literature. We would expect such groups to have a negative evaluation of physical mobility <u>if</u> such mobility involved separation from the family. This might not be the case in nomad groups where the entire tribe is physically mobile, rather than a single individual.

Item six states: "I like to see new things and meet new people." Agreement with this item is scored as positive evaluation of physical mobility. However, a person may see new things and meet new people without leaving home. This is of a different order than the other five items of sub-scale 3. It deals with the evaluation of variety or new experience, independent from the breaking down of family and community ties. In short, this item clearly does not belong in this scale, but probably should have been included in sub-scale 4 which deals with positive and negative evaluation of change. It is to sub-scale 4 that we now turn our attention.

Sub-Scale 4: Positive versus Negative Evaluation of Change

The factor loadings for the Lenawee sample are contained in Table 13. Fifty-five percent of the matrix variance is accounted for by the first unrotated factor. Significant loadings were obtained on the first six items but not on item 7. The next largest factor accounts for only 15 percent of the total matrix variance, and it is a bi-polar factor. It appears, therefore, that the prediction of a one factor solution is supported by the Lenawee data. Turrialba comes closer to a two factor solution. Although the first factor accounts for 46 percent of the variance,

Table 13. Factor matrix for WBCL Sub-Scale 4, Lenawee sample (N-439).*

Items (Sub-Scale 4)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
4.1	37	-03	-18	31	27	04
4.2	31	11	19	22	-02	31
4.3	40	-32	-11	13	48	15
4.4	49	20	-18	53	15	08
4.5	33	26	10	36	-08	22
4.6	41	-19	26	08	24	46
4.7	12	-04	01	06	09	08
% Total Variance	55	15	11	34	24	23

*Decimal points omitted.

we see from Table 14 that the second factor accounts for 25 percent of the total matrix variance. All loadings on the first factor are significant except items three and seven. On the second factor, we see that the loadings for items one, four and five are positive and significant while there are negative and significant loadings for items two and six. Items one, four and five are also significant and positive on the first factor. Since there is very little difference between the unrotated and the rotated loadings in terms of the percent of total variance accounted for by the first two factors, let us shift to the varimax loadings where the negative signs have been eliminated. Here, we see from

Table 14. Factor Matrix for WBCL Sub-Scale 4, Turrialba sample (N-112).*

Items (Sub-Scale 4)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
4.1	27	48	05	06	55	03
4.2	68	-22	-21	71	05	-19
4.3	07	03	-33	07	05	-33
4.4	20	42	-06	03	46	-08
4.5	31	25	05	19	35	04
4.6	63	-21	25	66	05	27
4.7	08	-14	-08	13	-10	-07
% Total Variance	46	25	10	43	28	10

*Decimal points omitted.

Table 14 that items two and six with loadings of .71 and .66 respectively, account for most of the variance in the first factor. The second factor is determined by items one, four and five. Item two states: "On the whole, the old ways of doing things are the best." Similarly item six states: "The happiest people are those who do things the way their parents did." In both items disagreement is scored as positive evaluation of change. Items one, four and five are stated in terms such as: "I like to try new things" or "I likepeople who are willing to change" or "On the whole, most changes make things worse." These items all deal with change or willingness to change at the present

time. Items two and six deal with change from the past to the present. Thus, one dimension may involve unwillingness to go back to older ways of doing things while the other dimension may involve a willingness to change in terms of the future.

In a highly industrialized society with strong value orientations toward the future, both of these dimensions may become fused into a single dimension involving change. The one factor solution of the Lenawee sample supports this view. On the other hand, less industrialized societies with more of a time orientation to the present might yield a two factor solution on the same items. In the opinion of the present writer, this is what has occurred in the Turrialba sample. In other words, it is only in a culture where change, newness and youth are very strongly emphasized that the dimensions are not distinguished.

From Table 15, we see that the largest of the unrotated factors account for only 37 percent of the total matrix variance in the Lansing sample, and the first three factors account for a total of 75 percent of the variance. It appears, therefore, that there is a three factor solution for the Lansing sample. In both the unrotated and the rotated factors, items two and six determine the third factor.

Thus, it appears that for the sample of Mexicans in Lansing, the two items which deal with the past time dimension, distinguish a different factor just as they did for the Turrialba sample. The first factor is determined by items one, three and four, while the second factor after rotation is determined by items four and five.

Table 15. Factor matrix for WBCL Sub-Scale 4, Lansing sample (N-87).*

Items (Sub-Scale 4)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
4.1	68	-13	-19	72	-03	-02
4.2	06	-27	32	03	-05	42
4.3	63	-11	05	61	09	17
4.4	42	50	02	33	50	-25
4.5	04	47	39	-13	60	07
4.6	17	-32	35	14	-04	48
4.7	12	05	10	09	12	07
% Total Variance	37	23	15	36	22	17

*Decimal points omitted.

It appears, therefore, that the prediction of a one factor solution is supported in the Lenawee sample but not in the Turrialba and the Lansing samples. The data for means and variances are presented in Table 16. In accordance with predictions, the means for the Lenawee boys are high and the

variances are low. However, the means for both the Turrialba and the Lansing samples are also high, although not as high as the Lenawee means. Consequently, neither the Turrialba nor the Lansing sample falls at the middle range of mean scores as predicted. While the variances for Turrialba are somewhat lower, in general, than the Lansing variances, they are not as consistently low as the Lenawee sample.

Table 16. Means and variances for all samples for Sub-Scale 4.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
4.1	99	01	97	03	90	09
4.2	85	13	88	10	68	22
4.3	95	04	94	06	80	16
4.4	96	04	87	12	77	18
4.5	91	08	63	23	82	15
4.6	90	09	75	19	72	20
4.7	77	18	88	10	77	18

In terms of the predictions of mean scores, only the Lenawee sample provides strong support for the predictions. For both the Turrialba and the Lansing samples, we may speak of their mean scores as being relatively lower than the Lenawee scores. However, in terms of the absolute numbers, neither Turrialba nor Lansing provide mean scores which fall around the middle of the possible range of scores.

Sub-Scale 5: Belief in Internal versus External Determination Events

The unrotated factors, as shown in Table 17, indicate a one factor solution for the Lenawee sample, since the first factor accounts for 53 percent of the matrix variance. Items one, four and six do not have significant loadings. This factor is, therefore, defined by five of the eight items. It should be noted that the rotated factors yield a three factor solution rather than a one factor solution, with each factor being defined by two or three items.

Table 17. Factor matrix for WBCL Sub-Scale 5, Lenawee sample (N-439).*

Items (Sub-Scale 5)	Principal Axes Loadings				Varimax Loadings			
	I	II	III	IV	I	II	III	IV
5.1	00	17	-11	18	01	06	-10	25
5.2	48	-22	14	12	06	16	46	00
5.3	48	-20	12	08	12	23	47	-02
5.4	10	17	-01	08	14	06	-02	16
5.5	55	-09	-26	-08	15	56	20	-08
5.6	16	09	-16	21	01	21	02	24
5.7	24	32	19	07	40	-01	08	20
5.8	50	25	02	20	50	30	10	-05
% Total Variance	53	17	9	8	24	27	26	10

*Decimal points omitted.

As indicated in Table 18, the first unrotated factor accounts for 48 percent or almost half of the total matrix

variance in the Turrialba sample. In this case, the factor is determined by items two, three, four and five. All of these items except item four had significant loadings in the Lenawee sample also. However, it is in the Lansing sample that the greatest similarity with the Lenawee sample appears to occur. In Table 19, we see that the first factor, accounting for 46 percent of the matrix variance, has significant loadings on items one, two, three, five, seven and eight. Only on item one is there a difference between the two samples in relation to which items define the first factor. Similarly, rotation of the factors for the Lansing sample produces a three factor solution just as it did for the Lenawee sample.

Table 18. Factor matrix for WBCL Sub-Scale 5, Turrialba sample (N-112).*

Items (Sub-Scale 5)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
5.1	-36	-01	20	-34	-14	19
5.2	37	31	-18	28	42	-10
5.3	67	-02	15	67	10	14
5.4	56	22	13	-59	05	17
5.5	30	01	35	31	00	35
5.6	-04	07	06	-05	04	08
5.7	-07	31	-02	-14	29	05
5.8	09	37	09	01	36	18
% Total Variance	48	17	10	47	18	11

*Decimal points omitted.

Table 19. Factor matrix for WBCL Sub-Scale 5, Lansing sample (N-87).*

Items (Sub-Scale 5)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
5.1	41	50	-12	-06	34	56
5.2	33	-52	-19	62	07	-15
5.3	48	-17	-24	48	22	18
5.4	13	20	-24	05	00	33
5.5	62	15	25	09	67	14
5.6	05	30	-26	-04	-06	40
5.7	38	09	23	02	45	03
5.8	72	-17	04	47	57	07
% Total Variance	46	22	10	25	34	19

*Decimal points omitted.

From the above discussion, it appears that there is some evidence to support the prediction of a one factor solution for sub-scale five, but the evidence is not clear cut. In all three samples there is one large factor which accounts for approximately half of the total matrix variance. However, the specific items which define the factor are not the same. Certain items such as two, three and five have significant loadings in all three samples but the rest of the items which make up the scale vary from one sample to the next. Moreover, the second factor which accounts for either 17 or 22 percent of the variance in each of the samples, contains significant loadings on several items in each case.

In short, the strongest support for a one factor solution is found in the Lenawee sample but there are strong trends in the same direction for both Lenawee and Turrialba.

The means and variances for sub-scale 5 are presented in Table 20. It is apparent that the item mean scores for the Lenawee sample are spread over a relatively wider range than are the comparable meanscores for any of the previously discussed scales. To be sure, the apparent range of sub-scale 3 is greater since these means range from a low of .37 to a high of .95. However, a quick glance at Table 12 will help the reader to recall that once item six is deleted from sub-scale 3, the range is from .37 to .52 or a spread of fifteen class intervals. Removal of any single item mean score will not appreciably reduce the spread of scores on sub-scale 5 for the Lenawee sample. Thus, while it is apparent that most of the boys of the Lenawee sample have scores which indicate a belief in the external determination of events, the scores are not consistently at the high end of the scale.

The means of both the Turrialba and the Lansing samples tend to cluster closer to the middle range giving some support to the prediction of mid-range mean scores for the Turrialba and Lansing samples. However, the considerable

Table 20. Means and variances for all samples for Sub-Scale 5.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
5.1	90	10	69	21	87	11
5.2	59	24	52	25	44	25
5.3	86	12	53	25	82	15
5.4	68	22	73	20	51	25
5.5	78	17	41	24	49	25
5.6	79	16	79	16	75	19
5.7	46	25	64	23	34	23
5.8	82	15	71	21	57	24

fluctuation of mean and variance scores within the same scale prevent us from interpreting the data as conclusive support for the original predictions concerning placement of the three samples along the hypothetical continuum of industrialization.

Sub-Scale 6: Positive versus Negative Evaluation of Deferred Gratification

As indicated in Table 21, one large factor accounts for 59 percent of the total matrix variance in the Lenawee sample. All of the items except item two have significant loadings on this factor. Item two states that: "Money is made to spend, not to save." The wording of this item is such that agreement with the item implies a negative

Table 21. Factor matrix for WBCL Sub-Scale 6, Lenawee sample (N-439).*

Items (Sub-Scale 6)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
6.1	21	17	-04	11	24	07
6.2	12	32	-09	-01	36	01
6.3	44	-20	-21	53	04	-01
6.4	60	-20	-07	61	05	20
6.5	46	-06	26	31	03	44
6.6	38	17	15	18	24	33
6.7	28	35	-08	10	44	10
% Total Variance	59	20	9	44	24	19

*Decimal points omitted.

orientation to saving money, under any conditions. Therefore, we might expect this item to be correlated with the scale which measures deferred gratification among the most industrialized sample. Actually, the item does have a significant loading but it is on the second factor rather than the first. Shifting to the rotated loadings, we see that the second factor is defined by items one, two, six and seven. It should be noted that the varimax rotations indicate a three factor solution with the largest factor accounting for 44 percent of the variance.

Failure to obtain a one factor solution is indicated by the data for Turrialba, as presented in Table 22. It is true that the first factor accounts for 48 percent or almost

half of the total variance but the second factor accounts for 26 percent of the variance and, therefore, cannot be ignored. Moreover, the rotated factors indicate a three factor solution with each of the three factors accounting for slightly over one-fourth of the total matrix variance.

