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Psychology of Morality &
Democracy and Education

Dynamic-Structural Attitude Unit: Concept and Measurement[1]

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1. Introduction

In the field of attitude research, problems of concept formation and methodology are evident. Attitudes are a central object of research in the social sciences, and formerly they were even used to define a whole subscience, namely social psychology. However, for some years both the concept and the measurement of attitudes have come under heavy attack. Many researchers consider attitudes now as acceptable merely for "pragmatic" reasons for use within the field of "applied" research. It is only from this point of view that "attitudes are alive and well" (Kelman, 1974). From the perspective of scientific research the concept has practically become a pariah which is not even worth being criticized anymore.

This may have to do with the paradox in which theory and method of attitude research is caught. In theory, inasmuch as this is explicitly stated, an attitude is defined (a) as consisting of two *integral* aspects, i.e. the affective and cognitive aspect, and (b) as manifesting itself in an *individual's* action. The methods of attitude measurement, however, are based on contrary assumptions: (a) that the two aspects of attitudes can be *divided* like separate entities and researched independently of one another, and (b) that their existence is bound to characteristics of an indiscriminately sampled *group* of persons. The gap between theory and method is not easily assessed because the assumptions on which the methods are based are rarely made explicit, nor are the theoretical definitions of the attitude concept always precise and unambiguous.

In this paper I will try to show ways of how attitude theory and measurement can be better integrated: this will be done by elaborating the concept of "dynamic-structural attitude unit" and by presenting a methodology based strictly on this. To do this I will provide a rationale for a new measurement methodology, namely for "Experimental Questionnaires" (see also Lind, 1982; 1984a). This

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concept has been developed to serve research on personality and personality development as part of our multinational, longitudinal research project on university socialization. Its application in this and other research projects has supplied preliminary evidence with which it has been possible to evaluate the utility of Experimental Questionnaires in terms of understanding and prediction.

2. The problem of coupling concept and method

The basic problem of coupling concept and method in attitude research has been most concisely stated by Meinefeld (1977). Concluding his thorough review of attitude research he criticizes the fact that

> "the development and application of research methods have proceeded largely independently of theoretical considerations, they have been oriented more strongly at abstract methodological standards than at the aim of examining or applying a theoretical concept. The 'lack of conception' of this research had the consequence that fundamental problems of the attitude concept are still unsolved, and that one can make use of 'mathematically elegant' and elaborated methods whose meaning, however, is not clarified and whose assumptions are not examined" (p. 200; my transl.).

This problem of coupling concept and measurement has apparently not yet been solved (cf. Petermann 1980, p. 28; Ostrom, 1980; Lippert & Wakenhut, 198.; Eiser, 1984). It is related to the problem of "validity," which has been often treated in methodological textbooks but, as Deutscher (1973) observes, has hardly been considered in actual attitude research: "The rhetoric of science and the behavior of scientists do not seem to coincide when it comes to matters of validity" (p. 128). This gap between "What we say/What we do" (Deutscher) in attitude research causes problems which are characteristic for "degenerating research programs" (Lakatos, 1978). Methods -- which should be the "protective belt" of a paradigm – have become the "hard core" of attitude research (i.e. the core providing the common framework for discourse), and conversely, the theory has come to be used as a protective belt for methods. However, methods which cannot be evaluated on the basis of a theory, and theories that cannot be tested on the basis of empirical data generated by theoretically valid methods result in a "degenerating problem shift," i.e. they do not contribute to the progress of science.

The development of sophisticated methods independent of theoretical concepts has been fostered by the notion that methods do not entail substantive assumptions themselves. New, complex measurement methods have been suggested which allegedly do not need to be theoretically justified or for which it has been

claimed that they are a proper substitute for theories (cf. Lazarsfeld, 1959). These claims, however, have turned out to be little more than self-deception. Methods of observation are always theory-impregnated (see Popper, 1972; Pawson, 1984). So-called "pure" methods entail "hidden anthropological assumptions" (Holzkamp, 1972; Kempf, 1980) which were often overlooked in the past. Thus, researchers could not know how the hidden assumptions of methods related to the theoretical proposition being tested and whether they contradicted the things that were explicitly hypothesized.

From this follows that a "progressive problem shift" in attitude theory and measurement requires both (a) that the term "attitude" is *theoretically defined* as a concept which is empirically meaningful and (b) that a *operational definition*, or measurement method, is developed which is theoretically valid. Both theoretical and operational definitions should of course be as congruent as possible or at least non-contradictory.

A necessary and central requirement for a theoretical definition of attitude is that it be formulated as an *explicit* statement. Theoretical definitions belong to what Popper (1972) has called "world 3," i.e. the world of "objective knowledge". Explicit, written statements are called *objective* because they transcend the subjectivity of short-lived sayings and convention-based methods. They make objects of research accessible to discourse in, and methods criticizable by, a broad (scientific) community. If there is not even a rudimentary definition of the object of attitude research the choice of the research methods is completely arbitrary and not criticizable; in addition the data produced by them would not have an objective meaning. There would be as many truths as there are methods. Thus, theoretical definitions may be more or less precise and fruitful for research; but they are not superfluous or suspendable.

In research, theoretical definitions are the basis of a *dispositional hypothesis* of this kind: "Person *I*'s behavior can be adequately described in terms of disposition *D* and for her this variable has the value d_1," e.g. "Ms. Miller's behavior can be well understood in terms of an attitude toward law and order, and it indicates that she possesses a *pro*-law-and-order attitude." Before we have investigated Ms. Miller's behavior, the above statement is clearly a hypothesis and not yet a fact. It is the task of measurement to test the empirical validity of this dispositional hypothesis.

Although the dispositional hypothesis is testable as a whole, traditional measurement has notoriously overlooked one part of it: the hypothesis that an individual can be *adequately described* in terms of a hypothesized attitude dimension. In attitude research, as in other domains of personality research, we usually accept the testability of the second part, i.e., the hypothesis of a particular value or score on an attitude dimension. In this respect research differs from prejudice which confuses a hypothesis with a fact. But by calling

attitudes a "hypothetical construct" we either deny their objective existence or presume their existence as matter of subjective belief. We shall come back to this problem below.
Operational definitions are implicit in research methods, in this case the methods of measurement. They are part of "world 1" (Popper), i.e. they factually co-produce the data on which our inferences about the objective world are based. Ideally they should be completely congruent with the theoretical definitions. But, because of practical limitations operational definitions can often be only partial realizations or special cases of the latter; in fact to make operational definitions more perfect seems to be a major preoccupation of "normal science" (Th. Kuhn). However, if the methods of research are based on unwarranted assumptions then their perfection cannot add to scientific progress and they need to be radically changed – on the basis of a theory of the research object.

3. Theoretical Definition: the Dynamic-Structural Attitude Unit

In social science literature we can find many definitions of an attitude. Although they are often highly varied in regard to their wording and although most highlight different aspects of attitudes, almost all of them seem to have a few themes in common which may be extracted and put together as a working definition (see Thurstone, 1931; Allport, 1935; Rosenberg & Hovland, 1963; D. T. Campbell, 1950; Newcomb, 1959; A. Campbell et al., 1963; Fishbein & Ajzen, 1975; Meinefeld, 1977).

