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Attitude measurement and behaviour prediction I: literature survey

T.R. Taylor

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This report forms part of project 3506.8, Attitude Assessment and Behaviour Prediction, undertaken in the Test Construction Division. It is one of a set of three reports which describe the major research performed under project 3506.8. Page numbering in the three reports is consecutive.

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SUMMARY

This report presents the literature which was surveyed as a basis for the research undertaken under project 3506.8. As the major interest areas in this project are attitude theory, attitude measurement methodology and behaviour prediction, these three topics are covered in the literature survey. Special attention is devoted to the following:

* The definition of attitude;

* The relative merits and demerits of various attitude measurement methodologies;

* Behaviour prediction models;

* Causal modelling techniques.

SAMEVATTING

Hierdie verslag bespreek die literatuuroorsig wat as basis gedien het vir die navorsing wat onder projek 3506.8 gedoen is. Die belangrikste onderwerpe van belangstelling in hierdie projek is: houdingsteorie, metodologie van die meting van houdings, en gedragsvoorspelling. Hierdie drie onderwerpe word dus in die literatuuroorsig behandel. Spesiale aandag word aan die volgende geskenk:

* Die definisie van houding;

* Die relatiewe verdienstelikhede en terkortkominge van verskeie metodologieë vir die meting van houdings;

* Modelle vir die voorspelling van gedrag;

* Tegnieke vir die vorm van oorsaaklike modelle.

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1.0 INTRODUCTION

Since ancient times, the notion has been prevalent in Western thought that man is consistent in all his modes of functioning. Aristotle in his Rhetoric makes the point that deeds are a reflection of underlying character: people do the sort of things that they do because they are the sort of people that they are. Similarly Theophrastus (in the third century B.C.) was of the opinion that we are consistent in our thoughts, feelings and actions. Livy's portrayal of historical figures in his Early History of Rome bears witness to his endorsement of a model of man which assumes consonance among different manifestations of the personality: his canvas of human activity is filled out with speeches and character descriptions which are invented due to the lack of historical record but which were readily accepted by his contemporaries so long as these elaborations augmented and reinforced the known facts about the actions of the individuals in question.

This model of man as a creature consistent across all his modes of functioning still has currency today, although in its more simplistic forms it is clearly unable to account adequately for all human behaviour. Western society has infused the consistency concept with strong moral overtones: consistency is "good", and inconsistency "bad". In particular, society demands that its members be consistent in word and deed. Children are urged, on pain of punishment and moral censure, to tell the truth. A man who "keeps his word" is attributed with a good moral character, whereas one who fails to act as promised is regarded as a scoundrel. Despite societal pressures, the simplistic consistency model fits man's behaviour poorly. Examples abound in literature, history and our day-to-day lives of behaviour which is not consonant with verbal statements and internal feelings.

It is possible, however, that the failure of the model might be attributable, at least in part, to an unsophisticated understanding of the concept of consistency. If one thinks in terms of simple isomorphic relationships, then man is indeed inconsistent. If, however, one thinks of consistency as predictibility, and if one is prepared to allow that many factors might interact in various, possibly complicated, ways in man in order to produce a given outcome,

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terms the postulated relationships between his variables; this should

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2.0 THE ATTITUDE CONSTRUCT

The term "attitude" has been used in a variety of senses since it was introduced into the psychological lexicon. As attitude is one of the major constructs to be used in this study, it is important that we investigate the different meanings which have been attached to the term, then, bearing these traditional conceptualizations and the requirements of the present study in mind, arrive at a definition which will be both satisfactory from a theoretical point of view and

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elicit negative emotional responses but will also have a function in an instrumental conditioning process. The individual would be expected to learn escape behaviours which would take him away from the word "dangerous" (e.g. a piece of equipment labelled "dangerous"). In the social arena he would also avoid people labelled "negroes".

Campbell (1964), on the other hand, proposes a model which is based throughout on the instrumental conditioning paradigm. He introduces the concept of "disposition" which he claims are "residues of experience" which co-ordinate behaviour. According to Campbell, when the individual is placed in a new situation he engages in trial and

including events, ideas, people, actions, etc., although most theorists claim that these should be couched in a social context. Nearly all latent process theorists cite affect as the dominant characteristic of attitudinal response, but many also include cognitive and motivational elements in their definitions.

Behaviour prediction using attitudes rests on the thesis that if the attitudinal response to an object is positive, then it is to be expected that overt behaviour towards that object would also be positive; similarly a negative attitude is expected to be accompanied by negative behaviour towards the attitude object. What is meant by "positive" and "negative" behaviour is often left unexplained, but it is probably not too far from the truth to say that positive behaviour implies liking for and valuation of the attitude object and negative behaviour, the opposite. Hence, attitudes are regarded as internal constructs which guide behaviour in particular directions, although no consensus exists as to whether the attitudes themselves are capable of initiating the behaviour.

Unlike attitudes, personality traits are not linked to any particular object and therefore can be regarded as more generalized constructs. Although it might be true to say that the personality trait theorists do not claim as strong a relationship between behavioural and trait phenomena as the attitude theorists do, the expectation is still that an individual's behaviour is consistent, across situations, with his position on the trait dimension.

Both the above approaches are attempts to meet the commendable scientific desideratum of parsimony: if one construct can account for many instances of behaviour, then that construct has scientific value in that it can be used to predict phonomena in a simplified schema which is abstracted, by one level, from the actual events.

Unfortunately the empirical findings in the realm of behaviour prediction do not support the expectations of the personality trait and attitudinal theories. The correspondence between verbal measures of the underlying constructs and overt behaviour has been found to be low in general. Even when allowance is made for possible shortcomings in the measurement instruments, support for the attitude-behaviour

consistency hypothesis is substantially lacking. The reason for this failure seems to be attributable to the assumptions of the simplistic consistency model. The determinants of human behaviour appear to be far too complex to be accounted for by a single predictor variable which is related to the criterion in a simple linear fashion. It seems much more likely that most behaviour is determined by a variety of variables and that the relationship between these variables is complex, involving various types of interaction and mediation.

The present state of our expertise makes it quite impossible to attempt to devise a model of human behaviour at the level of complexity and comprehensiveness suggested above. A more modest attempt, however, which attempts to accommodate some of the complexities involved, does seem possible. Therefore, the approach adopted in this study is a multivariate one, the selection of variables to be used being guided by theory and empirical findings. In addition, some attempt is made to account for the causal interrelationships among all variables, not only between each predictor and the criterion.

This study addresses itself to the study of behaviour towards attitude objects, not towards behaviour in general. It is only towards emotionally significant aspects of our environment that we develop attitudes. Some objects are emotionally significant for only certain people, but within any given culture there is invariably a large subset of objects to which almost all members have some sort of emotional reaction, be it positive or negative. These may be regarded as "important" social objects, in relation to which much social behaviour is enacted. It is behaviour of this kind which is generally of the most interest to social scientists, politicians and others who take an interest in social behaviour.

The failure of attitudes effectively to predict behaviour towards attitude objects indicates that it is not only our feelings towards, or evaluation of, an object which determines behaviour. A man may dislike his boss and still behave towards him in a reasonably positive manner, because he sees him as the means to the attainment of desirable goals (e.g., higher wages, promotion), or because social pressures preclude him from behaving in accordance with his feelings.

Also it is possible that some individuals tend to be influenced by certain factors more than others: it may be that the behaviour of some people is strongly influenced by normative pressures, while for others the dominant influence comes from internalized attitudes; and for yet others behaviour may be primarily dependant on the attitude object's instrumentality in facilitating the attainment of needs and goals. Some people may be able to tolerate much dissonance between internal attitudes and overt behaviour if in return they can satisfy certain needs, while for others this might not be possible.

It is conceivable that each of the above-mentioned factors has a separate and independent effect on overt behaviour. This seems unlikely, however, if one sees man as a thinking, reasoning creature, capable of integrating and restructuring his mental world. If one's perspective is of this kind, then it does not seem unreasonable to expect that individual factors will, through the process of thought, be brought together into higher-level constructs which interact in complex ways before observable behaviour is committed.

The approach adopted in this study attempts to accommodate some of these features but makes no claim to finality or exhaustiveness. At this point our theoretical and metric tools are not adequate to allow this, if ever they will be. Many phenomena which may have important influence on behaviour have to be assigned to an "extraneous effects" category because of our inability to incorporate them in the prediction model. One of the major flaws of earlier approaches which attempted to find simple consistency between attitude and behaviour is that they treated behaviour as though it were occurred in a social vacuum, unmonitored and uninfluenced by the opinions and sanctions of reference groups and "significant others". The present model is more balanced in that it acknowledges that behaviour is likely to be influenced by both external (environmental and social) and internal (cognitive and emotional) forces. In this it is greatly indebted to the theoretical perspective of Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980).