Table 22. Factor matrix for WBCL Sub-Scale 6, Turrialba sample (N-112).*

Items (Sub-Scale 6)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
6.1	32	-17	-26	07	-01	44
6.2	44	50	02	13	64	11
6.3	56	-15	-25	23	11	58
6.4	47	-14	34	58	08	10
6.5	58	-23	11	52	05	36
6.6	22	09	02	13	17	10
6.7	18	55	-04	-08	57	03
% Total Variance	48	26	10	27	31	27

*Decimal points omitted.

In the Lansing sample, the first unrotated factor accounts for 39 percent of the total matrix variance. The second factor accounts for 22 percent of the variance and the third accounts for 14 percent. It seems clear that the prediction of a one factor solution is not supported in the Lansing sample. However, there appears to be considerable overlap of items which contribute to the first two factors.

Table 23. Factor matrix for WBCL Sub-Scale 6, Lansing sample (N-87).*

Items (Sub-Scale 6)	Principal Axes Loadings				Varimax Loadings			
	I	II	III	IV	I	II	III	IV
6.1	79	-09	-07	09	75	21	20	04
6.2	20	41	-14	-29	02	14	20	51
6.3	36	-22	-30	-29	44	-30	13	23
6.4	51	-43	26	-05	65	02	-31	-10
6.5	07	32	28	-31	-07	24	-22	41
6.6	47	42	28	20	22	67	08	13
6.7	24	28	-38	19	09	14	53	-06
% Total Variance	39	22	14	10	36	20	15	15

*Decimal points omitted.

Thus, items two, six and seven have significant and positive loadings on both factors one and two.

Even though the Lenawee sample is the only one which yields one factor which accounts for more than half of the matrix variance, all three of the samples have significant loadings on all but one of the items on the first factor. The specific item which does not have a significant loading is different in each of the samples, but the fact that only one item fails to contribute indicates a trend toward a unidimensional scale. However, since the first factor accounts for only 48 and 22 percent respectively in the Turrialba and Lansing samples, the case for a unidimensional scale is weakened.

The three samples do not appear to differ in relation to mean scores for the items of sub-scale 6. The general tendency for all three samples is toward the high or deferred gratification end of the continuum. Neither the

Table 24. Means and variances for all samples for Sub-Scale 6.

	Lenawee		Turrialba		Lansing	
	M	Var.	M	Var.	M	Var.
6.1	68	22	93	07	85	13
6.2	63	23	52	25	57	24
6.3	90	09	84	13	89	10
6.4	87	11	87	12	89	10
6.5	90	09	98	02	89	10
6.6	93	07	73	20	90	09
6.7	56	25	46	25	51	25

Turrialba nor the Lansing samples have mean scores clustered around the middle range. In both samples the general tendency is for relatively high mean scores. Only items two and seven with mean scores close to the midpoint of .50 are in the predicted range for the Turrialba and Lansing samples. As previously pointed out, the wording of item two implies a negative orientation of saving money regardless of the condition. In all three samples, the mean is slightly above the midpoint and the variance is relatively high. Item seven, which is the other consistently high variance and middle range mean item, is similar to item two in that both

deal specifically with money and the question of spending. The other items of the scale deal with jobs, school, or working hard for something, but they do not specifically deal with money.

It appears, therefore, that there is some support for a one factor solution in the Lenawee sample and a similar trend for the Trurialba and Lansing samples. The means for all three samples indicate a tendency toward deferred gratification in expressed value orientations since the means are generally above the midpoint of the possible range of scores.

Summary of the first four predictions

The first prediction (A_1) was for a one factor solution for each sub-scale within each sample. Only on sub-scale three was this prediction supported by all three samples. On sub-scale five, there was some support in all three samples but not as strong as the support for the third scale. The prediction of a one factor solution for sub-scale one was supported by both the Lenawee and the Lansing samples. On sub-scale six, there was support for a one factor solution in the Lenawee sample with similar trends in both Turrialba and Lansing. Support for the one factor prediction was found among the Lenawee boys only, for

sub-scale two and four. In short, the Lenawee sample was the only one where there was relatively consistent support for the prediction of a one factor solution. As the prior discussion of this chapter indicate, even this consistent trend toward a one factor solution among the Lenawee boys should not be construed as an indication that all of the items of any specific scale contributed significantly to the large common factor.

The second, third and fourth predictions are all based on assumptions about where the three samples fall along a hypothetical continuum of industrialization. The second prediction (A_2) states that the Lenawee sample is at the industrial or gesellshaft end of the continuum and will, therefore, yield high means, low variance and low correlation coefficients. In general, there was support for this prediction on all scales except sub-scale three, where the mean scores were closer to the middle range.

The third prediction (A_3) states that the Turrialba sample is at an intermediate position along the hypothetical continuum of industrialization and will, therefore, yield middle range mean scores, low variance and low crorelation coefficients. In general this prediction was not supported. With the exception of sub-scale three the Turrialba sample

tended to score above the middle range and toward the high or industrial end of the range. It should be noted that there was some support for this prediction among all three samples on sub-scale four which deals with the evaluation of change. While sub-scale three which deals with the evaluation of physical mobility is actually below the middle range of scores in general, this does give support to the view that the less industrialized samples will not score at the high end of the continuum.

The fourth prediction (A_4) is slightly more complex than the others. The Mexican-American boys are viewed as being influenced by two cultures and occupying a transitional position (i.e., gemeinshaft to gesellshaft) along the hypothetical continuum. The predictions were for middle range mean scores (just as for Turrialba) but for high variance and high correlation coefficients due to the increased range of scores. The pattern here was similar to the pattern for Turrialba. Only on the third sub-scale was there a consistent (except for item six) tendency for mean scores to fall below the midpoint of the possible range. There was some support for middle range mean scores on sub-scale four but this was not strong or consistent. The general pattern for the rest of the sub-scales was for

scores to approach the high or industrial end of the scale.

Prediction B

When all 44 items of the Work Beliefs Check List are factor analyzed irrespective of sub-scales, it was predicted that there would be a total of seven factors. One large factor was expected to account for much of the variance and six small factors were expected to correspond to the six sub-scales.

Table 25 indicates that most of the 44 items have significant loadings on the first factor for the Lenawee sample. The one obvious exception to this is on sub-scale three where item six is the only item with a significant loading. It has already been pointed out that item six is the only item of this scale where there was a high mean score. Since relatively high mean scores tended to be a consistent pattern for most of the other scales, the factorial structure shown in Table 25 supports the previous indications that most of the items yield high mean scores for the Lenawee boys. The first five items of sub-scale three represent an exception to this pattern, but the exception is consistent with the failure to obtain significant loadings on these items.

Table 25. Factor Matrix for WBCL - All Items
Lenawee Sample (N = 439)*

Item	Principal Axes Loadings										
	1	2	3	4	5	6	7	8	9	10	11
1.1	27	-24	05	09	-10	-09	16	-18	03	-20	20
1.2	28	17	-05	-07	-28	-20	03	03	07	-18	05
1.3	27	-03	06	09	-22	-08	-17	-08	11	-04	-18
1.4	21	37	-05	-16	-19	11	-02	-02	-14	04	-10
1.5	44	14	-06	02	-16	00	23	01	04	-20	-08
1.6	19	16	-01	-02	-03	-12	-12	-10	21	04	00
1.7	15	35	04	02	-08	-15	11	06	-08	12	-07
1.8	-00	16	04	-20	-08	-13	-04	-04	06	01	07
2.1	50	12	-03	16	-07	10	-16	06	-22	-05	05
2.2	10	10	36	00	-06	01	-04	-15	12	09	-10
2.3	35	-10	20	11	01	-15	-15	02	-16	03	-01
2.4	33	-03	02	03	-01	-07	-00	07	-09	14	19
2.5	22	13	39	-21	28	-02	-19	04	07	-15	-04
2.6	33	-05	43	-20	15	-09	-01	22	-02	-15	-07
2.7	27	15	23	18	-05	15	19	22	04	03	01
2.8	25	13	13	09	03	25	07	30	-05	00	06
3.1	02	-34	02	-16	-07	-21	00	-01	-22	12	-05
3.2	-11	-28	-16	-30	01	-20	-01	04	-13	-08	-14
3.3	-10	-10	-10	-19	15	11	02	16	-08	-13	-05
3.4	05	-41	-16	04	-01	03	-01	21	05	01	-10
3.5	-10	-07	-15	-25	11	16	07	10	09	06	05
3.6	24	14	-14	-12	11	-16	-05	-07	01	-07	-02
4.1	27	21	-24	-04	00	-07	-09	03	-10	-01	-03
4.2	25	-22	-13	13	15	02	-11	-03	27	12	-05
4.3	21	15	-32	-04	01	-19	05	12	11	03	05
4.4	25	15	-22	-14	-11	09	-08	13	23	-08	05
4.5	41	-15	-13	-10	-09	23	-26	-09	07	-01	-04
4.6	36	-07	-20	04	09	-15	-10	21	07	10	03
4.7	-04	10	-07	-21	05	02	-03	04	03	23	02
5.1	03	24	-07	-20	-11	21	-09	-07	-18	07	-05
5.2	20	-32	-02	03	-18	-04	01	14	-07	08	-02
5.3	39	-25	-06	04	-19	08	26	-06	02	11	-21
5.4	-04	-03	-00	-31	-05	06	06	06	01	-06	09
5.5	48	-29	-10	-13	-02	06	-02	03	02	-03	-02
5.6	10	02	-12	-25	04	06	07	-13	-12	-00	-04
5.7	09	-04	10	-23	-17	05	11	-14	04	10	19
5.8	38	-22	11	-14	-07	05	-01	-05	-02	08	25
6.1	21	-24	06	-07	13	15	20	-16	06	-10	-03
6.2	21	00	20	-02	-03	-01	02	-01	-05	14	-13
6.3	46	-10	-11	18	21	10	-19	-17	-14	-03	09
6.4	33	13	-22	11	30	-03	19	-16	-15	-09	01
6.5	30	25	-16	-05	23	07	10	-12	09	09	-11
6.6	30	08	-02	00	25	-18	20	05	01	14	02
6.7	31	-06	32	-16	11	-04	07	-09	07	12	02
% Total Variance	18	9	7	5	5	4	4	4	3	3	2

*Decimal points omitted.

Table 25 (Continued)

Item	Varimax Loadings						
	1	2	3	4	5	6	7
1.1	09	-04	05	-02	04	-16	37
1.2	04	41	02	-02	05	-17	15
1.3	23	16	06	04	-10	-24	10
1.4	06	45	03	16	03	12	-02
1.5	10	30	03	17	22	-05	32
1.6	11	21	09	00	08	-12	-06
1.7	-12	31	06	14	17	-13	-02
1.8	-08	23	10	-09	-02	00	-08
2.1	42	21	07	24	12	-13	08
2.2	-04	07	29	18	-13	-09	01
2.3	24	00	27	02	01	-28	11
2.4	19	09	12	02	12	-11	16
2.5	09	01	57	05	04	03	-17
2.6	06	00	59	00	02	-04	13
2.7	00	06	15	40	07	-05	20
2.8	12	04	12	33	07	08	09
3.1	01	-07	07	-34	-10	-07	20
3.2	-03	-04	-01	-47	-03	08	06
3.3	00	-10	-01	-14	02	25	-03
3.4	19	-22	-13	-19	-04	00	22
3.5	-01	-04	-05	-14	03	33	-00
3.6	13	19	09	-11	26	-03	-04
4.1	20	28	-04	-01	23	-02	-05
4.2	34	-17	-00	-05	14	-07	09
4.3	09	25	-11	-12	32	-05	02
4.4	23	31	-05	00	08	12	02
4.5	53	11	04	-00	-06	11	13
4.6	32	06	01	-13	25	-14	08
4.7	-01	11	03	-09	03	16	-10
5.1	10	28	00	09	-05	23	-09
5.2	18	-04	-01	-11	-10	-11	31
5.3	17	03	-02	04	06	-01	54
5.4	-06	10	07	-15	-07	24	06
5.5	41	03	12	-12	09	05	35
5.6	04	12	04	-11	09	22	06
5.7	-04	15	12	-03	-12	12	21
5.8	26	05	23	-05	-04	02	31
6.1	10	-16	14	01	10	17	30
6.2	05	05	22	08	-01	-06	12
6.3	51	-09	08	10	23	-08	05
6.4	13	01	-00	08	52	01	07
6.5	13	14	06	11	40	13	-01
6.6	00	03	18	-00	42	-07	11
6.7	05	01	45	02	05	00	18
% Total Variance	10	8	8	6	7	5	8

*Decimals omitted.