> Accordingly an *attitude* is defined as *the degree of positive or negative affect consistently associated with a person's response to a well defined class of psychological objects.*

Similar definitions have been given using different terms. The most often cited definition stems from G. W. Allport (1935): "A mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (p. 810).
Angus Campbell et al. (1963, p. 189) stress the functional source of consistency in speaking of "attitude structure when two or more beliefs or opinions held by an individual are in some way or another functionally related." Similarly, Converse (1970) uses the term "belief system" for the "configuration of ideas and attitudes in which the elements are bound together by some form of constraint or functional interdependence." Newcomb (1959, p. 389) builds his theory

around the term “orientation” which “resembles fairly closely the 'standard' definition of 'attitude'.” He define an orientation “as that existing organization of the psychological processes of an organism which affects its subsequent behavior with regard to a discriminable object or class of objects.”
These definitions entail three basic properties of an attitude or attitude organization:

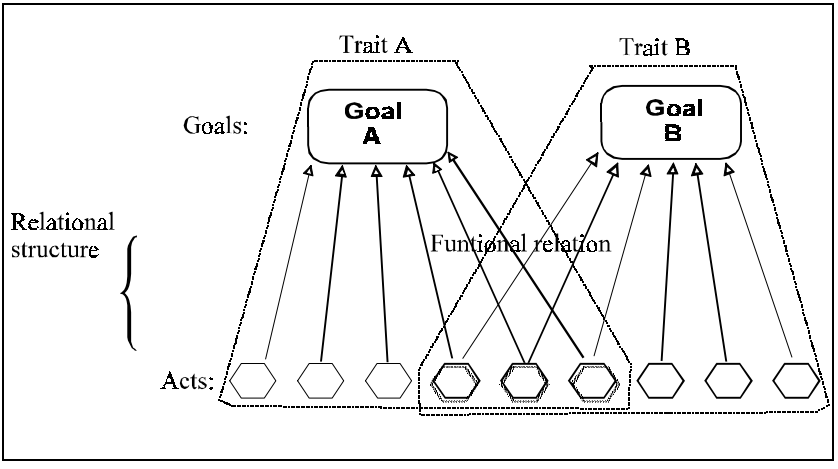
- *Direction* (positive or negative affect);
- *Magnitude* of affect, and
- *Consistency* of reaction,

and also names the bearer and manifestation of an attitude:

- the *individual*,
- in his or her *responses to objects* (interaction).

The first two properties of an attitude are usually subsumed under the term “affective” or “dynamic” aspect; the third under the term “cognitive” or “structural” aspect. Both properties are obviously meant to be indivisible aspects of the same attitude or behavior, and not separate mental entities. The response behavior is considered to be the medium of the realization of attitudes. Thus behavior can be described psychologically in terms of the attitudes that they serve -- just as it can be described physically in terms of temporal and spatial movement.
Attitudes are by definition aspects of response to objects (e.g. judgments to statements presented in a questionnaire or interview), i.e. as the *interaction* of a person with his or her socio-psychological environment. Hence attitudinal dispositions can neither be separated ontologically from behavior, but are rather “an integral part of action” (Kelman, 1974, p. 316). This means that attitude is neither a cause nor a consequence of action (since both assumptions would imply that attitudes can be ontologically separated from behavior).
However, we must admit that a single inter-action with an isolated environmental unit is rarely an unambiguous manifestation of the affective and cognitive components of an attitude. A single behavior may serve various affects and, therefore, have several meanings. Because “meaning” is essentially made up of the structure of a person's behavior, i.e. of their consistency in regard to a particular affect or affect system, more than one act must be considered. As in everyday life, to understand a person's attitudes requires the assessment of a whole configuration of reactions to relevant situations. How apparently ambiguous and inconsistent acts can be systematically researched will be discussed below.
The relevant components of dynamic-structural attitude units and their interrelation is schematically depicted in Figure 1. A new and decisive feature of this

model is that the *cognitive* or structural aspect of attitudes and the affective aspect are conceived of as a relational property of the same unit. The model in Figure 1 takes into account that an attitude of an individual may be consistent (attitude *A*) or inconsistent (*B*). By depicting two dynamic-structural units instead of one we can also demonstrate the realistic case in which two (or more) attitude units intersect, i.e. in which two or more attitudes are expressed through the same acts. For example, if unit *A* is a "positive or negative affect toward principled moral reasoning" and unit *B* is a "positive or negative affect toward reasoning which oppose my opinion", then in a person's response to a particular reasoning both attitudes may be involved at the same time: A



reasoning can contain a moral principle and also oppose one's opinion. In the reaction to this reasoning one attitude may supersede the other, or the two attitudes may strengthen or neutralize each other.

Figure 1. Dynamic-Structural Attitude Units

There are two further implications which are not explicitly stated yet. Firstly, attitudes and their dynamic and structural properties are strictly related to *individuals* and not to groups of individuals, i.e. the fact that a hypothesized attitude *A* exists in one person does not require that it must also exist in other persons nor that the scores in a particular group of individuals are bi-modally distributed. For example, persons may be structural different, i.e. person *1*'s res-

ponses may be adequately described in terms of an attitude toward "conventional morality" but person *2*'s behavior may not; or persons may have identical affects, i.e. in all persons the attitude has the same direction and magnitude. None of these cases restrict attitude research. But, as we will see later, they cannot be adequately analyzed through classical methods of attitude measurement.

Secondly, the cognitive or structural component is not restricted to an individual's conscious report (e.g. a person's awareness of a connection between aims and means). The definition we have cited does *not* require that the respondent be conscious of the affective and cognitive aspect of the attitudes manifested in his or her behavior. The object of attitude research is clearly distinct from the object of subjective-theory research (cf. Dann et al., 1982). Whereas the latter is also a legitimate field of research it does not have to, and is not able to replace the former. If attitudes are real, i.e. manifested in an individual's responses to relevant stimuli, then they are in principle accessible to the researcher regardless whether the individual is aware of them or not. Here modern attitude research is in full agreement with Piaget (1971) who noted that

> "structures ... are expressed in regular forms of responses that we believe we are discovering in the subject's behavior. We also feel that if the underlying structures did not exist, we would not be able to explain such behavior. But the subject is not aware of these structures. He is not a professor of psychology. ... He simply uses them" (p. 3).

In sum, our model of a dynamic-structural attitude unit entails the following: (a) The assessment of structure is directly connected to the possibility to "explain" and understand a person's behavior, (b) structures are defined as manifest structures which are verifiable in empirical studies, and not "latent" or "non-observable", even though the respondent may not be aware of them himself, (c) structural affective aspects cannot be separated from one another, nor from behavior, although they can be clearly defined, and finally, (d) hypothesized attitudes are properties of an individual and therefore must be verified individually.

Our definition does not imply criteria like acquiredness or stability. Attitudes are sometimes distinguished from other personality traits by saying that attitudes are acquired whereas personality traits are innate. For attitude measurement this is neither an important nor a feasible distinction. On the one hand, attitudes are in one sense also personality traits. They can be distinguished from general traits on the basis of their object: Whereas attitudes have an object by definition, other traits describe a behavior which is not specific for a particular object (cf. Allport, 1935, p. 837). On the other hand, the measurement of attitudes cannot make use of this criteria because we can hardly obtain reliable information on the acquiredness of each attitude for all

persons researched.
It has often been said that, in order to enhance prediction, stability needs to be part of the definition of attitudes. This, however, overlooks the problems created by incorporating a time criterion into the definition of attitudes. First, there is the problem of vagueness. How "stable" should an attitude be before one can call it an attitude? Must it last one hour, one day, one month, one year, or longer? Moreover, "the inclusion in the definition of the notion of persistence over time is," as Newcomb (1959) wrote, "in one sense very awkward, since if the behavior from which an attitude is inferred changes over time, it becomes necessary to assume that the attitude defined as 'enduring' has not literally endured, but has changed" (p. 389).
Secondly, there seems to be confusion about the tasks of measurement and causal research. If measurement is the proper basis for testing causal hypotheses, we cannot use the improvement of causal prediction as a criteria for measurement without creating a circular hypothesis. Therefore, as a criterion of measurement we prefer the criteria of reality over that of stability as a criterion of measurement (as did Newcomb, 1959). Since attitude is an "existing organization of psychological processes" (p. 389), the task of measurement is to test the *dispositional* hypothesis about the existence of a particular attitude for each research subject, but not the test of causal hypotheses about stability or change as implied by the quasi-methodological criteria of "reliability" and "generality".