The intention is to develop and expand this approach and then to examine the adequacy of a new model against the basic Fishbein-Ajzen model. In order to do this, attitude objects which currently are

salient to the groups of people under study will be used: data on the reactions (including behavioural reactions) of these respondents to the attitude objects will be interrelated according to the requirements of the models. In this way it will be possible to examine the degree to which the structures imposed by the models are compatible with the data and hence to compare the adequacies of the models as descriptors of the observed state of affairs.

Apart from the construction and testing of behaviour-prediction models, there is one other major area which will receive attention in this study: measurement methodology. Particular attention will be focussed on the problems and requirements of attitude measurement. The intention is to develop a methodology which overcomes the shortcomings inherent in presently available techniques and then to compare, in a practical application, the performance of the new methodology with the best of the currently used methods on a number of relevant criteria.

Finally, we come to the behavioural and attitudinal content area to be investigated. Content is of secondary interest in this research, as the main emphasis is on prediction models and on certain psychometric considerations. This does not mean that what is measured becomes completely arbitrary: several criteria should be borne in mind when selecting a suitable content area for a study such as the present one. Possibly the most important of these is attitude centrality. Centrality will be described in more detail in a later chapter; for the purposes of the present discussion, centrality can be thought of as the importance of an attitudinal topic to a given group of people. It is preferable to select a central attitude object for at least two reasons.

Firstly, it is likely that subjects will answer attitude items more conscientiously if the material is of a non-trivial nature. Secondly, central attitudes are less likely to be changed substantially by the measurement process than peripheral ones.

Another major consideration in the selection of an attitudinal topic is diversity of reactions to the topic. If most respondents have similar views on the topic, there will be constricted variance on the

measures applied; this in turn will affect scale reliability and correlations among variables. Consequently it will not be possible to investigate effectively the adequacy of different behaviour prediction models.

Yet another consideration when selecting an attitude object to study is the existence of observable and measurable behavioural reactions to the object. A person might have a positive attitude towards deficit financing, but what behaviour shall we look for to find behavioural confirmation of his attitude? On the other hand, if a person expresses a positive attitude towards a particular brand of toothpaste, there is a "natural" and easily observable behaviour which the investigator can monitor, namely buying the product in question.

In this study, the content area studied is Black advancement. Black advancement is an area which is central to many people at present, especially those who work in organizations where Black advancement programmes are in the process of being implemented, or where there is a probability of such procedures being initiated. It is also likely that in many groups (in this case organizations) a wide spread of attitudinal reaction will be found. It is becoming increasingly difficult in South Africa today to "run away" from Black advancement programmes by switching jobs. Hence, when measuring reactions to Black advancement issues, one is likely to find a range of both positive and negative responses.

Little is known about the structure of the Black advancement area, but a logical analysis of the domain indicates that the area is unlikely to be unidimensional. Hence, the experimenter must, guided by rational considerations and what little research there is, establish the dimensionality of the area empirically rather than assume unidimensionality. In this way, the study can be placed on a sounder footing from a psychometric point of view.

A few cautionary remarks should be made about causality and prediction models. Not only in psychology, but in any branch of science, it is never justifiable, if two variables are observed to covary, to claim with absolute certitude that this covariance is due to a causal link between the two variables. If I observe a tree catching alight after

having been struck by lightning, I am not justified in accepting without any doubt that the lightning caused the tree to catch alight: it may be that trees, which are about to catch fire, attract lightning, or it may be that a third variable caused both the lightning and the fire to occur. Man attempts to explain regularities in his environment by positing theories which impose a grid of causality on observed phenomena. It could be that this is an anthropomorphic view of the universe; man characteristically strives to find reasons for events which he observes, but the possibility cannot absolutely be excluded that causality is an invalid concept to use in the description of certain processes and events.

One must accept, however, that theorizing in causal terms is general practice in Western science. Elements of reductionistic causal thinking are found even in pre-Socratic philosophy. It was at an early stage in the development of Western thought that a school emerged which believed that the best way of studying the cosmos was to investigate specific event-event relationships rather than to attempt to understand the "mind of God". This school of thought supplied the fertile soil from which the reductionistic scientific way of looking at the world grew. Acausal ways interpreting sets of phenomena which change with time are not commonly found in Western thinking. Imagine for instance, a "symphonic" interpretation of natural phenomena where events, occuring like notes in a musical work, do not cause one another but happen for the sake of appropriateness, aesthetic appeal or some other criterion. Modern subatomic physics, with its Feynman diagrammes which deny the linearity of time, is grappling with acausal concepts; but such theorizing does not sit well with real-life experience, and certainly a relatively undeveloped science like psychology will have to live with its over-simplified causal explanations for the forseeable future.

This does not mean that one should uncritically invoke causality wherever the opportunity presents itself. No matter how sophisticated our models and computer programmes to analyze our data, the fundamental principles of proper scientific enquiry remain. Post hoc does not imply propter hoc: if x follows y in time it does not automatically mean that x is caused by y. Third-variable or other effects might underlie the true state of affairs. The current

availability of elaborate analysis techniques which go by appealing names like "causal modelling" offer great temptation to overinterpret data. For this reason, today's scientist should be more wary than ever of the seductions of uncritically concluding causal relationships. For, no matter how sophisticated, a technique cannot prove causality. As Kenny (1979) says: "Causal modeling provides no certain path to knowledge" (p.8). Only once a scientific model has repeatedly shown itself useful in accounting for a wide variety of data can one start attaching some credence to the causal structure which it posits; but one must always remember that it is only a successful simplification of phenomena thus far studied, not the whole truth.

Responsible use of causal or structural equation modelling techniques can help one to assess the degree to which a given model attains the above criteria. Modern causal modelling methods enable the investigator to assess the overall effectiveness of a theory in accounting for the data and may help him to track down specific deficiencies in the hypothesized structure. Any modifications to the original model should be done with circumspection and with a sensitivity to the theory. Haphazard post hoc modifications performed with no other aim in mind than to "get a fit" can only reduce the integrity and credibility of the research and open the resultant model to the criticism that it is largely the result of capitalization on chance and is unlikely to hold up in a cross-validation exercise.

Causal modelling also does not remove magically the problems inherent in a theory which is not comprehensive. The absence of crucial variables from the model can lead to the emergence of factitions links which would not be present if the "true" causal variable were present. Structural equation techniques hence do not make the third-variable problem go away.

These comments are in no way intended to belittle modern latent variable structural modelling techniques. On the contrary, the techniques have a number of substantial advantages over older methods and are the finest currently available for very many applications. What is being said is that they do not make up for poor theorizing. The techniques force the experimenter to state in precise mathematical

terms the postulated relationships between his variables; this should encourage him to think equally precisely about his overall model. In a way, it is because of the very success of techniques authored by Jöreskog (1974), Bentler and Weeks (1980) and others that it has become necessary to state the above qualifications.

On the basis of the above comments, the following points about the present study are made.

(1) The assumption that causal factors underlie human behaviour is adopted with reservation. Nevertheless, it is not accepted as a consequence that behaviour is capable of being predicted with absolute accuracy, even given that full knowledge of the underlying causal factors is available. The possibility of the existence of what might be called human free will is not excluded: The behavioural manifestations of this factor, if it exists, are by definition not predictable: hence even if complete knowledge of the individual is available at time t, consistently accurate prediction of his state at time t + x is not possible. Generally even the most sophisticated causal models do not account for more than about fifty percent of the variance in the behaviour being predicted. One could argue that at least some of the remaining variance is not only unknown but unknowable. Kenny (1979) expresses this neatly in the argot of the statistician: "Human freedom may ... rest in the error term" (p.9). It is accepted here, however, that human behaviour is substantially under the control of factors which have predictable effects; hence it follows that a knowledge of these factors and their relationships with one another will make the prediction of behaviour, with some reasonable degree of accuracy, a viable proposition.

(2) Even if a model is constructed which predicts behaviour with a high level of accuracy, caution should be exercised in concluding that the predictor variables in the model are in fact the causal factors of behaviour. The argument presented above should have high-lighted the dangers of inferring causality, even when a comprehensive and persuasive theoretical explication of the domain is at hand. History has shown that even the most

persuasive of theories can be changed from "fact" to myth in the light of new information and new insights. In psychology, with its proliferation of concepts, poor measurement instruments and "fuzzy" variables, few theories gain the level of credibility which is enjoyed by many of their counterparts in the more exact sciences. The area of behaviour prediction is no exception in this regard. Only after a theory has shown a good fit to the observed data in many different contexts can some modicum of credence be attached to the structural and causative implications of the model.