The same general pattern emerges from Table 26, except that some of the items of sub-scale three are significant but negative in the Lansing sample. It should be noted that the first factor accounts for only 19 percent of the total matrix variance in the Lansing sample. Although many of the items have significant loadings, less than one-fifth of the variance is accounted for by the factor as a whole. On the other hand, the second factor is only about one-half the size of the first factor in both cases.

The pattern is less clearly demonstrated for Turrialba. From Table 27, we see that the first factor accounts for only 13 percent of the matrix variance. Once again, many of the items have significant loadings but there is less consistency within any specific scale. Sub-scale three is either uncorrelated or negatively correlated with the factor. This pattern is consistent with the previously discussed data on Turrialba.

Summary of Prediction B

The factor analysis of all items of the Work Beliefs Check List did not provide strong support for the prediction of a seven factor solution. It is true that there was a consistent trend for most of the items to have significant

Table 26. Factor Matrix for WBCL - All Items
Turrialba Sample (N = 112)*

Item	Principal Axes Loadings										
	1	2	3	4	5	6	7	8	9	10	11
1.1	40	09	-05	-14	-25	29	02	-16	-11	-06	03
1.2	-06	00	-08	-06	-41	08	13	-07	02	02	03
1.3	12	24	02	-05	24	-15	11	17	-08	-25	17
1.4	-20	-01	07	03	-23	07	-12	20	-07	20	06
1.5	40	24	-09	-17	-12	-06	-16	-20	-17	-09	-07
1.6	-00	-00	00	-00	-00	00	00	-00	00	-00	-00
1.7	13	-07	01	-26	19	30	-16	-21	07	01	03
1.8	03	-20	06	22	-05	38	03	05	12	07	-11
2.1	30	-16	-24	23	26	02	02	10	-22	-09	-01
2.2	38	-04	-35	07	15	03	-13	-14	-02	-08	27
2.3	-02	11	-15	19	32	-06	19	07	-03	-06	-10
2.4	-22	-01	-02	-03	-29	-14	23	-17	-12	17	-01
2.5	18	-23	35	23	01	-24	-11	03	12	09	-04
2.6	08	-03	21	-12	19	-29	-14	-19	10	03	-15
2.7	16	-32	-24	09	-04	16	22	-09	-08	08	14
2.8	00	00	00	00	-00	-00	00	00	-00	-00	-00
3.1	-13	52	31	-04	-08	-02	16	08	00	-20	01
3.2	14	10	13	-19	-10	25	19	18	-14	-00	-02
3.3	-31	18	24	-03	-00	09	-20	23	10	-07	04
3.4	-09	31	13	-03	-06	-01	15	16	-05	13	01
3.5	-18	08	28	-07	08	30	-14	-09	-12	03	01
3.6	-03	-11	08	-40	13	-06	03	08	09	00	02
4.1	27	26	00	-05	10	25	12	-03	14	13	12
4.2	50	-15	-04	-34	08	-03	-14	11	-27	10	-25
4.3	13	-34	42	-14	06	13	02	-04	11	-12	-10
4.4	17	07	09	-09	30	14	05	09	26	20	17
4.5	35	34	04	-10	04	06	07	-03	11	-13	03
4.6	50	-02	-17	-01	-07	04	-10	38	-08	03	-12
4.7	-06	-15	-09	-29	-00	-16	-08	21	05	-17	15
5.1	-20	-26	-12	-00	29	-07	08	11	04	-10	01
5.2	42	16	06	-13	-18	-11	-18	13	-02	02	02
5.3	39	29	02	44	-08	-01	-12	17	17	02	02
5.4	-33	-18	-04	-26	-04	-06	38	16	-14	-09	06
5.5	23	08	-18	22	-06	-10	29	-01	19	09	-25
5.6	04	-35	-01	12	-15	24	-04	36	-01	-03	10
5.7	12	-13	-05	-21	-01	-19	05	09	01	27	08
5.8	24	07	02	-12	19	-02	14	13	-08	25	-09
6.1	-01	-34	31	16	-03	11	-05	-05	-13	-23	05
6.2	51	-14	-04	-01	-18	-11	21	-02	17	-24	10
6.3	37	-03	40	16	04	01	24	-05	-22	-18	-11
6.4	28	-01	27	06	00	-18	07	-11	-11	21	40
6.5	30	-21	43	14	-06	-21	00	02	-15	12	10
6.6	19	-09	20	-11	22	17	28	-06	18	09	-05
6.7	25	-25	-03	-20	-32	-13	02	03	41	-13	-04
% Total Variance	13	7	7	6	5	5	4	4	4	3	3

*Decimal points omitted.

Table 26 (Continued)

Item	Varimax Loadings						
	1	2	3	4	5	6	7
1.1	46	05	-04	11	08	31	03
1.2	08	15	-10	-08	-22	26	17
1.3	05	11	-01	06	26	-26	08
1.4	-08	11	-02	-00	-25	13	-11
1.5	49	05	-06	20	-00	-11	02
1.6	00	00	00	00	00	00	00
1.7	22	-14	-05	-09	21	08	-32
1.8	-11	-14	10	09	06	41	-09
2.1	01	-42	02	20	22	-01	14
2.2	25	-38	-13	23	13	-05	09
2.3	-23	-08	-10	09	29	-15	15
2.4	-11	19	-04	-18	-21	07	25
2.5	-04	-08	53	13	-10	-11	00
2.6	07	-00	24	-06	01	-35	-10
2.7	02	-32	-00	-07	08	30	24
2.8	00	00	00	00	00	00	00
3.1	-05	62	-02	08	10	-07	-01
3.2	21	21	02	-08	19	24	-01
3.3	-16	27	-03	01	-10	-03	-35
3.4	-04	36	-05	02	07	-02	04
3.5	-09	17	03	-02	08	14	-41
3.6	14	00	02	-37	08	-13	-11
4.1	20	12	-08	15	35	11	-00
4.2	55	-24	13	-07	12	-10	-03
4.3	09	-05	45	-22	10	16	-20
4.4	08	-02	04	00	37	-03	-12
4.5	32	20	-03	18	27	-04	05
4.6	42	-21	02	21	05	05	11
4.7	12	-10	-05	-27	-13	-15	-03
5.1	-25	-26	-02	-22	09	-12	00
5.2	48	08	11	19	-07	-09	02
5.3	11	04	10	64	04	01	12
5.4	-17	08	-08	-52	-00	05	17
5.5	02	-02	-01	17	11	04	43
5.6	-01	-24	12	-01	-11	36	-04
5.7	18	-08	06	-20	-03	-12	12
5.8	17	-00	05	-02	29	-10	07
6.1	-14	-10	39	-03	-06	21	-14
6.2	37	-11	22	04	05	09	38
6.3	08	11	49	13	27	10	13
6.4	12	07	37	09	07	-10	11
6.5	08	00	60	08	-04	-04	06
6.6	06	00	21	-15	40	11	01
6.7	35	-09	16	-16	-23	08	18
% Total Variance	9	7	7	7	6	5	5

*Decimal points omitted.

Table 27. Factor Matrix for WBCL - All Items
Lansing Sample (N = 87)*

Item	Principal Axes Loadings										
	1	2	3	4	5	6	7	8	9	10	11
1.1	11	55	-32	-06	-01	-04	18	32	-05	-23	09
1.2	30	-39	-24	-12	09	05	06	-19	-17	03	18
1.3	08	26	-05	08	34	13	-18	-18	-16	10	10
1.4	79	-38	-01	15	10	-02	-00	-07	-10	12	-03
1.5	51	07	-34	-01	-32	-18	03	-03	-26	-02	-05
1.6	45	-06	-15	21	13	17	-02	-17	05	-21	24
1.7	82	-17	14	-16	08	-14	27	16	03	10	-01
1.8	29	-20	-02	-17	-37	-09	-25	-08	-09	-03	12
2.1	32	20	-16	-05	09	-18	-35	06	-01	15	09
2.2	29	24	-10	01	21	04	16	-29	07	-17	-11
2.3	05	47	10	-07	-00	-10	-19	-03	-25	12	-28
2.4	32	18	17	28	-00	-24	-07	-30	-10	-05	10
2.5	28	-06	-28	-18	-07	17	-13	19	09	-15	-24
2.6	-02	31	-41	-23	08	26	11	01	12	-04	-10
2.7	46	-03	-36	-18	06	-22	-02	-18	19	-18	05
2.8	37	-05	-15	-30	08	23	-11	05	-20	15	-09
3.1	-08	21	-06	33	30	-13	03	-06	-04	03	-03
3.2	-26	19	-13	12	-25	28	-36	03	04	-13	15
3.3	-09	-35	29	07	-16	09	-04	21	14	11	10
3.4	-26	45	07	12	-24	-06	03	08	-03	18	13
3.5	-42	16	15	12	25	08	-15	20	-10	-11	-26
3.6	75	-29	15	-18	11	07	18	13	08	05	-07
4.1	67	-00	-01	26	-07	-09	-04	24	-05	-05	-19
4.2	05	45	16	11	10	01	37	11	-13	03	16
4.3	48	04	-06	08	13	26	-15	32	03	04	05
4.4	24	-19	-12	25	-12	20	-25	06	-02	34	-06
4.5	-03	20	-34	02	-28	22	06	-23	14	33	11
4.6	13	55	-17	10	32	-04	-07	14	02	-04	18
4.7	20	23	-01	06	-05	-11	-10	-28	27	-07	-19
5.1	29	02	43	-31	-04	11	-10	07	08	-22	23
5.2	16	24	-00	19	-41	00	42	02	-18	05	-03
5.3	17	48	03	-03	-16	42	07	-13	12	11	-06
5.4	02	13	11	-24	09	12	01	04	-04	-12	-02
5.5	37	20	23	15	-09	24	-05	04	28	-13	12
5.6	02	07	30	-14	22	06	-06	-11	-08	26	21
5.7	25	05	30	12	-19	-12	-26	-13	07	-29	-13
5.8	47	28	22	21	-21	09	14	-02	08	-07	02
6.1	36	51	19	-30	-02	-14	-06	-02	11	19	06
6.2	32	06	12	03	-05	12	-05	08	-35	-10	10
6.3	09	38	-07	00	-04	-30	-23	22	-07	01	14
6.4	33	25	03	-08	02	-34	-07	10	38	25	-05
6.5	51	-14	-05	46	07	15	-07	02	-06	-04	-05
6.6	30	30	34	-11	13	24	-02	-24	-08	06	-24
6.7	07	20	11	-37	-19	02	-08	-12	-30	-15	-01
% Total Variance	19	11	6	5	5	4	4	4	3	3	3

*Decimal points omitted.

Table 27 (Continued)

Item	Varimax Loadings						
	1	2	3	4	5	6	7
1.1	-05	36	-45	-04	-29	01	14
1.2	42	-16	-16	04	18	-20	-13
1.3	-04	20	-16	21	20	16	25
1.4	81	-00	08	35	05	06	06
1.5	37	29	21	12	-31	-18	-31
1.6	36	00	-15	39	00	00	06
1.7	90	10	02	-05	-11	08	01
1.8	23	09	09	03	-00	00	-53
2.1	14	48	-09	17	15	00	-12
2.2	22	17	-24	06	-07	08	24
2.3	-14	43	-01	-01	-05	26	03
2.4	19	33	24	22	-18	04	11
2.5	20	03	-32	12	09	02	-27
2.6	-09	05	-61	-05	-01	05	04
2.7	44	30	-26	00	06	-22	-14
2.8	33	02	-32	04	20	18	-18
3.1	-13	17	02	18	-00	-14	41
3.2	-47	00	-12	28	-00	13	-25
3.3	00	-33	34	02	03	06	-15
3.4	-41	19	02	-05	-34	12	05
3.5	-43	-01	11	02	21	11	27
3.6	84	-07	-00	02	03	17	-03
4.1	52	23	07	38	-20	00	-05
4.2	-00	13	-08	-08	-35	21	43
4.3	33	08	-18	37	08	21	-00
4.4	12	-08	00	46	04	-01	-22
4.5	-17	-02	-38	11	-26	-01	-17
4.6	-07	47	-27	15	00	10	35
4.7	05	29	-00	11	-11	06	-01
5.1	27	04	14	-14	08	49	-14
5.2	06	-01	-06	00	-67	02	00
5.3	-06	05	-34	13	-30	48	01
5.4	02	02	-10	-16	08	25	04
5.5	18	06	02	28	-19	40	01
5.6	04	03	10	-10	18	29	15
5.7	11	21	34	17	-08	20	-18
5.8	28	14	04	22	-45	32	04
6.1	18	53	-08	-18	-12	40	-00
6.2	22	05	00	16	-07	23	-05
6.3	-09	53	00	03	-06	00	-04
6.4	22	48	04	-05	-08	03	00
6.5	39	-03	04	59	-06	-03	08
6.6	19	12	-02	03	-01	55	15
6.7	00	16	-08	-24	-04	29	-24
% Total Variance	16	8	6	6	6	7	5

*Decimal points omitted.

loadings (except for sub-scale three) on the first factor. It is also true that the first factor was twice as large as the second largest factor in both the Lenawee and Lansing samples. However, the amount of variance accounted for by any single factor did not exceed twenty percent of the total matrix variance. In addition, there is a rapid decline in the amount of variance accounted for by each factor so that by the time we reach the fourth factor, we are dealing with less than six percent of the total matrix variance. Consequently, as shown in Tables 25, 26, and 27, the matrix variance accounted for by the fourth factor may be no more than one or two percent higher than that accounted for by the tenth or eleventh factor. Therefore, while the trends appear to be in the predicted direction, the total matrix variance is spread over so many factors that it is difficult to extract any definitive support for the prediction of a seven factor solution.