4. The Hidden Assumptions of Classical Attitude Measurement

If we take a closer look at the so-called "purely methodological" rules of attitude measurement we will find hidden assumptions that are at odds with the classical theoretical definitions of attitudes which can be found in many textbooks and which we have just explicated. The discrepancy between the theoretical and the operational definition of attitudes crystallize in the two key terms *structure* and *individuality*. In actual research attitudes have been mostly reduced to their affective or dynamic component whereas the structural component either has not been assessed, or has been inadequately operationalized, for example as a conscious belief or as the structure of attitudinal affects in a group of persons rather than in an individual. This is true not only for the classical one-component model which seeks to reduce an attitude to its affective component but also for the three-component model which has been suggested as an alternative by (among others) Rosenberg and Hovland (1963) and which basically rests on the same hidden assumptions.

4.1 The One-Component-Model

If we want to know the implicit definition of an object of research we must, as Wittgenstein suggested, look at the methodological rules which constitute it. Thus the definition of attitude which underlies practical attitude research is to be found in the methodological rules of attitude measurement. Here we can built upon Scott's (1968) excellent analysis of the state of the art:

> "Most attitude measurement, as currently practiced by psychologists, goes on without much attention to formal models of measurement. Yet the various current procedures are in some sense derived from conceptions about measurement that were developed earlier, in a formal or informal way. Perhaps the most influential, and certainly the best developed source is psychometric theory, or the *theory of mental tests* (for example, Gulliksen, 1950). Though currently under fire for its inadequacies . . ., it at least has the virtue of explicitness, which renders its inadequacies obvious" (p. 208).

As far as we can determine, there are four assertions which constitute the operational definition of attitudes:

(1) Attitude measurement is based on a one-component model: in operational terms attitude is defined merely as the positive or negative affective reaction toward a social object. Measurement techniques aim only at the direction and intensity of attitudes but not at their structural properties. The practice of attitude measurement has not much changed since Scott (1968) who noted that "by far the greatest attention has been devoted to the measurement of magnitude (or intensity)" (p. 208). The one-component model implies that the basic properties of an attitude or attitude system can be divided ontologically (otherwise they could not be assessed by different measurement instruments). This assumption seems to nourish the belief that all "attitudes can be broken down and measured in *fragments*" (Allport, 1935, p. 820), and the affective scores gained will be free of cognitive and behavioral aspects. However, "the price one must pay for bi-polarity and quantification in such cases is, of course, extreme, and often absurd, *elementarism*" (Allport, 1935, p. 820).

(2) Classical attitude measurement implies that the affective dimension under investigation, oblivious to the direction, be *characteristic for everyone* (the "common-trait model", Allport, 1935), i.e. the model is only sensitive for differences regarding to the magnitude of affect (e.g. person *1* has a score of 45 on a conservatism scale, person *2* a score of 47) but not with regard to structural differences. Because structural differences between subject's attitudes are ignored, classical attitude measurement produces ambiguous scores. A medium score on an attitude scale could mean that a person has either (a) no attitude, or (b) a conflicting attitude, or (c) a highly differentiated attitude (cf. Shaw and Wright, 1968, p. 7; Converse, 1970).

(3) To reduce this ambiguity the researcher often forces the subjects to express an attitude by "forced-choice items." This necessitates the assumption that

an attitude is always either positive or negative but not absent or neutral. Neutral and "don't know"-answers are assumed to express of a tendency on the part of the subject to hide his attitude. The possibility that an attitude structure exists which is different from the one hypothesized by the researcher is not considered. Nevertheless, the individual responses to forced-choice items are summed up for every subject and thus may also produce ambiguous scores in the medium range of an attitude scale.

(4) Attitude measurement is based on *group* data rather than on individual data. In addition to the assumption that structural differences amongst person's attitudes can be disregarded and that all persons have the one attitude in question (cf. Allport, 1935, p. 827), it is assumed that the attitudes in a deliberately drawn sample of persons are highly controversial, i.e. bi-modally distributed. A violation of either of these two assumptions leads to low correlations which open the research instrument to charges of being "unreliable" and "invalid." Thus the paradoxical situation results that at the moment in which the group's attitudes become similar in direction and intensity or structurally heterogeneous, the thus defined "attitude" disappears or becomes inaccessible (cf. Merton, 1973, p. 28).

In addition to the problems already mentioned, when these four assumptions are incorporated in the operational definition of attitudes they impede the communication between the researcher and the research subject. Allport (1960) has pointed out the two fundamentally different perspectives of personality assessment, i.e., the "external effect" and "internal structure" model. Whereas the latter characterizes the perception of a person's action from the perspective of his or her own attitudes, the former means a classification of behavior according to external, socially pre-defined concepts without testing their appropriateness. Hence, a researcher may measure a set of pre-defined attitudes without noticing that the model of measurement that is assumed does not agree with the real structure of the individuals' attitudes. In the field of attitude research, this problem has been discovered by D. T. Campbell (1963) who has notified the problem of "categorial overlap" between the researcher and the subject of research. He demonstrates that the correct interpretation of an individual's response by the researcher depends on the degree to which his methods of attitude measurement can secure categorial overlap and understanding – or at least how sensitive he is to this problem.

4.2 The Three-Component Model

In an attempt to revise the classical one-component-model of attitudes Rosenberg and Hovland (1963) have suggested a three-component-model of affective, cognitive, and behavioral aspects (see also Rajecki, 1982, p. 34ff). They begin with the observation that "despite the fact that two persons respond in the same

way on one specific index of attitude they may hold quite different *attitudes*" (p. 2). In other words, they assume that there no simple relationship between like or dislike of a statement on a Likert-scale and the attitude that this statement is supposed to represent. Therefore, they suggest a focusing in the "internal *organization* of attitudes" (p. 4) and in addition to the affective aspects, to include also the cognitive and the behavioral ones in attitude research.

As in the classical concept, the "affective" component is defined as the magnitude and direction of affect toward a psychological object. The "cognitive" component is analogously defined as the "beliefs about the potentiality of that object for attaining or blocking the realization of values states" (Rosenberg & Hovland, 1963, p. 18). and is seen as being the conscious awareness of the link between a particular *object* and the *value* for which it supposedly stands. All three components are conceived of as *separate mental units* among which a *causal* relationship may exist. So for example, the following hypothesis is derived from balance theory: if a subject values religiosity highly (= affective component) and if he believes that "going to church on Sunday" is instrumental to that value (= cognitive component) then one should expect that this person will also has a high tendency to go to church on Sunday (= behavioral component).

At first glance it seems that this three-component-model has succeeded in achieving an integration of the basic properties of an attitude. However, what it has actually done is to shift the problem to another area without really solving it. Whereas in the basic definition of an attitude all three aspects are distinct but non-separate properties of the same thing, the Rosenberg-Hovland-model explicitly conceptualizes them as separate entities. Affect, cognition, and behavior are depicted as different *kinds of attitudes* which can be measured in a similar way (i.e. by having the subjects judge statements), however, using different classes of attitude objects (statements of believe and intention).