These two points give some indication of the complexity and difficulty of the task in hand. The attainment of any degree of certainty after the execution of an experiment is elusive even in the "hard" sciences; where man is involved, the task is even more difficult. In the present case, if the proposed prediction model does not fit the data, then not one but a variety of possible reasons have to be considered: failure to identify the right predictor variables, inadequate conceptualization of the interrelationships amongst variables, shortcomings in the measurement procedures, etc. Even if the model proves to be a good fit, little more can be said other than that the data do not show the model to be invalid. Whatever the outcome, the practice of performing controlled experiments is salutary in that new avenues of testing and exploring are almost always suggested by the results: hopefully this procedure of proposing, testing, breaking down and rebuilding does lead ultimately to a true increase in our knowledge, rather than the replacement of one myth with another.

2.0 THE ATTITUDE CONSTRUCT

The term "attitude" has been used in a variety of senses since it was introduced into the psychological lexicon. As attitude is one of the major constructs to be used in this study, it is important that we investigate the different meanings which have been attached to the term, then, bearing these traditional conceptualizations and the requirements of the present study in mind, arrive at a definition which will be both satisfactory from a theoretical point of view and capable of practical implementation.

The following resume of the historical evolution of the attitude concept has been taken largely from Allport (1966), De Fleur and Westie (1963) and Ostrom (1968).

"Attitude" was derived from the Latin word "aptus" which means "appropriate" or "fitting". Initially "attitude" was used to denote physical rather than mental states. In the seventeenth century it was used to refer to the physical positioning of an artist's subject with respect to the background. Only in the mid-nineteenth century did it start to acquire coinage as a descriptor of psychological phenomena; the term was then usually qualified by fixing the words "mental" or "physical" in front of it to indicate the sense in which it should be taken. The postural meaning which the term "physical attitude" conveyed was taken over into the psychological realm; hence "mental attitude" came to denote a kind of psychological posture. In the late nineteenth century the term was also used to indicate states with both physical and psychological components: early psychologists found that mental "set" reduced reaction time and the term "motor attitude" was introduced to account for this phenomenon. According to Allport (1966), the distinction between "mental" and "motor" has been discarded in more modern times to avoid the body-mind dualism which this implies.

With the emergence of behaviourism in the early twentieth century the search for elements of consciousness and the study of mental processes fell into disrepute. Attitudes came to be viewed in terms of expected or conditioned responses to given stimuli. Only in the 1920's did the term "attitude" come to be used in the most prevalent "modern"

understanding of the word: the relationship between the individual and social objects. Nevertheless, the behaviouristic interpretation of attitude has survived as a rival to the social psychological viewpoint. The two theoretical currents which these approaches have given rise to are generally known under the names "latent process" and "probabilistic" (Lemon, 1973; McGuire, 1969).

2.1 Probabilistic Orientation

The probabilistic (behaviouristic) orientation sees man in essentially S-R terms. The "black box" which intervenes between stimulus and response is not taken to have an internal life or conscious cognitive processes. Hence attitude is not regarded as a mental process, but is defined behaviouristically in terms of S-R links. Attitude strength is simply the probability of occurrence of a defined behaviour in a defined situation (Fuson, 1942). The concept of attitude is essentially superfluous in the probabilistic paradigm: notions of habit strength and S-R connections are for the most part adequate to account for what the latent process theorists call attitudes (Lemon, 1973).

Both classical and operant conditioning paradigms have been employed to account for attitude formation (Triandis, 1971, 1977). The perspective of Staats (1967), for instance, stresses classical conditioning more than operant. Staats defines attitude as an emotional response to a stimulus that has social significance. If a new stimulus is paired with a stimulus that elicits an emotional response, the new stimulus will come to do so also. Staats gives a hypothetical example of how first- and second-order classical conditioning might lead to the development of an attitude towards the word "negro": the word "dangerous" might be paired with an aversive stimulus which results in a negative emotional response being attached to this word; later, the word "dangerous" might be paired with the word "negro" so that by second-order conditioning the word "negro" gains negative emotional connotations. Thus classical conditioning may be used to devise an explanation for the formation of attitudes; but according to Staats, attitudes also perform functions. It is at this point that instrumental conditioning comes into the picture. The words "dangerous" and "negro" will, in the example mentioned above,

elicit negative emotional responses but will also have a function in an instrumental conditioning process. The individual would be expected to learn escape behaviours which would take him away from the word "dangerous" (e.g. a piece of equipment labelled "dangerous"). In the social arena he would also avoid people labelled "negroes".

Campbell (1964), on the other hand, proposes a model which is based throughout on the instrumental conditioning paradigm. He introduces the concept of "disposition" which he claims are "residues of experience" which co-ordinate behaviour. According to Campbell, when the individual is placed in a new situation he engages in trial and error behaviour. Behaviours which are rewarded are positively reinforced and a positive disposition is built up towards the objects and events which led to the rewarded performance. As a result, particular stimuli and responses are linked together, and the strength of a disposition is indicated by the probability that a given behaviour will occur in response to a given stimulus. Positive and negative dispositions can be seen therefore as guides or signposts which help the organism to develop patterns of behaviour which optimize the attainment of positive outcomes and avoidance of negative ones.

In the absence of knowledge about the organism's history of reinforcement, the experimenter's task is to study the patterns of S-R links and attempt to infer from these what the original conditions of reinforcement were. Campbell illustrates this with a rat example: suppose an experienced rat were taken from another laboratory; the new experimenter could, by setting up various experimental situations, form some idea of what the rat had been taught. Even then, the S-R links which he discovers might not be those where the habit is strongest - the original conditioning might have taken place with stimuli which are only related to the actual ones which the investigator uses.

Campbell's conceptualization of attitude (or disposition) is therefore not much removed from the Hullian and Skinnerian concept of habit strength. Emotion and evaluation are not taken to be relevant aspects of the dispositional construct. Also, disposition is not seen to be a uniquely human phenomenon.

The theorist who laid the foundation stones of all the more sophisticated work in the learning theory paradigm is Doob (1947). The orientations of many later workers (e.g., Lott and Lott, 1968; Rhine, 1958; and Breer and Locke, 1965) are heavily influenced by Doob's conceptualization of attitude. His main achievement was to modify the S-R model by positing a mediating process which intervenes between the input stimulus and the output response. By hypothesizing a mediating process or mechanism, Doob approaches the latent process orientation more closely than many other learning theorists. It should not be thought, however, that Doob's mediating process is cognate with the latent process theorists' understanding of this concept: the working out of the process is not seen to be under the conscious control of the individual nor is the process seen to perform a dynamic and integrative role in the personality.

Doob's definition is the following:

> An attitude is an implicit response which is both anticipatory and mediating in reference to patterns of overt responses, which is worked by a variety of stimulus patterns as a result of previous learning or of gradients of generalization and discrimination, which is itself cue- and drive-producing, and which is considered socially significant in the individual's society. (Doob, 1974; p.136.)

Doob's model, in the simplest case, can be presented symbolically as follows:

$$S - r - s - R$$

where

$r - s$ is the mediating process, and
r is the anticipatory or attitudinal response.

An anticipatory response is one which originally preceded another reward response as a result of being associated with this reward, and becomes reinforced so that it occurs before its original place in the response series. Hence, if one dislikes a particular fruit one tends to avoid eating the fruit. Originally the avoidance occurred only after actual contact had been made with the fruit and that contact had

proved to be unpleasant (punishing) and the withdrawal to be rewarding.

Attitude, as an internal mediational process, can help the individual to achieve more rewarding outcomes and fewer punishing outcomes than would be possible if the connection between S and R were not mediated. In some cases attitude may be a sort of substitute goal response. For instance an individual who dislikes another person may make an implicit response involving aggression rather than actually hurting his antagonist; overt aggression might not be the optimal way to attain desired goals. In other cases the implicit response might facilitate, rather than act as a substitute, for behaviour towards the goal object. In other words, Doob is claiming that there might be occasions when behaviour is mediated by attitudes almost immediately and little or no internal conflict and restraint is evoked in the mediating stage.