Prediction C

This prediction states that the sub-scale total scores within samples will produce a one factor solution for all three samples. Since the earlier predictions have been based on the assumption that each sample would score in a consistent manner on all six sub-scales, there is an

implied basis for assuming that the six scales are not orthogonal. It is this rationale which forms the basis of the sixth prediction.

Tables 28, 29, and 30 show that the factor analysis of the sub-scale total scores produced one large general factor in all three samples. As indicated in Table 28, the first unrotated factor accounts for 61 percent of the total matrix variance in the Lenawee sample. All of the sub-scales except sub-scale three have significant loadings on this factor.

Table 28. Factor matrix for WBCL Sub-Scale total scores, Lenawee sample (N-439).*

Sub-Scale	Principal Axes Loadings		Varimax Loadings	
	I	II	I	II
1	43	-10	13	42
2	60	-29	06	67
3	-05	36	29	-23
4	34	23	38	18
5	43	33	50	21
6	60	02	32	50
% Total Variance	61	20	30	50

*Decimal points omitted.

The largest single factor for the sub-scale total scores was obtained in the Lansing sample. From Table 29 we see that the first factor accounts for 65 percent of the

matrix variance among the Lansing boys. All of the loadings are relatively high except for sub-scale three.

Table 29. Factor matrix for WBCL Sub-Scale total scores, Lansing sample (N-87).*

Sub-Scale	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
1	71	-28	-13	16	76	05
2	69	-19	-04	26	68	04
3	-19	42	-20	01	-33	39
4	59	25	-26	31	41	47
5	45	36	20	59	13	16
6	65	15	22	59	39	05
% Total Variance	65	17	7	28	48	13

*Decimal points omitted.

The same pattern with lower (but still significant) loadings is evident from Table 30 for the Turrialba sample. Again, the only non-significant loadings are on sub-scale three. It will be recalled that a one factor solution was obtained on sub-scale three in all three samples but the mean scores were much lower than they were for any of the other scales.

Table 30. Factor matrix for WBCL Sub-Scale total scores, Turrialba sample (N-112).*

Sub-Scale	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
1	30	30	-15	43	09	-09
2	35	-38	-20	16	-54	01
3	-22	50	-02	06	51	-19
4	54	27	09	57	04	21
5	41	-11	33	22	-15	47
6	59	10	-13	58	-20	07
% Total Variance	51	28	10	44	30	15

*Decimal points omitted.

Summary of Prediction C

The data for the sub-scale total scores appear, therefore, to lend further support to the prior indications that sub-scale three approaches a unidimensional scale which is orthogonal to the other five scales. In addition, the Lansing sample provides the strongest support for a one factor solution and the highest loadings for the sub-scale contributions to a large common factor. The weakest support is in the Turrialba sample where the second factor accounts for 28 percent of the matrix variance.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Even when limited to the cognitive level, as we have done in this thesis, the measurement of values is not a clear-cut operation. In the earlier discussion of concept formation and scientific method, it was pointed out that explanation requires the use of precise terms and measurement. Values were defined in such a way as to include only the cognitive dimension. An instrument was used with assumptions based on the use of the ideal type, and predictions were made according to these assumptions. The data was analyzed by means of factor analysis, a technique which has sufficient mathematical underpinnings to maintain a respectable position in the world of contemporary social science. With the aid of a high speed digital computer, numerous factor matrices were produced. And yet, no "automatic" meaning was produced. Despite all the numbers, in the final analysis meaning had to be imposed on the data by the author. The method for achieving this varied from the use of existing literature to outright speculation.

Yet, we are often inclined to place high level measurement on a sacred alter, and to equate such measurement

with precision. However, one of the curious quirks of science appears to be that the very concept of "measurement," despite all of the overtones of precision, does not denote the same thing to all workers in the field. Thus, a sharp line is drawn between measurement and meaning. As pointed out earlier, whenever the data is transformed into symbols of a different level, the underlying principle of operationism must be kept in mind, lest we equate the symbol with the original source of data.

In this study, written responses were transformed into numbers referred to as factor loadings. It is these loadings which we interpret. But in order to make sense out of the loadings, it is necessary to refer back to the non-quantitative domain of theory. As previously stated, the same argument can be advanced when it comes to the interpretation of theory. In short, the dialogue between theory and method is no less complete, whether it involves high level theory or high level measurement or both. Within this context, let us consider the relationship of the results of this study to the hypothetical predictions.

The most immediate implication of the results of the data analysis is the lack of uniformity of results. The prediction of a one factor solution for all three samples was supported only on sub-scale three. It was suggested in

the last chapter that the five items which contributed to this factor were more indicative of family and community ties than physical mobility. The present writer suggests that a more appropriate title of this dimension would be "positive versus negative evaluation of family and community ties." While there was some support for a one factor solution among all three samples on sub-scale five, only the Lenawee sample showed a relatively consistent trend in this direction on all six sub-scales. Consequently, the first inclination is to conclude that the Work Beliefs Check List, insofar as it taps a common factor, reflects the value system most prevalent in the Lenawee sample.

In addition, only the Lenawee sample had mean scores which placed them at a position along the hypothetical continuum consistent with predictions. In both the Lansing and the Turrialba samples, there was a consistent tendency for the boys to score toward the industrial end of the continuum, on all scales except sub-scale three. In addition, there was a tendency toward greater variation and fluctuation among the Lansing and Turrialba samples.

If we relied on the mean scores alone, the implication would be that the Lansing and Turrialba boys held strong industrial values. However, the lack of uni-dimensional factors among these samples indicates a lack

of concensus on the specific items of the various scales. It seems more plausible, therefore, to assume that the items of the Work Beliefs Check List are a less ambiguous indication of the value orientations of the United States than of other cultures. This seems particularly true when we consider the instrument as a whole, since only the Lenawee sample showed a relatively consistent pattern of approaching unidimensionality and mean scores toward the industrial end of the continuum.

The first prediction of a one factor solution was supported in a relatively consistent manner for the Lenawee boys on all six scales. However, as shown in the discussion of the results, this does not mean that the evidence for a one factor solution was equally strong on all six scales, or that all of the items make significant contributions to the factor. On the other hand, the failure to achieve a large common factor on all of the scales in the Lansing and Turrialba samples does not mean that there were no single factor solutions for any of the scales. It simply means that the predictions were not uniformly or consistently upheld.

The second prediction about the Lenawee sample having mean scores toward the high or industrial end of the continuum

was generally supported, although the third sub-scale on physical mobility indicated more of a tendency for this sample to fall around the middle of the range. The third and fourth predictions which placed the mean scores for the Turrialba and Lansing samples in the middle range were generally not supported. While it is true that the mean scores for some of the items were lower than for the Lenawee sample, the results were erratic and non consistent for any given scale with the exception of sub-scale three.

Discussion of the Alternative Conclusions

In chapter four, a set of conditions was stated and it was argued that if the expected relations were not obtained, one or more of the propositions would be rejected. However, the results are not simple and easy to fit into the appropriate slot. Hence, while the instrument does not appear to fulfill the criterion of unidimensionality in all three of the samples on all of the scales, it cannot be argued that none of the predictions were supported. In short, unidimensionality was found on some of the scales in all of the samples.

It seems, therefore, that the most reasonable conclusion is that the instrument as a whole appears to provide more clear cut and consistent data among the most

highly industrialized samples. Perhaps, as a function of the partial but incomplete internalization of these industrial values by the intermediate and transitional samples, the results are difficult to describe in terms of unidimensionality. As a result of this, the present conclusion is that while there is strong evidence that the Turrialba and Lansing samples express industrial values on many of the items of the scale, and while there does appear to be unidimensionality on some of the scales, this is not true for all of the scales or for the instrument as a whole. It should also be noted that the sub-scale dealing with the evaluation of physical mobility having strong evidence for a unidimensional scale among all three samples, is the only one in which the non-industrial samples (more precisely, the intermediate range samples) scored at the non-industrial end of the scale. The possible reasons for this were discussed in the results chapter and will not be repeated at this time.

Limitations of the Study

One of the most obvious weaknesses of the study lies in the particular samples used. Since there was no sample which could be placed at the extreme non-industrial end of the continuum, there is no way of knowing whether such a sample would have shown a fairly consistent tendency to

support the predictions. Since the Lenawee sample did show such a tendency to support the predictions for the industrial end of the continuum, data from such a fourth sample would enable us to make better judgments about whether the tendency for the Lansing and Turrialba samples to score toward the industrial end of the continuum is actually a function of the level of industrialization.

Another weakness lies in the method of analysis. Since the study was concerned with the question of unidimensionality of scales, it is possible to question the use of factor analysis, rather than the scalogram analysis. Guttman, for example, contends that the factorial structure is derivable from a scale analysis but knowledge of the factor analysis will not enable us to ascertain the scale patterns.[1] However, the proponents of factor analysis argue just as strongly for the merits of this technique. Ideally, both techniques should have been used but this was not possible within the operating limits of time and money.

It has already been pointed out that within the camp of those who endorse factor analysis, there is considerable dissention over whether or not factors should be rotated.

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[1]Louis Guttman, "Relation of Scalogram Analysis to Other Techniques," in Samuel A. Stouffer et. al., Measurement and Prediction (Princeton, New Jersey: Princeton University Press, 1950), p. 192.

Moreover, among those who advocate rotation, there are numerous unresolved issues over the specific methods of rotation (i.e., oblique versus orthogonal). Similar problems exist even after a decision has been made to use orthogonal rotations. The reader is reminded of the discussion in chapter four concerning quartimax and varimax rotations. Since the rationale for the choice made in this study were presented in this earlier discussion, it will not be repeated at this time. However, it was noted that certain unanticipated problems occurred in the rotation.

The factors were rotated in the order of size, that is the two largest, then the three largest, etc. However, the ranking procedure which the computer lab used (at least on this data) took the sign of the eigenvalues into account. This resulted in some factors being ranked below other factors even though the "low" factor accounted for a larger percentage of the total matrix variance. Since it always turned out that the three largest factors were positive, there was no problem in the rotation of these factors. However, the fourth largest factor was frequently ranked last and, therefore, was rotated only when all of the factors were rotated. As pointed out in the section on data analysis, increasing the number of factors being rotated results in the larger factor splitting. In the

present study, this splitting was so extreme that there appeared to be almost as many factors as there were items. Consequently, most of the rotations involve only three factors, even though there were fourth factors which had enough significant loadings so they should have been rotated. The net effect of this was an increased reliance on the unrotated factors for interpretation.

A further limitation of the study involves the ordinary problems of translation, and conceptual meaning which arise when an instrument has to be translated into a different language. Since the present writer is not qualified to address himself to this problem, he can only acknowledge the fact that this is an additional limitation of the study.