In the same vein, their interrelationship is not seen as a logical but as a causal relationship which can be analyzed by means of empirical correlations among group data (pp. 2 and 4). Hence, this model does not substitute for but builds upon the classical concept of attitude and therefore contains the same contradictions existing between the explicit definition of an attitude and its measurement.

As the analysis of Rosenberg and Hovland's model has shown, there is a basic ambiguity in perceiving the psychological status of an attitude. One time it is used as a behavioral term, another time as a dispositional one. In their three-component-model, on the one hand the term "attitude" is used synonymously with the term "response statement". Thus, the concept of attitude provides no surplus-meaning and therefore no theoretical significance. On the

other hand, the term “attitude” is used to indicate a disposition. However, because this usage of the term “attitude” is not elaborated and has not been given any operational meaning it has no empirical significance.

The differences between Rosenberg and Hovland's model and the theoretical definition of dynamic-structural attitudes which we have elaborated above are twofold. Firstly, in the latter the cognitive property of an attitude is not viewed as a segregated realm of behavior but as an integral property of the structure or organization of affect-related behavior. This difference is indicated by the fact that in Figure 1 we have not drawn a separate box labeled “cognition” but have depicted this aspect as a property of the responses to the same class of psychological objects.

The second differences relates to the epistemological status of the components. In the Rosenberg-Hovland model, attitudes are depicted as an nonobservable “intervening variable.” Sometimes these variables are vaguely viewed as “not directly observable,” suggesting that we can infer them through the observation of behavior which is causally determined by these attitudes. This, however, would require us to make an assumption about the causal relation between an observable and a non-observable variable which is itself not testable and thus merely tautological.

In the theoretical definition the affective and cognitive component of an attitude unit are considered as “existing” and real, i.e. as manifest, observable properties of a person's reaction to a class of attitude objects. They are only called hypothetical as long as they have not been tested. If this class is finite and contains only a very small number of objects, the attitude aspects are *perfectly verifiable* through the evaluative reaction of a person toward those attitudinal objects. If the class of attitudinal objects is well defined but large, attitudes toward a (representative, random) sample of objects can be taken as a basis of attitude measurement; the attitude will also be verifiable, although within the limits of statistical inferences. If the class of objects defining the meaning of an attitude unit is large but not well defined, then its properties are only *tentatively verifiable* -- something which is unfortunately very often the case in the social sciences. Finally, it is possible to postulate a case in which the class of objects cannot be feasibly defined, e.g. when criteria like stability or development are introduced. In this case the attitude cannot, strictly speaking, be verified at all.

5. Measurement: Experimental Questionnaires

According to Coombs et al. (1970) measurement can have either of two aims: As a “technique,” measurement merely means the assignment of numbers to events, properties, or objects on the basis of certain rules. Dawes (1972) also

calls this "index measurement" (p. 40) because these rules are not yet a theory, i.e. they contain no assumptions by which we could empirically test whether the numerical model of measurement actually represents the attitude. Measurement as a "criterion" means an experiment in which a hypothesis about a disposition and its properties is tested. Because in this case we can judge whether the resulting scores adequately represent the properties of a hypothesized attitude, we can call this "representational measurement." Whereas in index measurement we must make assumptions about the object of measurement without being able to test them empirically, with the latter we can subject them to an experiment. This is particularly important when our knowledge about the nature of an object is still vague and unreliable -- which is not seldom the case in the field of attitude measurement. Representational measurement as a criterion is needed here to test the (dispositional) hypothesis that a particular attitude is really manifested in an individual's behavior and that it has a certain direction and magnitude.

The methodology of the "Experimental Questionnaire" (EQ) is an attempt to provide a representational measurement of dynamic-structural attitudes on the basis of the theoretical definition given above. Its construction is tied to three questions: What are the empirical units and the empirical elements of attitude research? How can we empirically identify the two basic aspects of a dynamic-structural attitude unit? Finally, how can we distinguish between several behavior-determining forces when they are "collinear"?

First, the empirical units of attitude research are considered to be the particular attitudes defined by the theory under investigation. That is, the theory or the theoretical problem specify the empirical unit. Thus, if there is no -- even rudimentary – theory about the object of research, then measurement has no basis. In attitude research the basic unit of research is an attitude defined by a class of socio-psychological objects. These are usually represented by statements about abstract ideas or social institutions (e.g. conservatism, religion, peace, morality, communism, law). The empirical elements are the individual's responses to these objects. Since attitudes are defined as responses to social stimuli, research does not need to eschew interaction with the subjects but may rather profitably make use of "those individual and concrete person-environment constellations which conspicuously expose their dynamic characteristics" (Helm, 1960, p. 374; my transl.). Thus, attitudes which do not affect behavior are, from the standpoint of attitude research, neither real nor interesting.

If the behavioral manifestation of a particular attitude cannot be assessed directly by the researcher (e.g. for economic or ethical reasons), we may ask a person to report his or her attitude ("How conservative are *you* in political affairs?"). However, the assessment through self-reports raises additional problems because the individual reports may be strongly affected by personal

differences with regard to (a) the ability to remember one's actions and (b) the standards of their subjective evaluation (usually referred to as "response sets").
The second problem is to measure the two basic aspects of a dynamic-structural attitude unit without disintegrating them into two different units. A solution seems only possible if one measures both affect and structure as aspects of the *same set of behavior*, i.e. by using the same class of attitude objects, instead of employing two different sets of object in which case we would not measure the same attitude unit but two different ones.
The third problem concerns the functional ambiguity of acts which results from their multiple determination and the "collinearity" of mental forces. We have attempted to solve this problem by using the "diacritical method" of Brunswik (1955), i.e. by using its systematic variant, the "orthogonal" research design. If applied to dispositional experiments, this hermeneutic device is well suited to sort out to which of several functional unities an act belongs. It requires that a *pattern of responses to a systematically (orthogonally) designed pattern of probing questions* be analyzed as to which attitude or set of attitudes account for that particular person-situation *interaction*.
These tentative answers to the basic problems of attitude measurement were the basis for constructing of the Experimental Questionnaires (EQ). EQs are, to use Loevinger's (1957) words, "structured tests viewed behavioristically." EQs are designed to record behavior (judgments) and not reports about behavior (as do self-report questionnaires). EQs measure the dynamic and structural aspect of an attitude *simultaneously*, i.e. as indivisible aspects of an individual's responses to the same class of attitude objects. Finally, EQs make use of the epistemological possibilities of systematic, multifactorially designed experiments; they are built to test dispositional hypotheses, i.e. hypotheses about the existence (or non-existence) of dispositions in an individual's behavior.
Thus, behavior is the empirical medium but not the empirical unit of analysis, i.e. it is the individual's attitude which is measured and not his behavior. This distinguishes the methodological behaviorism of EQs from the metaphysical behaviorism of Watson or Skinner in which behavior is the ultimate research unit. It resembles more closely the "subjective behaviorism" of Miller, Galanter and Pribram (1960) or the "social behaviorism" of George H. Mead (1968). EQs are viewed "subjectively" because they are designed to penetrate through the surface of unrelated behavioral acts and to assess the dynamics and structure of a subject's attitudes. Nevertheless, EQs are also "social" insofar as their scientifically construed categories are bound to the sociality of communication.
Concretely, an EQ consists of attitude objects which belong to one or more object classes; if they belong simultaneously to several classes, they are designed orthogonally. Through this design, EQs allow us to answer three questions (cf.