Doob believes attitudes have cue- and drive-producing properties; r can therefore be said to have stimulus value, i.e., it can arouse other responses. These responses may be overt or implicit: perceiving responses (which may determine which other stimuli the individual will respond to ultimately), linguistic responses, thoughts, images, stereotypes, overt behaviour - these are all possible responses which r can evoke. Eventually, however, the implicit responses have an effect on overt behaviour. Hence an attitude has cue-value in the sense that it acts as a stimulus to produce another response, but it also is a drive in that tension is reduced through subsequent behaviour leading to a reward. We may therefore speak of the drive strength of an attitude. The drive strength of an attitude varies from attitude to attitude and from occasion to occasion. If an individual is not particularly hungry, then a picture of his favourite food will evoke a positive attitude toward the food, but the overt response may be no more than a favourable comment and possibly salivation. If, on the other hand, the individual is very hungry, the food stimulus might start an r - s train which culminates in the individual rushing out to buy his favorite food.

Drive strength is one of the three influences which affect what Doob calls "attitude strength". The two other factors are afferent habit strength and efferent habit strength. The former refers to the strength of the bond between the input stimulus and attitude as a response, and the latter to the strength of the bond between attitude as a stimulus and a response pattern (either implicit or overt). All three of these factors influence the strength of the bond between an input stimulus and the type and intensity of the response towards a goal object.

The fate of an attitude over time, is according to Doob, dependent on at least three factors. The first concerns the reward or punishment associated with the goal response. An attitude will persist when it is repeatedly reinforced. If a change in the reward pattern occurs, then efferent habit strength is also liable to change: if, for instance, a given response starts becoming less and less successful as a means of obtaining positive reinforcement, then efferent habit strength will decline. This will affect in turn the afferent habit strength adversely with the result that the attitude will grow weaker and become less important as a means by which drives are expressed in behaviour. Secondly there is the factor of conflict with competing drives and attitudes. Even when afferent and efferent habit strengths are great, an attitude's drive strength may be weak in comparison with that of other attitudes aroused by the same or different attitude patterns. In such circumstances the attitude is likely to be "swamped out" by its competitors with the result that it has little influence on observable behaviour. Finally, there is forgetting which may involve other psychological processes besides extinction through non-reinforcement. The above discussion should make it clear that ample provision is made in Doob's theory to account for attitude change.

Rhine (1958) has used Doob's r - s paradigm to account for the formation of what might be called "abstract" attitudes. Some attitudes might be regarded as more abstract than others in that they refer to a wider class of social phenomena: hence, an attitude to Communism is more abstract than an attitude towards the postman because the concept of Communism refers to a whole range of socio-political phenomena. The "rules" holding these phenomena together as a construct are complex and intangible, whereas the

postman is discernable in the flesh and is both the totality and the only exemplar of his concept. Rhine, who sees attitude formation essentially as concept formation, outlines a model whereby r - s links become welded together into larger units, thus forming more abstract attitudes. Some degree of abstraction is also possible through the mechanism of stimulus generalization. Hence one could move from having an attitude toward a postman to having an attitude towards postmen in general. Stimulus generalization has its limitations, however, in cases where the elements of the concept are linked together by complex relationships: here Rhine's model is still applicable.

Breer and Locke (1965) build on these ideas in their book on task experience. A task is defined by these authors as a stimulus complex on which one or more persons perform certain operations in order to produce certain outcomes. Breer and Locke are interested in the development of broad (abstract) cultural beliefs, attitudes and values. They make the assumption that in any task situation certain patterns of behaviour will have greater reward value than others: by virtue of the reinforcing quality of their associated outcomes, these particular types of behaviour will have a better chance of being emitted than others. The individual's internal response to the rewarded behaviours takes three major forms: cognitive (the apprehension of the instrumental value of these acts), cathectic (the development of a positive attachment for this kind of behaviour) and evaluative (the definition of such behaviour as legitimate and morally desirable). These three internal responses together constitute the individual's attitude to the rewarded behaviour. This theoretical orientation does, therefore, make some concession to the latent process approach in that certain conscious mental processes are claimed to occur in the individual, although these are seen as somewhat slavish reactions to the rewarded behaviour.

Breer and Locke (1965) propose that the orientations developed in response to a given set of task attributes will be generalized to other task situations, and through a process of induction, to the level of cultural beliefs, preferences and values. They distinguish two kinds of generalization, lateral and vertical. In lateral generalization orientations generated in one situation "spill" over to

other situations involving tasks with more-or-less similar attributes. This type of generalization appears to be akin to the usual learning theory conceptualization of stimulus generalization as conceived by Hull (1943) and others. The second type of generalization, vertical, proceeds indirectly from the specific to the general (abstract), from one task to a conceptual grouping of tasks. There are different levels of generalization, culminating in value systems.

Breer and Locke (1965) think of culture as a profile of abstract beliefs, attitudes and values, where profile refers to the distribution of such orientations among members of the society. The authors point out that there is no such thing as a homogenous culture, but despite internal variation there are significant differences between cultures taken as a whole. Internal cultural variation is partly explainable by the fact that each individual's task experience is different. Equivalently, between-culture variation can be accounted for largely by cultural differences in the nature and distribution of tasks, according to Breer and Locke. Changes in tasks will eventually show up in changes in cultural beliefs, attitudes, etc. Task-specific orientations change first, with their more abstract counterparts lagging: this helps to explain the lack of cultural homogeneity in cultures where rapid technological change is taking place.

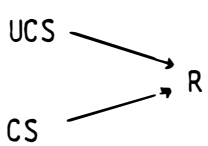
Although Breer and Locke's approach produces some interesting explanations of social attitudes, values and beliefs, they do seem to have relied rather too heavily on a single causative factor, task experience, with the result that the theory can be criticized as being one-sided and conceptually limited. Possible contributory factors like cultural heritage, family history, genetic differences and environmental conditions (unrelated to task experience) are largely ignored.

Lott and Lott (1968) use Doob's (1947) r - s conceptualization as the basis of their theory of interpersonal attitudes. Having a positive attitude towards another person (i.e., liking that person) is regarded as an anticipatory goal response. Learning to like a person is essentially learning to anticipate a reward when that person is

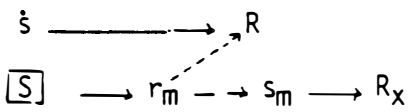
present. Subsequently, the liked person (or some representation of him) can raise general drive level in the liker in proportion to the degree of liking (i.e., strength of the r - s link) and can function as a secondary reward. This explanation can account for man's penchant for engaging in social intercourse apparently for its own sake.

Before moving on to discuss the latent process theories, we should review the standpoint of one other theorist whose orientation has both learning theory and latent process aspects. Even more than Doob, Osgood and his associates have emphasized the mediational process, but nevertheless have remained broadly within the learning theory paradigm in their conceptualization and description of the process (Osgood, Suci and Tannenbaum, 1957, 1970; Osgood and Tannenbaum, 1955; Osgood, 1965).

The major thrust of Osgood's work has been directed towards semantic measurement. He uses the terms "significate" and "sign" to indicate patterns of stimulation from objects in the outside world and symbols or representations of these objects respectively. Hence an object like a hammer is a significate whereas the word "hammer" can become a sign. Osgood et al.'s (1957) major goal is to show how stimuli become signs for a given significate. He rejects the Pavlovian view that the significate is the unconditioned stimulus, the latter merely being substituted for the former and thus acquiring its meaning. Osgood et al. (1957) claim that whenever some stimulus other than the significate is contiguous with the significate, it will acquire an increment of association with some portion of the total behaviour elicited by the significate as a representational mediation process. Osgood's and the classical learning paradigm are compared in the two learning paradigms below.



Classical learning theory paradigm



Osgood's paradigm

where

UCS	is the unconditioned stimulus (e.g., shock),
CS	is the conditioned stimulus (e.g., buzzer),
ṡ	is the significate (e.g., hammer),
[S]	is the sign (e.g., word "hammer"),
R	is the response (to UCS or ṡ),
R_x	is the response to the sign which takes account of the significate, and
r_m — → s_m	is the mediational representational process.

Osgood et al. (1957) state that the understandings which different individuals have for the same signs will vary to the extent that their behaviours towards the things signified have varied. This is because the representational process, which is the meaning of the sign, is determined in it entirety by the nature of the total behaviour occurring while the sign is being established.

The process r_m — → s_m which Osgood identifies with meaning is assumed to be an antecedent, initiating condition for overt behaviour R_x. For the purposes of measurement, it is clear that it is necessary to use some representative sampling of R_x as a means of inferring what is happening at r_m. The measurement technique which Osgood has devised to achieve this aim will be described in another chapter. However, the results which he obtained through the use of this instrument are relevant to the present section. As a model for semantic space, Osgood postulated a region of unknown dimension and Euclidean in character. He selected the factor analytic technique to define the semantic space with maximum efficiency: factor analysis was used to identify the minimum number of orthogonal dimensions which effectively exhaust the dimensionality of the space.