Implications for Future Research

In using or designing an instrument like the Work Beliefs Check List, one of the first modifications which seems to be needed has to do with the assumption that all six of the sub-scales are equal indicants of the internalization of industrial values. It has already been suggested that the third scale appears to be tapping orientations toward family and community ties rather than orientations toward physical mobility. Even if orientations toward structured time, work, change, deferred gratification, etc., are

related to the level of industrialization, this does not mean that all of the scales are equally weighted or equally salient to the members of the sample. Strong negative evaluation of the severance of kinship and community ties by more gemeinshaft groups is consistent with theory and the underlying assumptions of the instrument. However, theory also leads us to expect weaker reactions to dimensions which have no kinship basis, even though the reactions may be in the same direction. Consequently, some modification of the theoretical expectations of mean scores should be made. In other words, rather than expecting the middle range samples to score around the midpoint, it might be more consistent with the present data if the expectations were for scores between the midpoint and the high end of the continuum, but with considerable inter-item variance.

Another modification of the instrument involves the specific items of the respective scales. Some of the items showed little or no discriminating power and should be eliminated from the scale or included with a different scale. These items have been discussed in some detail in the results chapter where the outstanding example was item six of the third sub-scale. This item did not appear to belong with the other items on the level of face validity and the results strongly supported this for all three samples.

However, the most important implication for future research lies in the relationship of concept formation, theory construction, and measurement to each other. Considering the amount of post-analysis projection of meaning necessary to attempt to interpret the data, it seems legitimate to ask whether the high level techniques used for data analysis have increased the precision in the measurement of values. In the opinion of the present writer, the justification of the technique cannot be based on the present data *per se* but lies in the potential for developing and improving the measurement of transcultural value variables in future research. If the Work Beliefs Check List is modified in accordance with the present findings, it should yield increasingly less erratic results, and with fewer items and less labor. If subsequent studies support this view, the technique may aid in the development of a more precise and a more simplified instrument for the measurement of values. At this stage, presumably, the boundary conditions for interpreting the data will be more accurately stated. This writer strongly believes that such a stage will be reached *only* by recognizing the dialogue between quantitative and qualitative variables in social research, and the inescapable linkage of concept formation, theory construction and measurement.

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APPENDIX A

CORRELATION MATRICES FOR ALL SAMPLES

Table A-1. Item Intercorrelations for Sub-Scale 1. Lenawee Sample (N = 439)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
1.1		13	08	-06	16	-04	-06	-01
1.2			15	17	23	14	18	12
1.3				01	12	14	06	01
1.4					16	06	22	04
1.5						11	10	-01
1.6							09	07
1.7								05
1.8								

*Decimal points omitted.

Table A-2. Item Intercorrelations for Sub-Scale 1. Turrialba Sample (N = 112)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
1.1		20	-01	-09	21	00	25	11
1.2			-06	-04	-06	00	-07	-06
1.3				-13	02	00	-08	-23
1.4					-08	00	-02	04
1.5						00	06	-14
1.6							00	00
1.7								02
1.8								

*Decimal points omitted.

Table A-3. Item Intercorrelations for Sub-Scale 1. Lansing Sample (N = 87)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
1.1		-13	-03	-17	21	07	03	-14
1.2			08	43	21	24	25	17
1.3				02	-01	19	-07	-04
1.4					41	37	69	21
1.5						14	35	32
1.6							31	05
1.7								21
1.8								

*Decimal points omitted.

Table A-4. Item Intercorrelations for Sub-Scale 2. Lenawee Sample (N = 439)*

Item	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
2.1		03	19	17	08	12	17	19
2.2			09	-01	14	14	05	07
2.3				22	17	15	11	08
2.4					02	08	02	17
2.5						40	10	09
2.6							15	14
2.7								29
2.8								

*Decimal points omitted.

Table A-5. Item Intercorrelations for Sub-Scale 2. Turrialba Sample (N = 112)*

Item	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
2.1		26	28	-11	04	-08	19	00
2.2			01	-13	10	03	21	00
2.3				-01	02	-02	-06	00
2.4					-07	-01	-01	00
2.5						23	-02	00
2.6							-21	00
2.7								00
2.8								

*Decimal points omitted.

Table A-6. Item Intercorrelations for Sub-Scale 2. Lansing Sample (N = 87)*

Item	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
2.1		07	13	17	11	02	27	17
2.2			10	26	09	23	29	-02
2.3				14	06	01	-06	14
2.4					-19	-19	07	-10
2.5						26	22	20
2.6							17	20
2.7								07
2.8								

*Decimal points omitted.

Table A-7. Item Intercorrelations for Sub-Scale 3. Lenawee Sample (N = 439)*

Item	3.1	3.2	3.3	3.4	3.5	3.6
3.1		28	02	14	01	01
3.2			14	15	12	06
3.3				16	12	04
3.4					08	-08
3.5						-05
3.6						

*Decimal points omitted.

Table A-8. Item Intercorrelations for Sub-Scale 3. Turrialba Sample (N = 112)*

Item	3.1	3.2	3.3	3.4	3.5	3.6
3.1		17	29	25	18	-04
3.2			08	09	09	02
3.3				10	10	00
3.4					07	04
3.5						-04
3.6						

*Decimal points omitted.

Table A-9. Item Intercorrelations for Sub-Scale 3. Lansing Sample (N = 87)*

Item	3.1	3.2	3.3	3.4	3.5	3.6
3.1		-02	-10	05	13	-21
3.2			06	21	11	-34
3.3				-05	-03	07
3.4					17	-28
3.5						-30
3.6						

*Decimal points omitted.

Table A-10. Item Intercorrelations for Sub-Scale 4. Lenawee Sample (N = 439)*

Item	4.1	4.2	4.3	4.4	4.5	4.6	4.7
4.1		07	18	19	12	10	04
4.2			06	13	17	15	11
4.3				17	01	21	09
4.4					21	11	04
4.5						13	00
4.6							02
4.7							

*Decimal points omitted.

Table A-11. Item Intercorrelations for Sub-Scale 4. Turrialba Sample (N = 112)*

Item	4.1	4.2	4.3	4.4	4.5	4.6	4.7
4.1		11	-04	26	21	03	-06
4.2			14	02	12	43	12
4.3				12	03	-06	01
4.4					13	08	-07
4.5						15	04
4.6							03
4.7							

*Decimal points omitted.

Table A-12. Item Intercorrelations for Sub-Scale 4. Lansing Sample (N = 87)*

Item	4.1	4.2	4.3	4.4	4.5	4.6	4.7
4.1		09	40	26	-16	04	17
4.2			03	-14	05	24	-08
4.3				21	-01	21	01
4.4					30	-09	-04
4.5						-03	16
4.6							09
4.7							

*Decimal points omitted.

Table A-13. Item Intercorrelations for Sub-Scale 5. Lenawee Sample (N = 439)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
5.1		-05	-03	06	-00	11	06	-01
5.2			25	04	18	05	04	13
5.3				-02	25	06	10	16
5.4					05	04	09	07
5.5						11	04	27
5.6							05	06
5.7								20
5.8								

*Decimal points omitted.

Table A-14. Item Intercorrelations for Sub-Scale 5. Turrialba Sample (N = 112)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
5.1		-19	-21	16	-06	09	06	-01
5.2			23	-14	04	04	06	12
5.3				-37	25	05	-11	09
5.4					-11	09	01	05
5.5						-02	-02	06
5.6							04	-04
5.7								17
5.8								

*Decimal points omitted.

Table A-15. Item Intercorrelations for Sub-Scale 5. Lansing Sample (N = 87)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
5.1		-03	09	25	31	26	20	23
5.2			30	-01	01	-13	04	38
5.3				12	29	07	09	31
5.4					06	01	-01	-01
5.5						-06	25	43
5.6							-02	03
5.7								28
5.8								

*Decimal points omitted.

Table A-16. Item Intercorrelations for Sub-Scale 6. Lenawee Sample (N = 439)*

Item	6.1	6.2	6.3	6.4	6.5	6.6	6.7
6.1		09	06	10	09	07	13
6.2			00	02	00	09	19
6.3				32	17	09	03
6.4					25	21	09
6.5						17	11
6.6							14
6.7							

*Decimal points omitted.

Table A-17. Item Intercorrelations for Sub-Scale 6. Turrialba Sample (N = 112)*

Items	6.1	6.2	6.3	6.4	6.5	6.6	6.7
6.1		01	26	09	22	-01	04
6.2			21	15	14	10	38
6.3				18	31	17	-04
6.4					34	12	-01
6.5						07	-01
6.6							11
6.7							

*Decimal points omitted.

Table A-18. Item Intercorrelation for Sub-Scale 6. Lansing Sample (N = 87)*

Items	6.1	6.2	6.3	6.4	6.5	6.6	6.7
6.1		10	35	46	-05	39	23
6.2			13	-10	27	17	22
6.3				21	-02	-12	03
6.4					-02	11	-14
6.5						23	-14
6.6							19
6.7							

*Decimal points omitted.

Table A-19. Sub-Scale Total Score Correlations
Lenawee Sample (N = 439)*

Sub-Scale	1	2	3	4	5	6
1		26	-14	16	21	18
2			-13	12	17	36
3				08	16	-01
4					22	20
5						24
6						

*Decimal points omitted.

Table A-20. Sub-Scale Total Score Correlations
Turrialba Sample (N = 112)*

Sub-Scale	1	2	3	4	5	6
1		01	09	26	02	23
2			-31	10	09	20
3				04	-18	-07
4					25	30
5						21
6						

*Decimal points omitted.

Table A-21. Sub-Scale Total Score Correlations
Lansing Sample (N = 87)*

Sub-Scale	1	2	3	4	5	6
1		50	-29	44	21	38
2			-21	39	20	45
3				11	01	-10
4					33	36
5						43
6						

*Decimal points omitted.

Table A-22. WBCL Intercorrelations for all Items
Lenawee Sample (N = 439)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
1.1	--	13	08	-06	16	-04	-06	-01	10	-01	10	11	-00	08	07	-06
1.2		--	15	17	23	14	18	12	10	01	10	07	-00	10	06	07
1.3			--	01	12	14	06	01	16	20	19	07	04	07	04	04
1.4				--	16	06	22	04	16	06	-01	04	02	04	09	09
1.5					--	11	10	-01	25	07	08	11	04	13	18	12
1.6						--	09	07	09	10	02	07	13	-02	03	00
1.7							--	05	07	06	04	07	04	06	13	08
1.8								--	-03	-02	-02	-02	10	01	00	-08
2.1									--	03	19	17	08	12	17	19
2.2										--	09	-01	14	14	05	07
2.3											--	22	17	15	11	08
2.4												--	02	08	02	17
2.5													--	40	10	09
2.6														--	15	14
2.7															--	29
2.8																--
3.1																
3.2																
3.3																
3.4																
3.5																
3.6																
4.1																
4.2																
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5.5																
5.6																
5.7																
5.8																
6.1																
6.2																
6.3																
6.4																
6.5																
6.6																
6.7																

Table A-22. WBCL Intercorrelations for all Items
Lenawee Sample (N = 439)*

Item	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	4.7
1.1	11	-04	-10	01	-06	06	-01	09	02	03	08	09	-13
1.2	-05	03	-07	01	-12	07	11	-03	15	20	09	09	-02
1.3	-01	-00	-10	08	-10	09	05	09	05	06	13	03	-06
1.4	-05	-08	-04	-16	-00	16	15	-05	04	13	06	04	06
1.5	-07	-07	-04	-04	-03	11	14	04	16	12	15	12	-08
1.6	-05	-01	-15	-08	-01	12	02	07	07	11	09	12	-00
1.7	-04	-08	-10	-14	-07	02	14	-07	11	03	-06	-01	05
1.8	-02	-01	01	-06	-02	04	02	-11	11	05	01	-03	01
2.1	-01	-12	-08	-00	-13	12	20	03	09	14	20	16	-03
2.2	-00	-14	-06	-13	-08	02	-12	-00	-04	-06	02	-08	02
2.3	12	-03	-06	04	-09	05	09	06	-02	-01	11	15	-07
2.4	02	-07	-03	-02	-04	09	08	07	10	05	09	12	05
2.5	-05	-05	02	-15	00	10	01	02	-04	-01	07	04	00
2.6	04	03	03	-02	-10	-01	02	05	-03	03	04	05	-05
2.7	-07	-20	-07	-02	-03	-02	07	02	-01	06	01	09	-05
2.8	-08	-12	04	02	02	00	-01	-03	-01	10	07	06	-00
3.1	--	28	02	14	01	01	-02	01	-03	-11	03	06	02
3.2		--	14	15	12	06	-00	-05	-02	-06	00	00	03
3.3			--	16	12	04	-01	-08	03	05	-02	-02	01
3.4				--	08	-08	-06	15	00	01	12	15	-08
3.5					--	-05	-04	03	04	07	-02	00	12
3.6						--	17	05	10	16	04	16	-00
4.1							--	07	18	19	12	10	04
4.2								--	06	13	17	15	11
4.3									--	17	01	21	09
4.4										--	21	11	04
4.5											--	13	00
4.6												--	02
4.7													--
5.1													
5.2													
5.3													
5.4													
5.5													
5.6													
5.7													
5.8													
6.1													
6.2													
6.3													
6.4													
6.5													
6.6													
6.7													