Lind & Wakenhut, 1983):

1. To what degree does a hypothesized attitude account for an observed pattern of responses of an individual?
2. In which direction and with which intensity does this attitude influence the test response?
3. In addition to or in combination with the primarily hypothesized attitude which other attitudes determine the individual's responses?

While the first and third questions aim at assessing the cognitive-structural component of a particular trait, the second question aims at a trait's dynamic component.

EQs are designed as idio-nomothetic_ experiments, that is, as experiments in which hypotheses about a person's, and not a group's, attitudes are tested. The individual person is viewed as the starting-point of analysis. This methodological approach causes some practical problems, since in many instances the statistical programs for computers are not particularly equipped to support idiographic research. Usually, the individual is merely viewed as source of measurement "error" and replication. Therefore, the only way to process the data of an idio-nomothetic experiment would be, in technical terms, to code "variables" as "persons." However, because EQs should also serve to facilitate inter-personal analysis, e.g. the analysis of correlations between attitudes and other variables like social status, sex, age, etc., a standard coding is also required. Statistical packages provide only since recently the possibility of carrying out small scale "variable-arithmetic." The KOSTAS-system developed by Willi Nagl at the University of Konstanz (cf. Nagl & Walter, 1983) contains a subroutine which allows us to write programs for quite sophisticated intra-individual analysis. For researchers coddled by high level compilers, the programming in KOSTAS will seem crude. Nevertheless, it was possible to program a four-way analysis of variance for individual data pattern which can be run for several thousand subjects at one time (cf. Lind & Keller, 1982; and the example below). Heidbrink (1983) has succeeded in adapting parts of this program to the SPSS program package, whose recent releases have also a tool for variable-arithmetic (cf. Beutel & Schubö, 1983). Wakenhut (1982) has developed a special FORTAN-program for evaluating experimental tests of moral competence; this program can also analyze individual patterns of response.

6. Example: Measuring dynamic and structural aspects of moral judgment

The principles of Experimental Questionnaires and their scientific utility can be demonstrated using the example of the "Moralisches-Urteil-Test" (MUT; cf. Lind, 1978; 1984b). This test is designed to assess the dynamic and structural aspects of three hypothesized attitudes and their combination. Its central aim is to assess the cognitive and the evaluative component of an individual's moral attitude. The MUT has been conceived on the basis of Kohlberg's theory of moral-cognitive development (Kohlberg, 1969; Rest, 1973; Lind, 1978; 1983) and on research of response behavior from which three tentative assumptions have been derived.
It is assumed

(a) that an individual's evaluation of moral arguments for and against a particular moral decision is determined by the quality of the moral argument, i.e. by the individual's attention to the Stage-type of moral reasoning exhibited by the arguments;
(b) that the statements may be also evaluated with regard to their agreement or disagreement with one's own opinion about the moral dilemma; and
(c) that inconsistency of judgment behavior may not just indicate a lack of moral development but a greater differentiation; it may indicate the successful coordination of the moral consciousness factor and the opinion agreement factor ("mature moral commitment;" Perry, 1970); and the differentiation of the preferences for a particular level of moral reasoning according to the situation context in which the moral decision is made ("contextual relativism"). To test dispositional hypotheses on the basis of these assumptions the MUT has been designed as a three-factorial experiment (Table 1). It contains two parts; each is introduced by a brief description of a dilemma of action (Theft and Mercy Killing) and by a subsequent question as to how "wrong" or "right" the respondent judges the solution chosen by the protagonist. Thereafter

Independent variables (factors)			Dependent variable
1. Story (dilemma)	2. Stage of reasoning	3. Pro-Con (opinion-agreement)	Judgment of acceptability
– A	–I	Pro / Con	completely unacceptable … completely acceptable
	–II		
	–III	.	–4 –3 –2 –1 0 +1 +2 +3 +4
	–IV	.	
	–V	.	
	–VI	.	
– B	–I	Pro / Con	
	–II		
	III	.	
	–IV	.	
	–V	.	
	VI	.	

Tab. 1 Experimental questionnaires: The design of the "Moralisches-Urteil-Test" (m-u-t)

six pro-arguments and six con-arguments are presented, each at random order. The respondent is asked to mark whether he or she accepts or rejects each argument ("-4" = completely unacceptable, "+4" = "completely acceptable"). In the language of research, these judgments are the "dependent variables" of the dispositional experiment. To give an example for the measurement of structural and dynamic aspects of judgment behavior by Experimental Questionnaire, the judgment pattern of two (fictitious) persons *1* and *2* shall be evaluated who have answered only one sub-test (Table 2). As we see in this example, both persons differ not only in their attitudes toward each of the six moral stages but, more interestingly, differ very much in regard to their attitude structure. Person *1* clearly attends to the moral quality of the given reasoning; her attitudes toward each stage of reasoning vary little across pro and con and are markedly different from stage to stage. By contrast, person *2* judgment seems to be determined by the opinion-conformity of the given reasoning. She apparently does not have a *different* attitude toward the moral stages but has *no* attitude toward them at all, as is indicated by the large variance of her judgments across pro and con and her lack of differentiation between stages of reasoning. Obviously in the case of person *2* it would make no sense to compute a score for her attitude toward moral stages of reasoning. For person *1*, on the other side, we can compute magnitude scores for her attitudes toward Stages I to VI, and say that she has a negative attitude toward Stage I to III, a neutral attitude toward Stage IV, and a positive attitude toward Stages V to VI.

These differences in the structural aspects of moral attitudes are concisely described by the results of an intra-individual analysis of variance components. Person *1* receives a *high* score on factor STAGE (C-score), and a *low* score on factor PRO-CON, whereas person *2* scores *low* on factor STAGE and *high* on factor PRO-CON (Table 2; for the computations see the appendix).

7. On the Empirical Utility of Experimental Questionnaires

It may have become obvious by now that prevailing standards of test evaluation (reliability, validity) do not apply to assessment methods like Experimental Questionnaires. But this does not mean that there are no other ways to ascertain the quality of a research method. I can see at least two criteria for judging EQs: One criterion is the *theoretical validity* of the assessment technique. Because we have 'deduced' the concept of Experimental Questionnaires from a theoretical proposition this method may legitimately be evaluated with regard to that claim.

The C-Scores for the patterns of moral judgment behavior of two fictitious persons

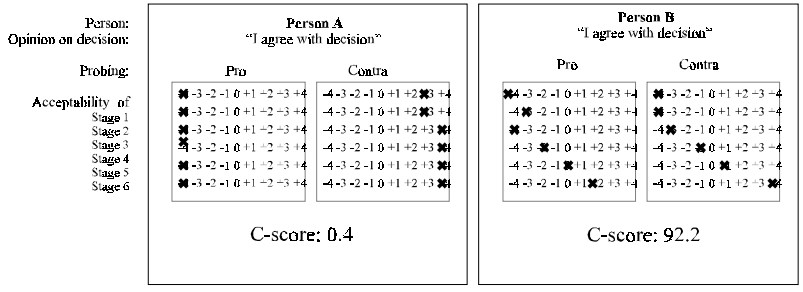


Table 2

The other criterion is the utility of EQs for *understanding* and *predicting* human behavior. Understanding and prediction are not mutually exclusive categories. Rather they are closely related: prediction requires understanding. Utility for understanding a person's judgment behavior means that an attitude test provides a large "categorial overlap" (Campbell, 1963) between the researcher and the person(s) studied. One could say that the greater this categorial overlap is, the better we will understand a particular person-situation interaction in terms of the attitudes involved.