In the wide variety of applications using a large number of different concepts (signs), Osgood and his associates have frequently, but not invariably, found semantic space to be three dimensional. These three

dimensions have been labelled evaluation, potency and activity. The evaluative dimension is generally found to be the strongest and usually accounts for over a third of the total variance. Osgood et al. (1957) identify attitude with the evaluative dimension of meaning. They see attitudes as predispositions to respond which are distinguished from other such states of readiness in that they predispose towards an evaluative response. The evaluative response might or might not extend to overt evaluative behaviour, depending on a number of factors, including the intensity of the evaluation and environmental conditions.

In conclusion, it should be said that if it were not for the refinements introduced by Doob and Osgood, learning theory's ability to deal with the attitude construct would be virtually nil. Campbell's (1964) standard S-R approach, for instance, makes attitude a redundant concept, indistinguishable for all practical purposes, from habit. The "primitiveness" of this type of approach is largely due to its disregard for any kind of mental process conseptualization: the result is that attitude is defined only in terms of external (behavioural) manifestations. Doob's (1974) r - s conceptualization is an attempt to account for mental processes from a learning theory standpoint. Lott and Lott (1968) acknowledge Doob's contribution when they state that it is the r - s and the conditions which influence its evocation and strength on the one hand and its motivational and overt response consequences on the other, that provide the theoretical bridge between S-R learning theory and an understanding of attitudinal phenomena. Even the Doob refinement, however, goes only a small way towards a full recognition of mental processes. The problem seems to be that learning theory's stimulus-response paradigm is best suited to accounting for observable events, i.e., external stimuli and the behaviour which is (apparently) caused by these; once the paradigm is used to explain unobservable processes it seems to be hampered by the rigid or inappropriate way that it models mental processes. Human mental processes might occur in a number of dynamic and complicated ways which can never be accommodated adequately in the S-R paradigm.

Although the orientation adapted in this study is not of the behaviouristic variety, concepts from this discipline often help in the understanding of certain attitudinal phenomena. A degree of

eclecticism is not out of place if a benefit of deeper insight can be secured. One can use some of the concepts of behaviourism without becoming a behaviourist. For this reason, the behaviouristic approach has been examined in some depth.

2.2 Latent Process Orientation

Latent process theorists claim that the S-R model is a grossly inadequate way of looking at human functioning. They emphasize man's consciousness, his powers of reasoning and thinking and his need to understand and integrate the information which comes to him via his senses from the outside world. The latent process approach postulates underlying unobservable mental constructs which mediate behaviour. Most of the theorists of this school see attitudes as "stored-up experience" in the form of evaluations of objects, actions and events. Hence, whereas the behaviourist is happy to limit his definition of attitude to response consistencies, the latent process theorist goes one step beyond this and sees attitude as a construct which has epistemic value for the individual. Attitudes are a means of categorizing and integrating information about social objects and hence making the social world more comprehensible. Attitudes may be regarded as mental models of external social objects, models which always incorporate an evaluative or affective component. Hence attitudes are characterized by the fact that they place the social objects to which they refer on a like-dislike dimension. Attitudes are also claimed by many theorists to incorporate rational or pseudo-rational material which can be used in support of the affective component. This material serves what might be seen as a universal need: to supply reasons for one's thoughts, feelings and actions.

This last comment high-lights the latent process theorists' contention that attitudes play a major functional role in the personality. Katz (1960) identifies four main functions which attitudes perform:

(1) Adjustment function - the means of reaching desired goals and avoiding undesirable ones.

(2) Ego-defensive function - the defense of the self-image from threats.

(3) Value-expressive function - the giving of positive expression to central values (beliefs about ideal end-states and ways of attaining these).

(4) Knowledge function - the organization and explication of perceptions and cognitions.

Schroder, Driver and Streufert (1967) see attitudes as structures for the classification of information, which function as the basic units in information processing.

Smith, Bruner and White (1956) summarize some of the main points of the latent process theories. In an attempt to tie together personality traits and attitudes, they state that personality traits are dynamic and predispositional; that the possession of certain traits predisposes the individual to the adoption of certain general attitudes towards the world. Hence attitudes are seen within the domain of personality. The authors state that an individual's attitudes are but one of a number of consistent and regular forms of behaviour which characterise him. From the consistencies, the individual's personality can be deduced. Personality is then an inferred construct to which we ascribe certain dynamic qualities - striving, adaptation, defense, etc. Expressed attitudes, like all behaviour, both constitute part of the data from which personality is inferred and are in turn a function of personality.

The following five subsections review the main latent process theories.

2.2.1 Theories which regard attitude as a tripartite phenomenon

Philosophers at diverse times and places have arrived at the same conclusion that there are basically three existential positions that man can take - knowing, feeling and acting. The Gita of the Hindus recognizes three corresponding paths to salvation - jnana, bhakti and karma (Ostrom, 1968).

According to Ostrom (1968), it was only in the late 1940's that psychologist and sociologists started seeing cognition, affect and

conation as three different but related facets of attitude. Thereafter major theoretical contributions to this orientation were made by Krech and Crutchfield (1948), Lambert and Lambert (1964) and Newcomb et al. (1965). Other authors like Scott (1968), Triandis (1964, 1967, 1971, 1977) and Katz and Stotland (1959) also endorse the tripartite conceptualization of attitude.

The thinking-feeling-acting orientation has probably had its greatest exponent in Krech and Crutchfield (1948) and Krech et al. (1962). They describe the three components as follows:

Cognitive: comprises all evaluative beliefs about an attitude object. (These authors seem to regard evaluation in a non-affective sense.)

Affective: includes all emotions or feelings connected with the object.

Action-Tendency: involves all the behavioural readiness associated with an attitude.

The authors therefore appear to be saying that although action-tendency is a component of attitude, overt action need not result in all cases, but an attitudinal predisposition to behave in a certain way towards an object exists.

According to Greenwald (1968), the affective component is established through classical contitioning, the conative through instrumental conditioning and the cognitive through the acquisition of information and the processing of the information.

If the components of attitude are indeed formed in such different ways, one might be led to doubt whether these three phenomena do indeed form components of a single construct. It is possible, however, that the three components are brought to a reasonable level of compatibility with one another through processing and evaluative activities undertaken by the individual at a "higher level". McGuire (1966) points to the human need for cognitive consistency and Tedeschi, Schlenker and Bonoma (1971) and Tedeschi and Lindskold (1976) emphasise the need for an apparent consistency to be displayed to the outside world (the authors call this "impression management").

In both perspectives, a self-reviewing facility in mental functioning is being adduced and a model of (at least) partial self-awareness assumed which is congenial to the orientation in this study.

According to Krech et al. (1962), each of the three components of attitude can vary along two major dimensions: valency and multiplexity. Valency is the degree of favourability or unfavourability towards the object of the attitude and multiplexity is the number and variety of elements making up a component. A priest would, for instance, be expected to have a more multiplex cognitive component to his attitude toward religion than someone who took little interest in religious matters. Krech et al. claim that in general there is a strong tendency for different components of an attitude to be similar in valency. Therefore if one is strongly opposed to mixed sport on emotional grounds, one is also expected to have strong negative beliefs about the idea and tend to behave in such a way as to thwart such practices.

We have so far covered Krech et al.'s conceptualization of within-attitude structure. These authors also see attitudes themselves to be inter-connected in structural arrangements. Attitudes cluster together into broad themes. Hence, a number of attitudes which relate to aspects of government might cluster together to form a system of attitudes around a political theme. Again it is to be expected that the members of a cluster would be compatible in their valencies; it would be unusual, for instance, to have an exceedingly negative attitude towards a particular political party but a very positive attitude towards its leader. Attitudes may vary in interconnectedness. Those forming part of a large cluster would in general be highly connected with other attitudes, whereas attitudes which are not part of a system might be isolated to a large extent from other attitudes. It is only in attitudes of the latter type that changes can occur without threatening to upset the equilibrium of the whole system.

The following are Krech et al.'s (1962) ideas on the formation of attitudes. Attitudes develop in the process of need or want satisfaction. In coping with various problems and in trying to satisfy his needs and wants, the individual develops attitudes:

favourable towards objects and people which satisfy his needs and vice versa. With respect to objects which satisfy his needs, both final objects and objects which are a means of attaining goals will be regarded positively. Attitudes therefore serve functions in the personality (see the comments of Katz, 1960, on this point earlier in this chapter). For instance, racial prejudice may enhance self-regard, be a way of managing repressed wants, protect the self against threats to self-esteem, etc.