Table A-22. WBCL Intercorrelations for all Items
Lenawee Sample (N = 439)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	6.1	6.2	6.3	6.4	6.5	6.6	6.7
1.1	-09	11	16	00	17	-01	11	15	22	01	16	09	-04	04	10
1.2	04	01	05	-01	11	02	10	07	-01	00	03	08	02	06	04
1.3	05	11	17	-03	13	-05	03	04	01	01	11	-00	06	-05	06
1.4	25	-08	06	01	09	10	05	01	-07	06	05	04	10	-04	06
1.5	03	02	27	-01	17	11	01	14	07	06	07	17	12	14	04
1.6	-01	-02	-01	-04	03	02	07	05	-01	00	07	04	12	06	04
1.7	07	-02	02	-04	-04	01	-02	-02	-08	04	-00	08	11	19	-00
1.8	08	-06	-06	01	-06	09	08	02	-12	02	-07	-09	03	03	13
2.1	13	10	12	-07	20	03	-01	16	02	07	32	13	11	14	06
2.2	02	-05	01	-04	00	-06	12	05	04	12	-00	-07	00	04	18
2.3	-01	10	07	-11	13	-01	01	17	07	16	15	12	02	04	16
2.4	03	08	13	01	19	-02	05	13	07	08	14	07	02	14	13
2.5	05	-04	-07	07	03	02	-02	07	10	08	10	-01	09	08	18
2.6	-08	09	07	08	17	04	02	17	07	13	12	00	01	13	25
2.7	-04	05	14	-05	00	-08	05	08	05	14	04	05	09	06	13
2.8	04	05	02	-01	08	-05	05	03	03	-01	10	10	09	08	06
3.1	-05	17	11	05	04	05	09	07	02	-00	02	-05	-10	-02	11
3.2	-07	03	02	10	08	05	03	-01	03	-03	-05	-03	-06	-04	-05
3.3	03	-04	-04	02	04	05	-00	-05	08	-07	-01	-01	-05	-02	-05
3.4	-08	17	14	-04	14	-08	-05	08	10	-04	04	-05	-05	02	02
3.5	05	-03	-05	15	04	10	02	02	03	-12	-09	-04	02	-00	00
3.6	02	-00	-03	-00	11	06	00	03	07	02	07	16	13	18	07
4.1	10	-00	02	-03	05	05	-03	06	-03	05	11	15	18	05	-01
4.2	-13	10	13	-14	21	01	-03	07	15	02	23	07	00	10	05
4.3	03	04	07	06	10	-00	-04	01	-06	-03	08	15	18	15	-06
4.4	07	03	05	09	10	-03	06	02	-00	04	01	09	11	-02	06
4.5	10	12	18	03	27	10	03	22	10	06	29	03	14	01	08
4.6	00	09	10	-05	23	-01	-09	13	-01	06	17	07	13	16	05
4.7	07	-02	-05	07	-06	13	14	-05	-07	02	-05	-02	06	01	-05
5.1	--	-05	-03	06	-00	11	06	-01	05	10	01	02	05	-01	-01
5.2		--	25	04	18	05	04	13	04	06	06	-00	-13	01	-01
5.3			--	-02	25	06	10	16	19	13	16	07	15	09	10
5.4				--	05	04	09	07	04	-00	-09	-05	-01	-04	-01
5.5					--	11	04	27	18	10	22	11	06	11	15
5.6						--	05	06	09	-02	02	12	07	05	-00
5.7							--	20	06	-04	-01	-02	01	00	13
5.8								--	10	10	21	00	04	10	17
6.1									--	09	06	10	09	07	13
6.2										--	00	02	00	09	19
6.3											--	32	17	09	08
6.4												--	25	21	09
6.5													--	17	11
6.6														--	14
6.7															--

Table A-23. WBCL Intercorrelations for all Items
Turrialba Sample (N = 112)

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
1.1	--	20	-01	-09	21	00	25	11	06	21	-08	01	-12	-03	09	00
1.2		--	-06	-04	-06	00	-07	-06	-12	-06	-15	27	-07	-08	15	00
1.3			--	-13	02	00	-08	-23	10	07	18	-11	-09	07	-04	00
1.4				--	-08	00	02	04	-16	-14	-02	18	04	-08	-06	00
1.5					--	00	06	-14	08	18	-04	-05	02	-03	-11	00
1.6						--	00	00	00	00	00	00	00	00	00	00
1.7							--	02	01	09	-06	-17	-04	14	04	00
1.8								--	07	-13	-05	-11	03	-16	03	00
2.1									--	26	28	-11	04	-08	19	00
2.2											01	-13	-10	03	21	00
2.3											--	-01	02	-02	-06	00
2.4												--	-07	-01	-01	00
2.5													--	23	-02	00
2.6														--	-21	00
2.7															--	00
2.8																--
3.1																
3.2																
3.3																
3.4																
3.5																
3.6																
4.1																
4.2																
4.3																
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4.7																
5.1																
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5.6																
5.7																
5.8																
6.1																
6.2																
6.3																
6.4																
6.5																
6.6																
6.7																

Table A-23. WBCL Intercorrelations for all Items.
Turrialba Sample (N = 112)

Item	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	4.7
1.1	05	19	-14	-03	02	02	20	15	01	-06	10	27	-10
1.2	01	09	05	05	01	-02	-03	-06	-04	-07	-01	03	-06
1.3	20	13	05	04	-06	13	05	02	-04	07	17	03	10
1.4	-02	17	12	07	07	-03	-04	-08	-06	-09	-17	-02	05
1.5	-02	15	-21	-07	-08	-05	11	30	-09	-06	30	05	-05
1.6	00	00	00	00	00	00	00	00	00	00	00	00	00
1.7	-11	11	-09	-09	14	12	22	13	08	10	04	-04	04
1.8	-19	00	-04	03	04	-13	06	-03	11	-03	07	04	-11
2.1	-22	02	-14	-07	-07	-10	-12	20	-12	09	-04	22	00
2.2	-22	-12	-16	-19	-11	-14	16	12	-12	11	14	22	14
2.3	06	-04	-12	-07	-02	02	08	-09	-08	02	-05	-01	-06
2.4	00	-04	-01	03	00	-05	-06	-05	-10	-15	-13	-22	02
2.5	-09	-06	01	-05	-04	-05	-07	02	12	08	-09	08	01
2.6	05	-10	01	-10	01	-02	-08	20	14	07	-01	-01	05
2.7	-26	09	-24	-12	-05	-04	-05	10	06	08	-16	06	-11
2.8	00	00	00	00	00	00	00	00	00	00	00	00	00
3.1	--	17	29	25	18	-04	12	-20	-12	-04	12	-04	-11
3.2		--	08	09	09	02	09	15	08	10	10	10	01
3.3			--	10	10	-00	-06	-15	-05	12	-06	-06	09
3.4				--	07	04	05	-07	-16	04	13	-02	03
3.5					--	-04	-11	-08	19	07	00	-09	-06
3.6						--	-02	16	24	14	-10	-08	15
4.1							--	11	-04	26	21	03	-06
4.2								--	14	02	12	43	12
4.3									--	12	03	-06	01
4.4										--	13	08	-07
4.5											--	15	04
4.6												--	03
4.7													--
5.1													
5.2													
5.3													
5.4													
5.5													
5.6													
5.7													
5.8													
6.1													
6.2													
6.3													
6.4													
6.5													
6.6													
6.7													

Table A-23. WBCL Intercorrelations for all Items.
Turrialba Sample (N = 112)

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	6.1	6.2	6.3	6.4	6.5	6.6	6.7
1.1	-25	25	12	-10	-00	-02	06	02	05	25	13	04	02	07	07
1.2	-11	-05	-05	02	03	05	-01	-11	-05	06	-07	-07	-02	-10	15
1.3	05	05	14	-05	-06	-03	02	05	-07	13	14	07	-00	-01	-15
1.4	-05	05	05	06	-08	21	02	-14	-06	-12	-09	04	-03	-13	-06
1.5	-24	32	10	-16	-04	-12	-04	07	-10	10	15	10	-05	-03	16
1.6	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
1.7	11	04	-09	-11	-11	-05	-04	02	06	04	-07	-04	-06	16	-02
1.8	02	-18	09	-08	00	24	-04	-06	14	00	05	-03	00	20	05
2.1	06	03	11	-11	05	08	-01	09	08	14	13	04	04	05	-03
2.2	-02	02	11	-23	08	04	03	02	-01	16	03	11	-01	01	03
2.3	10	-06	10	08	15	-05	-06	02	- 10	-06	01	-08	-12	12	-17
2.4	-08	-09	-20	14	15	-06	06	-07	00	-04	-02	09	-05	02	-03
2.5	02	09	15	-12	06	06	-02	-02	20	09	18	23	34	12	15
2.6	-01	-08	-06	-14	06	-24	14	03	03	02	08	07	11	06	06
2.7	01	-09	-02	04	11	09	05	03	05	17	05	08	-04	04	07
2.8	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3.1	-14	05	11	11	-02	-22	-11	-09	-01	-03	12	02	-04	03	-05
3.2	-13	-01	-03	07	07	11	06	10	-02	07	18	-01	02	11	-00
3.3	-00	-07	-02	-10	-22	05	-06	-00	13	-25	-06	-15	-14	-02	-06
3.4	-04	-04	01	-00	03	-13	-00	15	-14	-04	06	04	04	-07	-12
3.5	-10	-03	-15	-10	-24	01	-14	-05	06	-25	-03	02	-04	11	-20
3.6	05	00	-13	07	-16	-07	18	06	-04	00	-06	-05	-02	07	12
4.1	-11	06	18	-10	14	05	-01	14	-05	06	08	10	-02	15	-07
4.2	-06	21	-01	-09	02	02	14	25	01	15	15	02	16	03	05
4.3	-01	05	-02	01	-08	14	-04	-01	21	12	29	01	24	18	16
4.4	-04	04	10	-06	01	-01	04	15	-11	-01	-03	15	-05	24	04
4.5	-08	14	15	-09	12	-12	-08	07	-14	18	11	13	03	11	04
4.6	-03	27	20	-12	15	17	13	12	-08	23	08	02	08	02	11
4.7	09	07	-20	26	-01	14	00	-13	00	01	-17	01	-05	-05	18
5.1	--	-19	-21	16	-06	09	06	-01	04	00	-03	-10	-09	03	-08
5.2		--	23	-14	04	04	06	12	-13	18	11	15	14	06	16
5.3			--	-37	25	05	-11	09	-05	19	07	10	14	-13	00
5.4				--	-11	09	01	05	07	-10	-10	-06	-08	04	-01
5.5					--	-02	-02	06	-12	12	12	-10	-02	14	11
5.6						--	04	-04	20	04	02	-07	10	-01	11
5.7							--	17	- 13	06	-12	14	18	05	16
5.8								--	-10	00	14	09	06	14	00
6.1									--	01	26	09	22	-01	04
6.2										--	21	15	14	10	38
6.3											--	18	31	17	-04
6.4												--	34	12	-01
6.5													--	07	-01
6.6														--	11
6.7															--

Table A-24. WBCL Intercorrelations for all Items.
Lansing Sample (N = 87)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
1.1	--	-13	-03	-17	21	07	03	-14	13	15	16	07	14	38	15	01
1.2		--	08	43	21	24	25	17	00	06	-28	-02	09	-10	34	28
1.3			--	02	-01	19	-07	-04	14	17	29	09	04	09	-05	03
1.4				--	41	37	69	21	20	25	-12	35	20	-18	34	35
1.5					--	14	36	32	24	16	11	18	24	-00	31	18
1.6						--	31	05	08	20	-14	19	09	03	31	13
1.7							--	21	10	17	03	17	20	-08	38	28
1.8								--	12	-11	-01	11	17	-11	19	17
2.1									--	07	13	17	11	02	27	17
2.2										--	10	26	09	23	29	-02
2.3											--	14	06	01	-06	14
2.4												--	-19	-19	07	-10
2.5													--	26	22	20
2.6														--	17	20
2.7															--	07
2.8																--
3.1																
3.2																
3.3																
3.4																
3.5																
3.6																
4.1																
4.2																
4.3																
4.4																
4.5																
4.6																
4.7																
5.1																
5.2																
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5.5																
5.6																
5.7																
5.8																
6.1																
6.2																
6.3																
6.4																
6.5																
6.6																
6.7																