Theoretical validity, of course, cannot be quantified but must be established on the grounds of conceptual and logical analysis. An intensive explication of the theory in question as well as some kind of expert-rating of the resulting test are the major devices for securing theoretical validity. This has been done in the case of the MUT (cf. Lind 1984a; 1984b), so for the time being we shall simply assume that it is theoretical valid.

(a) With respect to the criterion of *categorial overlap*, there is preliminary quantitative evidence available. The MUT is based on the assumption that moral attitudes or judgments have a cognitive component and hence may also differ from one individual to another with regard to their structure. The hypothesized moral affect may determine one person's judgment behavior but not that of another. Moreover, moral attitudes may determine judgment in one person in one way, and in another person in another way. Therefore, understanding an individual's judgment should be improved when both the cognitive and affective aspect are measured individually. Ideally, the hypothesized moral attitudes should completely account for the variance of the individual's response behavior.

Past personality research has shown that such a complete overlap between theory and reality is far from being reached. Hartshorne and May's (1928) Studies in the Nature of Character revealed only minimal categorial overlap; the squared intercorrelations of children's behavior across different 'moral' situations, which was taken as an indicator for this, was a low as $r^2 = 0.05$. This is even below the 0.10 which Mischel (1968) has identified as a barrier to personality research. Gordon Allport (1961) criticized this study for its common-trait definition of dispositions which takes for granted that all individuals are structurally homogeneous. Children may not behave consistently in regard to some socially defined criteria and still be consistent in regard to their own motives. Bem and Allen (1974) showed, though with regard to another topic, that consistency increases up to $r^2 = 0.20$ when the individual's awareness of trait consistency is taken into account.

Because EQs claim to achieve a greater categorial overlap between the researcher (the research method) and the respondents, this figure should be better. As a matter of fact, in a study of German high school graduates (N = 516) one disposition alone – moral attitudes – accounts on average for 27% of the individual's judgment variance (median $r^2 = 0.27$). The MUT has been revised on the basis of a theoretical re-examination. Thereafter the medium proportion of "understood" variance rose to 41.2 percent in a comparable group of first semester university students (N = 1 288). This increase of categorial overlap achieved by Experimental Questionnaires is summarized in Table 3. Of course, the proportion of variance is not only dependent on the measurement instrument but on the degree to which the individuals' judgment is determined in real terms by the hypothesized attitude. Since persons vary strongly in regard to which attitudes predominantly determine their behavior, we need to enlarge our concept of "understanding" and consider more than *one* disposition in measurement. Then, as our own research into the structure of moral judgment indicates, we can account for most of an individual's judgment variance, that is, we can almost completely "understand" it in terms of its *dispositional* (not its causal) determinants.

Table 3 Categorial Overlap in Three Approaches to Personality Research: A Tentative Comparison

Operational Definitions (Paradigms)	Categorial overlap
1. Common trait, external-effect definition	
- Hartshorne & May (1928)	.05
2. Partly common structure definition	
- Bem & Allen (1974)	.20
3. Internal-structure definition, dynamic-structural attitudes	
- MUT (version 1 - high school graduates)	.27
- MUT (version 2 - 1st semester students)	.41

Note. Squared correlational coefficient r^2, i.e. proportion of variance of judgment accounted for by moral consciousness and personality traits, respectively.

Finally, in assessing the degree to which a hypothesized dynamic component organizes instrumental acts into a functional whole, Experimental Questionnaires provide a means for ascertaining the degree of categorial overlap between an individual person and the researcher before the respective category is applied for classifying this person. The person is thus not forced into a descriptive system which does not tally with his, or her, actual behavioral categories. The measure of structure of a attitude thus also gives us an opportunity to achieve an awareness of the descriptive adequacy or inadequacy of the theory on which the assessment technique is based. It tells us something about the ability of a psychological theory to understand particular persons as well as people in general.

b) The evaluation of utility of EQs for *predicting* complex behavior is based on two hypotheses which are derived from our juxtaposition of the definition of dynamic-structural attitudes and the classical methods of their measurement:

1. The methods of classical attitude research imply that inconsistencies in the subject's responses are not a property of individuals' attitudes but of the research instrument, i.e. they are indications of measurement error ("unreliability"). If this is true then the inconsistencies or variance of responses should not greatly vary from person to person, nor should it be related to a particular class of attitude objects.
2. The alternative hypothesis, which would support the criticism of classical methods, is that the consistency or variance of behavior varies greatly

from person to person and also with regard to the classification of objects that one considers, and that these variations can even be theoretically predicted.

Empirical Evidence

For deciding on the empirical validity of these hypotheses we can draw upon several studies which can be summarized in three points:

- When individual response patterns are analyzed one finds throughout that persons vary strongly in their consistency of responses to social objects. We have found this to be true with regard to interests for school subjects (Lind, 1981, p. 177), conservatism (Lind, 1983, p. 164), and moral judgment (Lind, 1984a). Differences in individual attitude structures over the whole of the theoretically possible ranges have been found.
- Consistency of judgment is clearly related to particular classes of attitude objects. The hypothesis of "partial consistency" (Krämer-Badoni & Wakenhut, 1978), which is derived from cognitive-developmental theory, could be well supported in the study of moral judgment behavior. The classical measures for test consistency for judgments on moral reasonings on Stages I to III (Cronbach's alpha: 0.24 to 0.47) are considerably higher than for judgments on reasonings on Stages IV to VI (all zero; cf. Lind, 1981, p. 159).
- Moreover, differences in consistency of judgment with regard to moral attitudes can to some extent be predicted on the basis of cognitive-developmental theory. These differences seem to be clearly related to the level or quality of education obtained. The comparison of four studies using the MUT shows that university students judge *reasoning* more consistently with regard to their moral attitudes (in this group at average 41% of an individual's variance of responses was due to moral orientations) than apprentices (23%), and these are more consistent than delinquents (16%) with an even lower educational status (see Lind, 1984a).

These and other findings on the basis of a few thousand subjects clearly indicate that the first hypothesis cannot be upheld and that the assumptions on which classical attitude measurement are based need revision. All evidence available so far supports the alternative hypothesis that underlies the construction of Experimental Questionnaires. EQs, like methods in general, cannot be directly subjected to empirically tests - this is only possible for theoretical propositions. However without EQs these propositions could not have been tested at all which something demonstrates the genuine advantage of this methodology.

8. Conclusion

Because of the many problems involved in attitude research attempts have been made to replace the concept of attitude either through behavioral concepts that are stripped of all socio-psychological meaning or through subjective methods of introspection which lack the degree of objectivity needed in scientific research. In this paper we have argued that these are not the only alternatives and that there is a third approach to attitude measurement which is based on a careful analysis of the pitfalls to which classical attitude research has fallen prey.

We believe that this could only be achieved when theory and method were placed in a balanced relationship with one another and in particular when the implicit assumptions of the so-called theory-free methods were revealed. To do this we described the hidden assumptions on which the methods of classical attitude research have been based and juxtaposed them to the concept of dynamic-structural attitude units as laid down in theory.

We agree with Allport's diagnosis that the decisive fallacy behind the prevailing methods in attitude research is, that attitudes are traits which are common to everyone. Stated more exactly, by not being aware of the fact that the *structure* of attitudes is *not* the same for everyone (the fact that some subjects have no attitudes being a special case), researchers implicitly assumed that all persons have the same attitude structure. Therefore, researchers thought that they could neglect the individual structure of attitudes in measuring the affective or magnitude aspect of attitudes and base their assessments solely on *group-data*, e.g., on correlations of group data (noted as $correlation_g$).

We have tried to show that this assumption is neither in agreement with a substantive psychological theory of attitudes nor does it agree with empirical data. There may be some cases in which structural differences are small enough to be neglected. However this of course has to be tested on the basis of *individual* data using methods which are sensitive to differences of the individual attitude structures.