An individual's attitudes are also shaped to some extent by the information to which he is exposed. New information is frequently used to form attitudes which are consonant with existing attitudes. Usually an individual's information about any given social object is very incomplete; also the original sources of information are often not available with the result that the individual has to rely on information at second hand from "authorities" who might distort the information intentionally or through ignorance. As the individual tends to pay attention to authorities whose attitudes are consonant with his own, it is not difficult to see how new information often results in the formation of attitudes which are compatible with related attitudes already in the system. Also by selective attention the individual can "filter out" information to which he is exposed, which is incompatible with his present attitudes.

Group affiliations also influence the formation of attitudes. A person's attitudes tend to reflect the beliefs, values and norms of his group. To maintain his attitudes, the individual must have the support of like-minded people. Hence groups serve to form and maintain attitudes. Also, an individual with a given attitude might seek out a group with like attitudes. An example would be a Christian seeking out church people when he moves to a new town. For holding the normative or "right" attitudes in the group, an individual is rewarded with more secure membership or possibly promotion to higher status in the group.

Krech et al.'s (1962) views on attitude development, therefore, seem to be similar to Greenwald's (1968) with regard to the importance of operant conditioning and information processing; classical conditioning as a basis of the affective element does not feature in

their conceptions, however. Krech et al.'s orientation is also more sociological.

Newcomb et al. (1965) state that attitudes are located at the interface between cognitive processes (thought and memory) and motivational processes (emotion and striving). These authors distinguish attitude from motive in the following way: an attitude is not characterized by a drive state but merely refers to the likelihood that a particular motive can be aroused. Attitudes persist; motives do not, although they may recur. Hence attitudes are important in the long-term organization of behaviour. According to Newcomb et al. attitudes originate in specific motives. Once an object or state has been associated with the satisfaction of a motive, the type of behaviour that led to the satisfaction comes to be directed towards that object or event even in the absence of the drive to which it was originally related. The satisfaction of the motive also leads to the development of a favourable affective orientation towards the object or event, as well as the organization of favourable cognitive material with respect to the same.

Newcomb et al. like Krech et al. claim that attitudes vary along the two dimensions of valency and multiplexity. They add two other concepts which they call inclusiveness and centrality. Inclusiveness is described as the degree to which the different component elements which refer to the attitude object differ from one another. The final liking or disliking for an object is some kind of subjective summing of the liking or disliking for the component elements. Centrality, or salience, is closely related to the frequency with which an object occurs to a person. Judd and Krosnick (1982) claim that central attitudes are more closely linked to underlying values; they find empirical support for this hypothesis.

Although Newcomb et al. stress the importance of the motivational aspect of attitude, they state the a simple and perfect correspondence between an attitude and relevant behaviour is not to be expected for the following reasons:

(1) Behaviour is a product not only of attitudes but of the immediate situation as well. Attitudes are not the original causes of

behaviour. They represent intervening conditions that have themselves been determined by the sum of past situations.

(2) Attitudes relevant to a situation are often multiple. Any stimulus complex or situation to which we respond evokes a number of attitudes at once. In most cases, it is difficult or impossible to tell exactly what attitudinal factors will come into play in a given individual, for these factors vary from person to person.

Triandis (1971, 1977, 1979) also accepts the tripartite conceptualization of attitude and has the following to say about the three components:

Cognitive Component. In order to reduce information load, stimuli are categorized. Hence the cognitive part of attitude is in effect a way of storing information in meaningful units or conceptual groupings. However, such categorizations can also result in the loss and distortion of information, because once a stimulus has been placed into a category, it tends to take on the conceptual characteristics of the group as a whole and lose any individual or particular meaning which it had.

Affective Component. Once a category has been formed, it is possible for it to become associated with pleasant or unpleasant states. The way an individual feels about a social object is generally determined by previous associations of the attitude object with pleasant or unpleasant experiences. We tend to develop positive affect towards objects which help us achieve our goals and vice versa.

Behavioural Component. Triandis (1977) claims that an individual's behaviour towards an attitude object is mediated by his culture and reference groups, and by the possibilities and avenues of action open in any given situation. Previous habits also play a role in determining what sort of behaviour an individual will resort to. Hence the component of the attitude which relates to behavioural preferences need not be highly correlated with actual behaviour due to the influence of the non-attitudinal factors mentioned above.

Katz and Stotland (1959) justify the attitude concept by claiming that the stability of many behaviours over time points to the existence of some sort of internal stabilizing mechanism incorporating affective and cognitive elements which control and moderate the behaviour. These authors define attitude as an individual's tendency or predisposition to evaluate an object or the symbol of that object in a certain way. Evaluation is seen by them as the attribution of qualities which can be placed along a dimension of desirability-undesirability; it contains both cognitive and affective elements. According to Katz and Stotland, not all attitudes have a behavioural component. In fact all three components, cognitive, affective and behavioural can vary greatly in predominance from attitude to attitude. Some attitudes may be highly "cognitive" and be little different from a cluster of beliefs. Other attitudes may be strong on affective and behavioural components. Attitude of this sort could be involved in a situation where racial prejudice boils over into violence. Katz and Stotland believe that the relationship between attitude and behaviour is often found to be weak because not all attitudes have appropriate motor outlets; even if an attitude is expressed behaviourally, the experimenter, through his lack of understanding of the individual's dynamics, might have chosen the wrong index for his behavioural criterion.

Katz and Stotland (1959) state that the cognitive component of an attitude can be described according to three characteristics: differentiation, integration and generality-specificity. Differentiation (number of beliefs) is akin to Krech et al.'s (1962) and Newcomb et al.'s (1965) multiplexity. Integration refers to the degree of organization of beliefs; generality-specificity (the number of objects or beliefs subsumed under the same category) is similar to Newcomb et al's concept of inclusiveness.

A number of other authors have also commented on a variety of dimensions along which attitudes, or at least the cognitive aspects of attitudes, can vary. The two cited by Krech et al. (1962), valency and multiplexity, are mentioned frequently in the literature, although not always by the same names. Valency is usually known as extremity. Lemon (1973) distinguishes this from intensity which he defines as the strength with which an individual endorses a particular attitudinal

standpoint: hence a person can hold a moderate standpoint, but hold it strongly. Sherif and Sherif (1967b) have found that in general extreme attitudes tend to be more strongly held, although this is not invariably the case.

Lemon (1973) introduces a further dimension, involvement (i.e., the degree to which the individual is personally involved), but it is doubtful whether this can be distinguished adequately from a number of other concepts. Another term which comes up frequently in the literature is salience. Scott (1968), defines salience as the prominence of an attitude, or the degree of readiness with which a person expresses it.

Scott also defines another apparently important dimension: ambivalence. He describes this as the degree to which opposing tendencies are found in the attitude. A high level of ambivalence is present if one tends to feel positively about certain aspects of the attitude object and negatively about others. One might, for instance, like the foreign policy of a particular political leader, but dislike his personal morals and the condescending way in which he addresses his audiences. The ambivalence dimension has implications for attitude measurement. The score which an individual receives on an attitude questionnaire might be neutral for two different reasons: he might actually have a neutral attitude on the issue in question, or he might have a number of extreme conflicting views which cancel one another out when item scores are summed. In some attitude measurement methods it is possible to derive an index of the respondent's variability in his responses; in practice however this is seldom, if ever, done.

A whole host of other dimensions are mentioned by Scott (1962, 1969) and Zajonc (1960), but as these are rarely cited in the literature and are of no consequence to this study, they will not be described here.

Several authors have attempted to demonstrate discriminant and convergent validity for the three-component attitude model (e.g., Ostrom, 1969; Kothandapani, 1971; Bagozzi, 1978; Bagozzi and Burnkrant, 1978; Bagozzi, Tybout, Craig and Sternthal, 1979). Substantial support for the model has been found by some of the

studies, but not all. On balance, however, the evidence favours the tripartite model. The studies mentioned above differ in a number of ways, including the analysis methods used, the attitude object measured, the techniques employed to assess the three components of attitude and the level of education and sophistication of the subjects to which the measures were applied. Clearer findings might emerge if some control is exercised over these factors in future research. Also, many studies have used the relatively primitive analysis methods proposed by Campbell and Fiske (1959) or exploratory factor analysis. Confirmatory techniques using structural equations modelling are preferable. Some of these methods, including those of Jöreskog (1974), Browne (1983) and Bentler and Weeks (1980) will be described, and their advantages mentioned, in Chapter 7.

A further improvement in research strategy would be to expand the range of attitudinal material assessed in any given study. Multitrait-multimethod approaches have been employed in some studies, but generally only one attitude object is assessed. Ostrom (1969), for instance, measures the three components of a single attitude using several assessment techniques. (The "traits" in this case are the three attitude components.) What is needed is to apply a sort of "super" multitrait-multimethod approach, with the three components of several related attitudes being measured using several methods. This type of study would offer a context in which to study the strength of relationships between attitudinal components relative to separate but closely associated attitudes.