Table A-24. WBCL Intercorrelations for all Items. Lansing Sample (N = 87)*

Item	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	4.7
1.1	04	13	-21	15	02	-06	16	29	15	-21	06	49	07
1.2	-11	-15	-07	-28	-22	25	16	-10	10	13	03	-13	-09
1.3	25	04	-23	03	08	-07	04	13	08	03	11	31	09
1.4	-01	-31	12	-35	-36	69	56	-13	38	35	-09	-12	05
1.5	-09	-06	-25	-04	-35	24	44	-05	16	11	18	13	04
1.6	04	06	-18	-26	-21	31	20	07	25	19	05	07	13
1.7	-11	-44	07	-28	-41	82	50	10	32	17	-13	03	07
1.8	-19	04	06	-11	-31	21	15	-23	08	17	05	-09	00
2.1	08	-03	-13	04	-19	10	21	-09	21	17	-01	24	07
2.2	15	-12	-15	-04	-06	17	13	14	11	-13	13	17	15
2.3	15	05	-27	23	21	-07	03	11	-06	08	03	18	08
2.4	13	03	-08	-03	-11	17	17	15	01	03	02	15	29
2.5	-16	12	-11	-14	-00	29	28	-16	29	09	03	-07	09
2.6	04	07	-21	-03	05	-08	-09	09	-00	-02	32	19	03
2.7	-03	-19	-29	-20	-35	27	25	-16	13	01	08	07	20
2.8	-11	-09	-14	-35	-24	28	17	-03	28	16	-05	03	-04
3.1	--	-02	-10	05	13	-21	06	20	-05	-05	-07	25	01
3.2		--	06	21	11	-34	-21	-13	04	09	23	15	-03
3.3			--	-05	-03	07	05	-21	-07	17	-03	-29	-20
3.4				--	17	-28	-08	26	-01	-09	26	15	04
3.5					--	-30	-19	13	-02	02	-18	08	-04
3.6						--	35	01	44	17	-13	-07	07
3.													
4.1							--	09	40	26	-16	04	17
4.2									03	-14	05	24	-08
4.3									--	21	-01	21	01
4.4										--	30	-09	-04
4.5											--	-03	16
4.6												--	09
4.7													--
5.1													
5.2													
5.3													
5.4													
5.5													
5.6													
5.7													
5.8													
6.1													
6.2													
6.3													
6.4													
6.5													
6.6													
6.7													

Table A-24. WBCL Intercorrelations for all items. Lansing Sample (N = 87)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	6.1	6.2	6.3	6.4	6.5	6.6	6.7
1.1	01	26	24	06	04	-14	-14	09	22	13	34	12	-03	01	10
1.2	02	-06	-13	-06	-07	03	-08	-06	-10	07	-16	-06	14	-05	07
1.3	07	-18	11	06	-01	23	-15	15	10	04	10	-06	10	13	01
1.4	12	-04	-09	-06	19	03	14	22	10	22	-07	13	52	14	-06
1.5	01	34	02	-03	03	-20	08	22	15	16	12	12	22	04	16
1.6	15	05	05	-05	22	-04	19	19	02	19	-01	-01	35	01	-11
1.7	31	15	-01	09	18	05	10	32	27	22	04	33	33	21	00
1.8	21	00	-13	-15	06	-05	22	16	08	11	-03	04	04	-08	26
2.1	03	-13	10	09	09	05	01	04	27	13	33	33	19	06	09
2.2	-00	-00	13	10	18	-11	05	16	22	02	-05	02	10	29	10
2.3	-01	10	16	03	-03	04	14	17	30	12	25	17	-15	28	24
2.4	04	15	02	-05	10	12	28	19	15	19	15	15	23	17	06
2.5	13	-05	03	-01	06	-18	01	07	-01	03	-05	09	09	-02	03
2.6	-15	-00	27	13	01	-07	-19	-02	19	-02	02	02	-05	-02	13
2.7	11	-10	01	03	02	-08	13	11	14	06	13	22	13	-02	-02
2.8	-04	-07	23	06	10	06	-01	03	15	19	06	06	06	17	17
3.1	-27	01	-00	-03	03	-01	-02	02	-07	-08	09	01	01	-02	-18
3.2	00	-03	16	04	06	-11	09	-09	-10	-04	14	-18	-10	-04	-01
3.3	17	-15	-09	-03	08	-04	-03	-07	-09	08	-09	-09	-01	-12	-13
3.4	-12	23	19	05	-05	07	-05	08	15	-14	20	03	-15	01	16
3.5	-05	-19	-11	02	-13	-01	03	-22	-09	-05	02	-16	-16	-00	-03
3.6	31	06	-01	09	18	05	10	22	14	13	-10	19	33	21	00
4.1	10	15	03	-03	26	-11	25	39	18	24	11	23	47	13	-03
4.2	03	31	18	01	24	11	-07	25	26	10	21	06	-09	09	11
4.3	16	-03	14	-02	20	11	05	28	12	16	10	10	28	12	-08
4.4	-13	04	02	-05	10	-00	05	03	-08	08	-03	06	32	-01	-16
4.5	-18	18	31	-11	05	-00	-28	01	13	-11	01	01	-08	-06	01
4.6	-00	-03	17	06	15	06	-09	15	25	04	18	26	10	13	-04
4.7	-04	-01	23	-05	10	-07	28	19	23	-08	06	23	06	17	06
5.1	--	-08	09	25	31	26	20	23	33	16	-03	08	-03	21	25
5.2		--	30	-01	01	-13	04	38	11	15	03	03	10	07	04
5.3			--	12	29	07	09	31	22	13	01	11	01	42	06
5.4				--	06	01	-01	-01	04	03	08	-07	-14	19	17
5.5					--	-06	25	43	22	11	07	21	28	18	06
5.6						--	02	03	20	09	-04	04	-13	24	01
5.7							--	28	10	09	19	11	11	17	14
5.8								--	23	20	-02	20	20	17	-01
6.1									--	10	35	46	-05	39	23
6.2										--	13	-09	27	17	22
6.3											--	21	-02	-12	08
6.4												--	-02	11	-14
6.5													--	23	-14
6.6														--	19
6.7															--

Table A-25. Item Intercorrelations for Sub-Scale 1. Pooled Sample, Lenawee, Turrialba, and Lansing (N = 638)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
1.1		08	08	-09	20	-02	04	-01
1.2			08	18	18	18	13	10
1.3				-02	09	09	04	-05
1.4					14	10	21	06
1.5						10	13	02
1.6							08	05
1.7								06
1.8								

*Decimal points omitted.

Table A-26. Item Intercorrelations for Sub-Scale 2. Pooled Sample, Lenawee, Turrialba, and Lansing (N= 638)*

Item	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
2.1		09	21	08	00	06	13	07
2.2			08	-00	08	13	10	05
2.3				16	11	11	05	07
2.4					-01	02	03	11
2.5						33	13	14
2.6							10	12
2.7								25
2.8								

*Decimal points omitted.

Table A-27. Item Intercorrelation for Sub-Scale 3. Pooled Sample - Lenawee, Turrialba, and Lansing (N = 638)*

Item	3.1	3.2	3.3	3.4	3.5	3.6
3.1		21	05	18	07	-03
3.2			14	11	11	01
3.3				10	11	05
3.4					12	-11
3.5						-08
3.6						

*Decimal points omitted.

Table A-28. Item Intercorrelation for Sub-Scale 4. Pooled Sample - Lenawee, Turrialba, and Lansing (N = 638)*

Item	4.1	4.2	4.3	4.4	4.5	4.6	4.7
4.1		11	26	26	07	09	06
4.2			09	06	12	23	08
4.3				20	02	18	05
4.4					23	09	-01
4.5						15	00
4.6							02
4.7							

*Decimal points omitted.

Table A-29. Item Intercorrelations for Sub-Scale 5. Pooled Sample - Lenawee, Turrialba, and Lansing (N = 638)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
5.1		-08	00	09	09	12	04	05
5.2			25	01	15	03	05	19
5.3				-09	32	05	01	19
5.4					03	05	08	07
5.5						06	03	30
5.6							04	04
5.7								21
5.8								

*Decimal points omitted.

Table A-30. Item Intercorrelations for Sub-Scale 6. Pooled Sample - Lenawee, Turrialba, and Lansing (N = 638)*

Item	6.1	6.2	6.3	6.4	6.5	6.6	6.7
6.1		06	09	13	10	03	11
6.2			07	03	05	12	23
6.3				27	14	10	06
6.4					21	16	04
6.5						12	05
6.6							15
6.7							

*Decimal points omitted.

Table A-31. WBCL Intercorrelations for all Items. Pooled Sample: Lenawee, Turrialba, and Lansing (N = 638)*

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
1.1	--	08	08	-09	20	-02	04	-01	11	04	06	10	00	11	08	-06
1.2		--	08	18	18	18	13	10	01	00	-00	08	04	04	14	12
1.3			--	-02	09	09	04	-05	20	15	20	03	-02	08	-01	-02
1.4				--	14	10	21	06	07	05	-02	09	04	-00	10	11
1.5					--	10	13	02	19	09	05	10	08	07	16	10
1.6						--	08	05	01	09	-02	10	15	-02	11	06
1.7							--	06	09	08	02	02	02	07	13	06
1.8								--	02	-05	-02	-02	09	-03	03	-03
2.1									--	09	21	08	00	06	13	07
2.2										--	08	-00	08	13	10	05
2.3											--	16	11	11	05	07
2.4												--	-01	02	03	11
2.5													--	33	13	14
2.6														--	10	12
2.7															--	25
2.8																--
3.1																
3.2																
3.3																
3.4																
3.5																
3.6																
4.1																
4.2																
4.3																
4.4																
4.5																
4.6																
4.7																
5.1																
5.2																
5.3																
5.4																
5.5																
5.6																
5.7																
5.8																
6.1																
6.2																
6.3																
6.4																
6.5																
6.6																
6.7																

Table A-31. WBCL Intercorrelations for all Items. Pooled Sample: Lenawee, Turrialba, and Lansing (N = 638)*

Item	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	4.7
1.1	11	02	-13	08	-01	03	10	14	07	-01	12	23	-10
1.2	-05	03	-04	-05	-11	11	12	-03	13	14	03	03	-02
1.3	10	-01	-11	14	-05	05	06	07	05	09	20	12	-04
1.4	-05	-06	00	-16	-03	21	17	-07	07	10	-02	-01	06
1.5	-04	-02	-11	-00	-06	11	26	08	13	10	21	13	-06
1.6	-04	04	-11	-13	-03	16	09	09	12	11	01	08	04
1.7	-05	-09	-09	-09	-05	14	22	-01	13	08	01	00	04
1.8	-07	-01	01	-06	-05	05	05	-12	09	05	03	-03	-01
2.1	-02	-12	-12	08	-10	05	08	03	04	13	16	21	-04
2.2	-04	-14	-10	-14	-10	02	-02	02	-05	-06	05	01	06
2.3	10	-03	-10	04	-06	02	05	03	-05	-00	06	10	-05
2.4	04	-04	-02	-01	-03	10	10	09	06	02	02	07	08
2.5	-07	01	03	-16	01	13	10	02	08	03	-02	02	03
2.6	04	-00	-01	-01	-07	-02	-04	07	00	02	08	06	04
2.7	-09	-13	-11	-07	-07	04	11	01	05	05	-03	07	-00
2.8	-09	-06	03	-09	-02	06	05	-01	06	07	-03	02	01
3.1	--	21	05	18	07	-03	06	02	-02	-03	08	10	-01
3.2		--	14	11	11	01	-02	-01	03	02	02	04	04
3.3			--	10	11	05	01	-09	01	09	-05	-07	00
3.4				--	12	-11	-00	14	02	06	22	18	-08
3.5					--	-08	-05	05	08	09	-01	02	07
3.6						--	19	06	20	15	-03	07	03
4.1							--	11	26	26	07	09	06
4.2								--	09	06	12	23	08
4.3									--	21	02	18	05
4.4										--	23	09	-01
4.5											--	15	00
4.6												--	02
4.7													--
5.1													
5.2													
5.3													
5.4													
5.5													
5.6													
5.7													
5.8													
6.1													
6.2													
6.3													
6.4													
6.5													
6.6													
6.7													