If this premise holds true we would also have to rethink the criteria by which these methods are evaluated. Because they are also based on group data they must be specified by a notation such as $reliability_g$, $validity_g$, and $dimensionality_g$. For example, if based on correlations among group data, the $reliability_g$ does *not* merely indicate a property of an attitude scale. Rather, in this indicator the combined effects of the scale, the individual response structure, and the group structure to which the scale is applied, are hopelessly confused. Thus, taking a low $reliability_g$ as an sign for a high amount of measurement "error" can mean a complete misattribution because, as Converse (1970) ironically states, "where measurement reliability is at issue, the measurement of non-existing states is very unrewarding" (p. 176).

Hence, in the course of revising attitude measurement, new criteria will have to be developed. Above all, the methods of measurement will have to meet the criterion of "theoretical validity," i.e. the assumptions on which they are based should be identical with the assumptions stated in theory. As we have seen this is not as trivial a requirement as one would suppose. Secondly, methods of attitude measurement must be sensitive to individual differences regarding the structure of attitude units. Unless an hypothesized attitude cannot be shown to significantly determine an individual's responses to socio-psychological objects, the assignment of an affective score to the individual is senseless. This is the criteria of understanding or categorial overlap. Further, more specialized criteria may be introduced when an elaborated theory of the object of research is available.

As a motto for this paper we could have paraphrased Ionesco: Attitudes are dead, long live attitudes! Allport (1935) was relatively pessimistic about the chances for attitude measurement to assess what he called the "qualitative" or "structural" aspect of attitudes and he suggested that we must be content with "quantitative" aspects because "measurement can deal only with attitudes which are *common*, and there are relatively few attitudes that are common enough to be profitably scaled" (p. 832). This verdict apparently has impressed attitude researchers so much that, aside from some alternative attempts, mainstream research still aims exclusively at the "quantitative" aspect, i.e. the magnitude of attitudinal affect. "A systematically developed alternative has yet to take its place in applied assessment" (Scott, 1968, p. 208). It is up to further investigations to decide whether the idea of Experimental Questionnaires propagated in this paper can take the place of classical attitude measurement in applied research. In addition to measuring the affective ("quantitative") aspects of attitudes, with EQs socio-psychological research is in the position of being able to simultaneously measure their "qualitative" or structural aspects. We have supplied preliminary evidence that this methodology is indeed useful both in regard to improving the categorial overlap between the researcher and his subjects and in regard to predicting human behavior. With EQs it is possible to detect differences in individual attitude structures and thus motivate the continual, theory-guided improvement of research methods. Because EQs are also strictly based on theory, the data they produce can be taken as an unequivocal instance for testing the empirical validity of hypotheses deduced therefrom.

Note. The ideas presented in this paper have grown out of several years of discussion and close collaboration with my colleagues of the *Forschungsgruppe Hochschulsozialisation*: Tino Bargel, Barbara Dippelhofer-Stiem, Gerhild Framhein, Hansgert Peisert (director), Johann-Ulrich Sandberger, and Hans-Gerhard Walter. I would like to thank them and also Roland Wakenhut

for their competent comments and helpful criticism. Nevertheless, I take sole responsibility for any erroneous conclusion and for speculative opinions which go beyond the evidence provided.

References

Allport, G. W. (1935). Attitudes. In C. M. Murchinson (Ed.), Handbook of social psychology. Worchester, MA.: Clark University.

Allport, G. W. (1961). Pattern and growth in personality. New York: Holt.

Beutel, P. & Schubö, W. (1983). SPSS 9: Statistik-Programm-System für die Sozialwissenschaften nach N. H. Nie & G. H. Hull, 4. Auflage. Stuttgart: G. Fischer.

Brunswik, E. (1955). Representative design and probabilistic theory in a functional psychology. Psychological Review, 62, 193-217.

Bem, D. J. & Allen, A. (1974). On predicting some of the people some of the time. Psychological Review, 81, 506-520.

Campbell, D. T. (1963). Social attitudes and other acquired behavioral dispositions. In S. Koch (Ed.), Psychology: A study of a science. Volume 6, Investigations of man as socius: Their place in psychology and the social sciences, pp. 94-172. New York: McGraw-Hill.

Campbell, A., Converse, P. E., Miller, W. E .& Stokes, D. E. (1960). The American voter. New York: Wiley.

Colby, A., Kohlberg, L., Gibbs, J. & Lieberman, M. (1983). A longitudinal study of moral development. Chicago: University Press.

Converse, P. E. (1970). Attitudes and non-attitudes: Continuation of a dialogue. In E. R. Tufte (Ed.), The quantitative analysis of social problems, pp. 168-189. Reading, MA: Addison-Wesley.

Coombs, C. H., Dawes, R. M. & Twersky, A. (1970). Mathematical psychology. Englewood Cliffs, NJ: Prentice-Hall.

Dann, H.-D. et al. (1982). Analyse und Modifikation subjektiver Theorien. Forschungsbericht 43, Zentrum I Bildungsforschung. Universität Konstanz.

Dawes, R. M. (1972). Fundamentals of attitude measurement. New York: Wiley.

Deutscher, I. (1973). What we say/What we do. Glenview, IL: Scott, Foreman & Co.

Eiser, J. R. (Ed.) (1984). Attitudinal judgment. New York: Springer.

Fishbein, M. & Ajzen, J. (1975). Attitudes, beliefs, intentions, and behavior. New York: Addison-Wesley.

Hartshorne, N. & May, M. A. (1928). Studies in deceit. Vol. I, Studies in the nature of character. New York: Macmillan.

Holzkamp, K. (1972). Kritische Psychologie. Frankfurt: Fischer.

Kelman, H. C. (1974). Attitudes are alive and well and gainfully employed in the sphere of action. American Psychologist, May 1974, 310-324.

Kempf, W. (1980). Latent trait models in educational testing. Statistische Diskussionsbeiträge der Fakultät für Wirtschaftswissenschaften und Statistik. Konstanz: Universität Konstanz.

Krämer-Badoni, T. & Wakenhut, R. (1978). Theorie der Entwicklungsstufen des moralischen Bewußtseins und interaktionistische Einstellungsforschung: Versuch einer Integration. In L. Eckensberger (Ed.), Entwicklung des moralischen Urteilens, pp. 211-251. Saarbrücken: Universitätsdruck.

Lakatos, I. (1978). The methodology of scientific research programmes. Vol. 1+2, Philosophical papers; edited by J. Worwall and G. Currie. London:

Cambridge University Press.
Lazarsfeld, P. (1959). Latent structure analysis. In S. Koch (Ed.), Psychology: A study of a science. Vol. 3, pp. 476-543. New York: McGraw-Hill.
Lind, G. (1978). Wie mißt man moralisches Urteil? Probleme und alternative Möglichkeiten der Messung eines komplexen Konstrukts. In G. Portele, (Ed.), Sozialisation und Moral, pp. 171-201. Weinheim: Beltz.
Lind, G. (1981). Die Rolle von Fachinteressen bei der Entscheidung für Ausbildung und Beruf. In H. Peisert (Ed.), Abiturienten und Ausbildungswahl, pp. 155-178. Weinheim: Beltz.
Lind, G. (1982). Experimental questionnaires: A new approach to personality research. In A. Kossakowski & K. Obuchowski (Eds.), Progress in psychology of personality, pp. 132-144. Berlin-Ost: Deutscher Verlag der Wissenschaften and Amsterdam: North-Holland.
Lind, G. (1983a). Entwicklung des Moralischen Urteilens – Leistungen und Problemzonen der Theorien von Piaget und Kohlberg. In G. Lind, H. Hartmann & R. Wakenhut (Eds.), Moralisches Urteilen und soziale Umwelt, pp. 26-42. Weinheim: Beltz. (American edition: G. Lind et al., Eds., Morality and social context. Chicago: Precedent Publisher, 1985).
Lind, G. (1983b). Sozialisation in der Universität: Einstellungsänderung oder kognitiv-moralische Entwicklung? In G. Lind, H. A. Hartmann & R. Wakenhut (Eds.), Moralisches Urteilen und soziale Umwelt, pp. 153-170. Weinheim: Beltz.
Lind, G. (1984a). Theorie und Validität des 'Moralisches-Urteil-Tests'. Zur Erfassung kognitiv-struktureller Effekte der Sozialisation. In G. Framhein & J. Langer (Ed.), Student und Studium im internationalen Vergleich, pp. 166-187. Klagenfurt: Kärntner Druck- und Verlagsgesellschaft.
Lind, G. (1984b). Inhalt und Struktur des moralischen Urteilens. Unveröffentlichte Dissertation. Universität Konstanz.
Lind, G. & Keller, F. (1982). Intra-individuelle Varianzkomponentenzerlegung der Antwortmuster des 'Moralisches-Urteil-Tests' (Algorithmus für das Programmsystem KOSTAS). Arbeitsunterlage 65, Forschungsgruppe Hochschulsozialisation, Universität Konstanz.
Lind, G. & Wakenhut, R. (1983). Tests zur Erfassung der moralischen Urteilskompetenz. In G. Lind, H. A. Hartmann & R. Wakenhut (Eds.), Moralisches Urteilen und soziale Umwelt, pp. 59-80. Weinheim: Beltz.
Lippert, E. & Wakenhut, R. (1978). Zur Zentralität von Einstellungen. Zeitschrift für Soziologie, 7, 87-96.
Loevinger, J. (1957). Objective tests as instruments of psychological theory. Psychological Reports, 9, 635-694.
Mead, G. H. (1964). Mind, self and society. Chicago: University of Chicago Press. (Original 1934)
Meinefeld, W. (1977). Einstellung und soziales Handeln. Reinbeck b. Hamburg: Rowohlt.
Merton, R. K. (1973). Fact and factitiousness in ethnic opinionnaires. In I. Deutscher (Ed.), What we say/What we do, pp. 23-45. Glenview, IL: Scott, Foreman & Co.
Miller, G. A., Galanter, E. & Pribram, K. H. (1960). Plans and the structure of behavior. New York: Holt.
Mischel, W. (1968). Personality and assessment. New York: Wiley.
Nagl, W. & Walter, H. G. (1981). Konstanzer Statistisches Analyse-System

KOSTAS. Forschungsbericht 37, Zentrum I Bildungsforschung. Universität Konstanz.
Newcomb, Th. (1959). Individual systems of orientation. In S. Koch, (Ed.), Psychology – A study of a science, Vol. 3, pp. 384-422. New York: McGraw-Hill.
Ostrom, T. M. (1980). Wechselseitige Beeinflussung von Einstellungstheorie und Einstellungsmessung. In F. Petermann, (Ed.), Einstellungsmessung und Einstellungsforschung, pp. 37-54. Göttingen: Hogrefe.
Pawson, R. (1984). On the level: Measurement and sociological theory. Paper presented to the European Symposium on Concept Formation and Measurement, Rome, September 1984.
Perry, W. G. (1970). Forms of intellectual and ethical development in the college years. New York: Holt.
Petermann, F. (1980). Einstellungsmessung und -forschung: Grundlagen, Ansätze und Probleme. In F. Petermann, (Ed.), Einstellungsmessung und Einstellungsforschung, pp. 9-36. Göttingen: Hogrefe.
Piaget, J. (1971). The theory of stages in cognitive development. In D. R. Green, (Ed.), Measurement and Piaget, pp. 1-11. New York: MacGraw-Hill.
Popper, K. (1979). Objective knowledge. An evolutionary approach (revised edition). Oxford: Clarendon Press (Original 1972).
Rajecki, D. W. (1982). Attitudes: Themes and advances. Sunderland, MA: Sinauer.
Rest, J. (1973). The hierarchical pattern of moral judgment. A study of patterns of comprehension and preference of moral stages. Journal of Personality, 41, 86-109.
Rosenberg, M. J. & Hovland, C. I. (1963). Cognitive, affective, and behavioral components of attitudes. In M. J. Rosenberg, C. I. Hovland, W. J. Mcguire, R .P. Abelson & J. W. Brehm, (Eds.), Attitude organization and change. An analysis of consistency among attitude components, pp. 1-57. New Haven: Yale University Press.
Rossi, P. H. & Anderson, A. B. (1982). The factorial survey approach. An introduction. In P. H. Rossi & S. L. Nock, (Eds.), Measuring social judgments. The factorial survey approach, pp. 15-67. Beverly Hill, CA: Sage.
Scott, W. A. (1968). Attitude Measurement. In G. Lindzey & E. Aronson, (Eds.), Handbook of social psychology, pp. 205-270. Reading, MA: Addison-Wesley.
Shaw, M. & Wright, J. (1967). Scales for the measurement of attitudes. New York: MacGraw-Hill.
Thurstone, L. L. (1931). The measurement of social attitudes. Journal of Abnormal and Social Psychology, 26, 249-269.
Wakenhut, R. (1982). Der Moralisches-Urteil-Fragebogen (M-U-F). Vorläufiges Manual für die Arbeit mit dem M-U-F (überarbeitete Fassung). Universität Augsburg.

APPENDIX

Computations for the Examples in Table 2.

	Person A PRO x	Person A PRO x^2	Person A CON x	Person A CON x^2	Person B PRO x	Person B PRO x^2	Person B CON x	Person B CON x^2
STAGE								
I	-4	16	-4	16	-8	64	-4	16
	+3	9	-1	1				
II	-4	16	-3	9	-7	49	-4	16
	+3	9	-1	1				
III	-3	9	-4	16	-7	49	-4	16
	+4	16	0	0				
IV	-2	4	-2	4	-4	16	-4	16
	+4	16	0	0				
V	0	0	0	0	0	0	-4	16
	+4	16	0	0				
VI	+4	16	+1	1	5	25	-4	16
	+4	16	0	0				
SUM :	-9	61	-12	46	-21	202	-24	96
	22	82	-2	2				

Sum of Squares (SS) :	107,0
	178,0
Mean SS	36,8
	0,3
Deviation SS :	70,3
	177,7
SS STAG E :	64,8
	0,7
SS PRO-CON :	0,8
	176,3
Determination STAGE :	92,3
	0,4
Determination PRO-CON :	0,7
	99,1

	Person A				Person B				
	Pro		Contra		Pro		Contra		
Stage	X	X^2	X	X^2	X	X^2	X	X^2	
1	4	16,00	-4	16,00	-4	16,00	-4	16,00	-8,00
2	4	16,00	-4	16,00	-2	4,00	-3	9,00	-5,00
3	4	16,00	-4	16,00	0	0,00	-1	1,00	-1,00
4	4	16,00	-4	16,00	1	1,00	1	1,00	2,00
5	4	16,00	-4	16,00	3	9,00	2	4,00	5,00
6	4	16,00	-4	16,00	4	16,00	4	16,00	8,00
Σ	24,00	96,00	-24,00	96,00	2,00	46,00	-1,00	47,00	1,00
								285,00	1,00