Disagreements over whether attitude is a tripartite phenomenon or only a subset of the elements usually included in the tripartite conceptualization can lead to terminological difficulties. Triandis (1979), for instance, seems to use the terms "affect" and "attitude" virtually interchangeably, but also has another element in his behaviour prediction model which is quite similar to what the tripartite theorists identify as the cognitive component of attitude. Trandis seems to have "demoted" attitude from its inclusive role in tripartite theory to a status similar to one of the elements of the tripartite model. The approach adopted in this study is comparable to that of Triandis. More attention, however, has been devoted to defining precisely the relationship amongst the components.

2.2.2 Consistency and balance theories

These theories are based on the assumption that beliefs, attitudes and values are all part of an internal system which strives towards consistency or congruence. Once incongruence or dissonance arises, the individual experiences a sort of psychological discomfort which induces him to make efforts to regain a sense of congruence or consonance (Festinger, 1957). Dissonance can arise in a number of ways - between different beliefs or attitudes, between new information and beliefs or attitudes, between behaviour and attitudes, between attitudes and values, etc. Most theorists have concentrated on one particular aspect of the belief-attitude-value system and have developed their theories to account for dissonance phenomena which occur in that area.

Heider (1946) originated the consistency approach to attitude theory. Heider's theory concentrates on the relationship between the individual and persons, objects and events in the environment. Hence the theory attempts to account for consistency phenomena between the individual and the outside world rather than between different cognitive elements of the individual himself. Heider defines two relations, L and U. L describes situations where liking, love, esteem, valuation, etc. occur between an individual and some person, object or event in his environment. U indicates when similarity, proximity, causality, membership, possession, belongingness, etc. relates one person or object to another. The relations -L and -U, which are the opposite of L and U respectively, are also defined. Heider describes a number of triadic situations where the relationships between the elements (individuals and objects) can be used to infer whether the situation is in "balance" or not. If, for instance, individual o likes object x and individual p, but individual p dislikes object x, then a state of imbalance exists. A further example of imbalance would be the case where individual o dislikes individual p, but p possesses attribute x which o likes.

If an individual experiences a state of imbalance, the theory claims that he will try to eliminate it. The thesis that inconsistency is unpleasant and that an individual who experiences it will make efforts to eliminate the inconsistency stems from a conceptualization of

Western man as a rational being who finds the existence of logical contradictions within himself unacceptable. Western man's dedication to logicality and consistency stems largely from his cultural indebtedness to Greek modes of thought. (Socrates attempted to point out inconsistencies in thought using the dialectic method.) Hence the balance model probably would be a poor descriptor of non-Western thought processes, and even in Western culture adherence to the canons of logicality is certainly not all-pervasive.

In the examples cited above, the imbalance can be resolved in a number of ways. In the second example, one possible resolution would be for o to start disliking attribute x. Alternatively, o could become more positive in his attitude towards p. A further possibility would be to deny that p possesses attribute x. (This last possibility would be viable only if x is an invisible or a not easily identified attribute.) Cartwright and Harary (1956) have generalized and modified Heider's (1946) theory to take account of n rather than three elements. The aim of these authors is to study sociometric structures and communication networks. The generalized theory is, however, rather cumbersome and has not generated much research. Newcomb (1953) has also modified Heider's (1946) theory to take account of social relationships in general, rather than perceptions only from the point of view of one person. He introduces the notion of "strain towards symmetry" in interpersonal relationships. Osgood and Tannenbaum (1955) use the balance concept in the context of verbal statements. If, for instance, a positive attitude exists towards Joe Soap and a negative attitude towards Communism, then if these two concepts are associated ("Soap advocates Communism") a state of imbalance or incongruity will arise. Balanced associative and dissociative statements would be "Soap advocates Capitalism" and "Soap deplores Communism". The theory has implications for attitude change.

Heider's (1946) theory still generates some research. Insko and Adewole (1979) for instance performed an analysis of variance study of p-o-x models and concluded that interaction effects between elements might be important. In all, seven effects can be identified: the three p, o, x main effects, three double interactions and one triple interaction. Mower-White (1979) reviews the research using Heider's model and concludes that in many cases Heider's conception of balance

has not found support. Mower-White cites three factors which moderate balance: type of experimental task, characteristics of the triad and personality variables.

Festinger's (1957, 1958, 1964) theory has probably generated more interest than any other consistency theory. His basic hypotheses are:

(1) The existence of dissonance (inconsistency), being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance.

(2) When dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information which would be likely to increase dissonance.

Festinger (1957) sees dissonance as a motivating factor in its own right. He defines dissonance as follows: two cognitive elements are in a dissonant relation if, considering these two alone, the obverse of one element would follow from the other. The total amount of dissonance between a given element and the remainder of an individual's cognitions depends on the number and importance (to the individual) of the relevant elements which are dissonant with the element in question. The strength of the pressure to reduce or eliminate dissonance is hypothesized to be a function of the magnitude of the dissonance.

Festinger's (1957, 1964) particular interest is in the nature and effect of dissonance between cognitions, attitudes, etc. and overt behaviour. Hence, if an individual has a negative attitude towards his supervisor, but nevertheless behaves in a positive way towards him, a state of dissonance exists between the individual's attitude and his cognitions about his behaviour. Another example of a dissonance-creating situation would be that in which a smoker reads about the deleterious effects which smoking has on one's health.

The usual experimental situation for studying attitude change in the dissonance theory paradigm is to induce the individual, usually by means of a reward, to play a role which is contrary to his attitudinal position (see Festinger and Carlsmith, 1959; Cohen, 1962; Rosenberg, 1964). Nuttin (1975), in his evaluation of the contradictory findings

concerning size of reward and size of attitude change (the theory predicts that large rewards produce less attitude change than small rewards), discards the dissonance concept altogether and replaces it with a concept he calls "perturbation" (which is described by him as a kind of emotional arousal).

Osgood (1960) points out that it is only when two cognitions are brought into some sort of relation to one another that dissonance comes about. If one does not associate the information about the unhealthy effects of smoking with one's own behaviour, then dissonance is not experienced. According to Festinger (1957), once dissonance is felt, the individual is under pressure to change one (or more) cognitions in order to reduce or remove the dissonance. If dissonance exists between an attitude and a cognition about one's behaviour then either the attitude or the behaviour could be changed to secure consonance. It is always the element which is less important psychologically to the individual that changes. Osgood (1960), however, points out a number of other possible outcomes, including the following:

(1) It might be possible to "deny" the relationship between the dissonant elements through rationalization.

(2) Other cognitive elements that are in consonant relationship with one of the dissonant elements might be adduced. (This is called "bolstering".)

(3) Other cognitive elements that are in a dissonant relationship with one of the dissonant elements might be adduced. ("Undermining".)

(4) Dissonant cognitive elements might be combined into a larger unit which, as a whole, is in balance with other cognitive elements. ("Transcendence".)

Asch (1966) also points out a number of ways in which dissonance can be reduced or avoided in the case where new information threatens to throw the cognitive-attitudinal system into a state of imbalance:

(1) The authenticity of the information can be questioned.

(2) The information can be reinterpreted.

(3) Information can be avoided and confirmatory facts sought.

A large body of empirical research has been based on the Festinger model and Brehm and Cohen (1962) have undertaken some theoretical developments of it.

Certainly dissonance theory in its original form needs to be qualified and modified in order to account for many findings on attitude and behaviour change. (Unfortunately post hoc modifications of theory in the light of empirical findings always serve to weaken the credibility of a theory.) Individuals do not always seem to experience a dissonance effect when cognitive elements are at variance with one another. Dissonance effects appear to be stronger when the subject believes that he has the freedom to perform or refuse to perform activities which are counterattitudinal (Linder, Cooper and Jones, 1967). Freedom of choice gives the individual a sense of commitment to his chosen activity (Cohen, 1960, 1966). It is also much more likely that dissonance effects will come about if the counter-attitudinal behaviour is performed in public rather than private. When behaviour is private, the incentive effects of a reward might outweigh any influence arising from the experience of dissonance (Carlsmith, Collins and Helmreich, 1966).