Table 31. WBCL Intercorrelations for all Items. Pooled Sample: Lenawee, Turrialba, and Lansing (N = 638)*

Item	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	6.1	6.2	6.3	6.4	6.5	6.6	6.7
1.1	-08	17	19	00	16	-02	06	14	15	08	19	08	-04	07	10
1.2	-01	-00	-03	00	05	03	08	03	-01	02	-03	04	05	-01	05
1.3	10	07	22	-03	14	-00	-03	08	-05	06	13	01	02	05	03
1.4	15	-05	03	00	05	11	05	-00	-05	04	00	05	14	-04	02
1.5	-04	15	18	-03	12	01	01	17	03	09	10	14	11	08	09
1.6	-02	-00	-05	-02	03	01	11	08	02	02	04	03	18	00	00
1.7	14	02	02	-05	01	-00	-03	05	-04	07	-00	08	09	20	00
1.8	08	-08	-03	-03	-04	10	07	02	-06	03	-04	-06	03	06	13
2.1	16	06	20	-08	20	04	-06	13	-01	11	27	12	06	16	06
2.2	00	-05	04	-07	02	-05	08	04	07	11	-01	-02	01	06	13
2.3	02	07	09	-07	10	-02	00	12	07	11	13	09	-03	09	11
2.4	00	07	03	03	17	-00	10	12	06	08	11	08	06	11	09
2.5	01	-02	-07	06	01	-00	02	06	11	06	07	03	13	02	14
2.6	-06	05	08	04	13	-03	00	11	06	09	10	02	00	10	20
2.7	-02	01	05	-01	01	-05	08	08	07	12	05	08	10	02	09
2.8	-03	02	-02	02	01	-02	07	01	08	00	06	08	10	02	05
3.1	-07	15	13	06	08	00	04	07	-03	-00	06	-03	-08	02	05
3.2	-10	02	-02	11	04	04	08	00	03	-02	01	-04	-04	-04	-04
3.3	02	-06	-07	01	-02	04	00	-04	07	-09	-04	-04	-04	-05	-06
3.4	00	17	20	-02	20	-05	-07	14	00	-02	08	-03	-08	07	05
3.5	01	-03	-06	10	00	07	-00	01	-00	-13	-06	-04	-01	04	-03
3.6	06	01	-06	03	07	05	05	07	07	03	02	14	16	13	06
4.1	04	07	06	-02	16	01	06	21	-01	10	10	14	22	10	-02
4.2	-09	16	09	-08	18	03	01	16	13	05	20	06	01	07	06
4.3	05	04	06	05	12	05	00	11	-02	04	12	10	20	14	-02
4.4	02	06	09	05	14	-01	05	10	-07	05	00	09	12	09	02
4.5	06	14	27	-03	26	03	-08	16	-01	09	20	05	04	10	08
4.6	02	13	18	-03	25	04	-04	17	-03	10	16	09	10	14	06
4.7	03	-01	-06	08	-05	10	15	-03	-01	-01	-06	02	06	-00	-01
5.1	--	-08	00	09	09	12	04	05	02	10	01	00	-00	08	02
5.2		--	25	02	15	03	05	19	01	10	07	03	-07	04	03
5.3			--	-09	32	05	01	19	07	16	14	08	07	13	09
5.4				--	03	05	08	07	03	-01	-07	-05	-03	00	02
5.5					--	06	03	30	05	13	19	08	05	18	15
5.6						--	04	04	11	01	01	08	04	06	02
5.7							--	21	06	-01	-02	03	06	-00	12
5.8								--	05	10	16	05	06	14	12
6.1									--	06	09	13	10	03	11
6.2										--	07	03	05	12	23
6.3											--	27	14	10	06
6.4												--	21	16	04
6.5													--	12	05
6.6														--	15
6.7															

Table A-32. Sub-Scale Total Score Correlations Pooled Sample - Lenawee, Turrialba, and Lansing (N = 638)*

Sub-Scale	1	2	3	4	5	6
1		26	-09	26	21	22
2			-16	15	15	35
3				14	14	-03
4					30	24
5						26
6						

*Decimal points omitted.

APPENDIX B

FACTOR MATRICES FOR POOLED SAMPLES

Table B-1. Factor matrix for WBCL Sub-Scale 1, pooled sample: Lenawee, Turrialba, Lansing (N-638).*

Items (Sub-Scale 1)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
1.1	14	-40	08	-10	42	01
1.2	49	-01	-19	21	18	45
1.3	13	-16	-09	-05	16	14
1.4	41	30	12	50	-02	16
1.5	44	-26	11	18	46	17
1.6	30	06	-25	10	01	38
1.7	38	12	21	42	15	07
1.8	13	10	-04	12	-03	12
% Total Variance	50	21	11	30	26	25

*Decimal points omitted.

Table B-2. Factor matrix for WBCL Sub-Scale 2 pooled sample: Lenawee, Turrialba, Lansing (N-638).*

Items (Sub-Scale 2)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
2.1	23	29	-20	02	40	13
2.2	22	02	-07	16	14	08
2.3	29	21	-31	14	45	05
2.4	12	21	-10	-02	24	10
2.5	52	-31	03	59	-02	12
2.6	54	-30	-11	62	10	05
2.7	37	22	26	12	08	48
2.8	38	21	29	13	05	51
% Total Variance	48	21	14	37	21	25

*Decimal points omitted.

Table B-3. Factor matrix for WBCL Sub-Scale 3 pooled sample: Lenawee, Turrialba, Lansing (N-638).*

Items (Sub-Scale 3)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
3.1	43	04	-23	39	25	-15
3.2	45	28	-00	51	09	11
3.3	23	09	20	19	08	25
3.4	45	-29	01	14	51	04
3.5	27	-05	18	13	22	21
3.6	-09	20	01	05	-21	03
% Total Variance	58	17	10	39	35	11

*Decimal points omitted.

Table B-4. Factor matrix for WBCL Sub-Scale 4 pooled sample, Lenawee Turialba, Lansing (-638).*

Items (Sub-Scale 4)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
4.1	49	-21	-15	50	05	24
4.2	30	34	-05	10	44	05
4.3	46	-09	-26	51	14	10
4.4	52	-22	26	25	03	57
4.5	29	12	31	-06	23	38
4.6	36	34	-04	13	47	09
4.7	07	06	-10	09	09	-04
% Total Variance	54	18	14	32	26	29

*Decimal points omitted.

Table B-5. Factor matrix for WBCL Sub-Scale 5 pooled sample, Lenawee, Turrialba, Lansing (N-638).*

Items (Sub-Scale 5)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
5.1	07	23	27	35	06	08
5.2	39	-16	-24	-32	31	20
5.3	52	-30	07	-15	59	04
5.4	04	24	01	14	-07	19
5.5	57	-03	23	13	57	19
5.6	10	11	13	16	09	07
5.7	17	32	-17	02	-05	40
5.8	55	26	-14	-01	30	55
% Total Variance	52	19	12	15	41	28

*Decimal points omitted.

Table B-6. Factor matrix for WBCL Sub-Scale 6 pooled sample, Lenawee, Turrialba, Lansing (N-638).*

Items (Sub-Scale 6)	Principal Axes Loadings			Varimax Loadings		
	I	II	III	I	II	III
6.1	23	03	-01	16	13	11
6.2	23	36	-06	07	43	00
6.3	47	-17	-28	57	07	08
6.4	54	-25	07	44	-01	42
6.5	36	-09	19	18	06	38
6.6	34	16	15	09	28	29
6.7	27	40	-03	06	47	04
% Total Variance	54	24	9	34	29	24

*Decimal points omitted.

Table B7. Factor Matrix for WBCL Sub-Scale Total Scores Pooled Sample, Lenawee, Turrialba, Lansing (N = 638)*

Sub-Scale	Principal Axes Loadings					
	I	II	III	IV	V	VI
1	45	-06	19	-20	10	01
2	51	-36	05	-05	-13	02
3	-00	37	28	09	-06	00
4	51	32	-12	-12	-04	-05
5	47	27	-13	04	01	07
6	60	-14	02	26	06	-03
% Total Variance	62	22	7	6	2	0

*Decimal points omitted.

APPENDIX C

THE MSU WORK BELIEFS CHECK LIST AND SCORING KEY

YOUR NAME _____

THE MSU WORK BELIEFS CHECK-LIST

Instructions:

This check-list is made up of statements people often say they believe. You will probably find that you agree with some and disagree with others. If you agree with a statement, circle Agree; if you disagree with a statement, circle Disagree. Do not omit any.

Be sure your name is on the top of this sheet.

1.1	The only purpose of working is to make money.	Agree	Disagree
1.2	I believe a man needs to work in order to feel that he has a real place in the world.	Agree	Disagree
1.3	I feel sorry for people whose jobs require that they take orders from others.	Agree	Disagree
1.4	Every man should have a job that gives him a steady income.	Agree	Disagree
1.5	The happiest men are those who work only when they need money.	Agree	Disagree
1.6	Doing a good job day in and day out is one of the most satisfying experiences a man can have.	Agree	Disagree
1.7	A regular job is good for one.	Agree	Disagree
1.8	I feel sorry for rich people who never learn how good it is to have a steady job.	Agree	Disagree
2.1	I don't like people who are always right on time for every appointment they have.	Agree	Disagree
2.2	I feel sorry for people who have to do the same thing every day at the same time.	Agree	Disagree
2.3	I don't like to have to make appointments.	Agree	Disagree
2.4	I believe that promptness is a virtue.	Agree	Disagree
2.5	I usually schedule my activities.	Agree	Disagree
2.6	I'd rather let things happen in their own way rather than scheduling them by a clock.	Agree	Disagree

2.7	It makes me feel bad to be late for an appointment.	Agree	Disagree
2.8	I expect people who have appointments with me to be right on time.	Agree	Disagree
3.1	I would be unhappy living away from my relatives.	Agree	Disagree
3.2	I hope to move away from here within the next few years.	Agree	Disagree
3.3	People who can't leave their hometowns are hard for me to understand.	Agree	Disagree
3.4	A man's first loyalty should be to his home community.	Agree	Disagree
3.5	When a boy becomes a man, he should leave home.	Agree	Disagree
3.6	I like to see new things and meet new people.	Agree	Disagree
4.1	I like to try new things.	Agree	Disagree
4.2	On the whole, the old ways of doing things are the best.	Agree	Disagree
4.3	Life would be boring without new experiences.	Agree	Disagree
4.4	I like people who are willing to change.	Agree	Disagree
4.5	On the whole, most changes make things worse.	Agree	Disagree
4.6	The happiest people are those who do things the way their parents did.	Agree	Disagree
4.7	New things are usually better than old things.	Agree	Disagree

5.1	I believe that a person can get anything he wants if he's willing to work for it.	Agree	Disagree
5.2	Man should not work too hard, for his fortune is in the hands of God.	Agree	Disagree
5.3	A man shouldn't work too hard because it won't do him any good unless luck is with him.	Agree	Disagree
5.4	With a little luck I believe I can do almost anything I really want to do.	Agree	Disagree
5.5	A person shouldn't hope for much in this life.	Agree	Disagree
5.6	If a man can't better himself it's his own fault.	Agree	Disagree
5.7	Practically everything I try to do turns out well for me.	Agree	Disagree
5.8	I usually fail when I try something important.	Agree	Disagree
6.1	I would rather work than go to school.	Agree	Disagree
6.2	Money is made to spend, not to save.	Agree	Disagree
6.3	I think there's something wrong with people who go to school for years when they could be out earning a living.	Agree	Disagree
6.4	One gains more in the long run if he studies than if he gets a job.	Agree	Disagree
6.5	The more school a person gets the better off he is.	Agree	Disagree

6.6 Generally speaking, things one works hard for are the best. Agree Disagree

6.7 When I get a little extra money I usually spend it. Agree Disagree

SCORING KEY (Tentative) 1957-1960

MSU Work Beliefs Check-List

1. Underlined responses are scored one point; all others are scored zero points.

2. There is a score for each sub-area, six scores in all.

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