Tedeschi, Schlenker and Bonoma, (1971) and Tedeschi and Lindskold (1976) develop this into a theory which replaces dissonance with what they call "impression management" as the major concept. According to the perspective of these authors, subjects in dissonance experiments are engaged in managing and maintaining a facade of consistency which they think will impress the experimenter. Impression management therefore posits two-way manipulation in the experimental situation: the experimenter performs manipulations on the subject who in turn performs manipulations in order to create a certain impression on the experimenter. Subjects are more interested in <u>appearing</u> to be consonant than actually <u>being</u> consonant. If a person is seen to be inconsistent in word and deed, or attitude and behaviour, his credibility will be lowered and his ability to influence others reduced. Many individuals are less willing to expose themselves to this prospect than to live with dissonance.

The impression management theory replaces the more traditional model of man as a consistent being with one in which only the public man is

consistent: appearance is more important than essence. Tedeschi et al. (1971) do allow, however, for individual differences in the tolerance of inconsistency between the public and private self. People who are anxious, rigid or who have an internal locus of control are more likely to conform to the expectations of Festinger's theory than those who possess personality traits opposite to those mentioned above. Presumably psychopaths are the most extreme impression managers.

Tedeschi's theory has implications for behaviour prediction theory and attitude change-behaviour change theory. In both these theories the concept of consistency enters: in the former between attitude and behaviour and in the latter between attitude change and resultant behaviour change. Once one admits impression management as a significant factor, one is forced to ask questions like the following: Is this stated attitude genuine or is it what the respondent would like the experimenter to believe about him? Is this experimentally monitored behaviour typical of the way the subject would behave in a completely normal true-life setting or is he presenting the experimenter with behaviour which he thinks will meet with approval or which is designed to be consistent with his (possibly false) stated attitude? It seems unlikely in any experimental design that the investigator will be able to isolate the effects of impression management with any degree of certainty. However, if Tedeschi and Lindskold (1976) were to define impression management more rigorously, it might be possible to devise a measure of degree of impression management. Impression management could then be studied as a moderator variable in attitude-behaviour change and behaviour prediction.

Other authors who have made important contributions to consistency theory are Capella and Folger (1980). They have recast consistency theory into the mold of information processing theory. Basing their thinking on Rumelhart et al.'s (1972) and Kintsch's (1974) Network models of memory, Capella and Folger create a more dynamic conceptualization of the relationships among beliefs and evaluations than is possible in Festinger's (1957) and Krech et al.'s (1962) models. Where these authors have only one ill-defined kind of conceptual link, Capella and Folger have several, including the following:

(1) Links indicating the possession of some quality ("is" links)

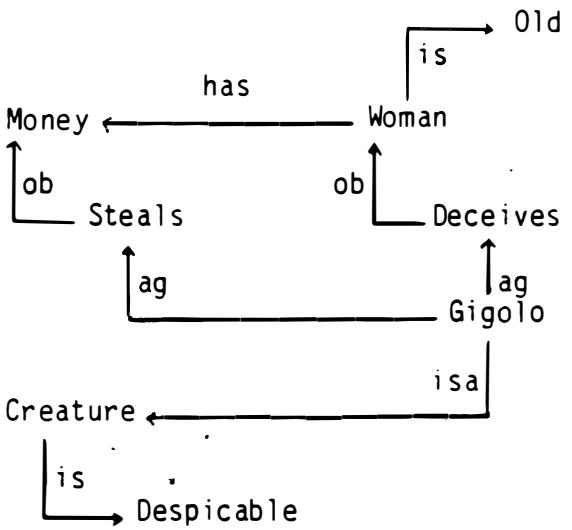
(2) Conceptual links ("isa" links)

(3) Links indicating that a cognition is an agent ("ag" links)

(4) Links indicating that a cognition is an object ("ob" links)

(5) Links indicating possession ("has" links).

The following is a process diagram of the complex of cognitions which can be verbalized as: "Gigolos are despicable creatures. They deceive old women and steal their money."



In a process model it is possible to represent how beliefs may be associated with evaluative cognitions via conceptual links. "Gigolo", for instance is connected with the evaluation "despicable" and with the belief "steals"; "steals" in turn may be connected with an evaluation "bad".

In conclusion, consistency theory is more accurately described as an approach which is complementary to tripartite theory rather than a rival to it. Tripartite theory concentrates primarily on the internal structure of attitudes, whereas consistency theory attempts to describe the nature and dynamics of structures which relate attitudes to one another. A close analogy in biology would be the following: tripartite theory is analogous to the study of the internal workings of the cell whereas consistency theory is analogous to the study of the structure of tissues which are made up of many cells.

2.2.3 Rokeach's object-situation theory

Rokeach's (1960, 1967, 1968, 1979) attitude theory cannot be associated easily with any other theory; therefore it will be dealt with on its own. The model uses belief as the basic building block of the cognitive system. According to Rokeach (1968), beliefs vary along a central-peripheral dimension. Centrality is defined in terms of interconnectedness: beliefs which are connected to many other beliefs are more central than those which are less connected. Changes in central beliefs will produce relatively greater changes in the remainder of the belief system than changes in more peripheral beliefs. "Primitive" beliefs which everyone accepts, like "I have two hands" are the most easily verifiable and the most resistant to change; widespread cognitive and personality reorganization or disorganization (e.g., psychosis) is liable to occur if such beliefs do change.

Rokeach (1968) claims that we tend to value a given ideology or system of beliefs in proportion to its degree of congruence with our own belief system; also, people tend to be valued in proportion to the degree to which they exhibit beliefs or systems congruent with our own. An attitude is defined by Rokeach (1968) as a relatively enduring organization of beliefs around an object or situation predisposing response in some preferential manner. He states that beliefs may be descriptive, evaluative or prescriptive. Whether or not the content of a belief is to describe, evaluate or exhort, all beliefs are predispositions to action. Rokeach (1968) differs with Krech et al. (1962) in that he does not see belief to be a purely cognitive phenomenon; what Krech et al. call the affective and behavioural components of attitude, Rokeach includes under the rubric of belief.

Rokeach (1960) cites a number of dimensions along which beliefs can vary; several of these we have encountered before in connection with attitudes: differentiation (i.e. multiplexity), compartmentalization (the degree to which a belief is isolated or connected with other beliefs), centrality, breadth (the "category width" of an attitudinal system), etc.

Rokeach (1968) emphasizes the relationship between attitude and behaviour. He points out that some authors, when they speak of the response set created by attitude, are actually referring to an affective (like-dislike) response. Others like Katz and Stotland (1959) speak of an evaluative response which they take to include both affective and cognitive elements. The Rokeach definition sees the attitudinal response primarily in behavioural terms although it does not exclude the possibility that the response is sometimes cognitive and/or affective.

One of the most remarkable aspects of Rokeach's (1960, 1979) orientation concerns the distinction which he makes between object and situation. He claims that the development of attitude theory has been hampered by its failure to accord "attitude-to-situation" the same status as "attitude-to-object". Rokeach points out that all objects occur in situations; if we wish to predict an individual's behaviour towards a social object, we must take account of the situation in which the object occurs. Behaviour is seen by Rokeach as a function of the weighted sum of attitude-to-object and attitude-to-situation. It is not quite clear what Rokeach (1968) means by this, but is seems that his conceptualization has theoretical shortcomings. It seems that, without reference to a particular social object, attitude-to-situation has limited value as a variable for behaviour prediction. For instance, if one wishes to predict the behaviour of an individual towards Blacks at a tea-party, it would seem preferable to determine his attitude towards Blacks at tea-parties rather than his attitude towards Blacks and his attitude towards tea-parties. In the latter case, both concepts (Blacks and tea-parties) are too broad to be suitable for attitude measurement.

In particular, the individual's attitude towards the situation per se is unlikely to have much bearing on the way that he behaves towards certain social objects in that situation. An empirical study by Bearden and Woodside (1978) bears out this criticism. In this study, attitude-to-situation ("a small informal party of friends") had a negligible correlation with the criterion (use of marijuana in such groups). On the other hand, attitude-to-object (marijuana) correlated substantially (0,51) with the criterion.

Rokeach and Kliejunas (1972) conducted a behaviour prediction study using Rokeach's model:

$$B_O = wA_O + (1 - w)A_S$$

where

B_O is behaviour towards the object in the specified situation,
A_O is attitude to the object,
A_S is attitude to the situation,
w is an empirically derived weight.

Using this model, Rokeach and Kliejunas (1972) obtained moderate correlations (averaging about 0,5) with the criterion (class attendance). However, as the authors do not compare the model with others (e.g., that of Fishbein and Ajzen, 1975), little can be said about the comparative efficacy of the Rokeach paradigm.

Another novel point of Rokeach's (1968) theory is his conceptualization of the relationship of attitudes to values. Rokeach distinguishes two types of values. Instrumental values are beliefs about how one ought or ought not to behave, and terminal values are concerned with desirable and undesirable end states. Values are centrally located in the belief system and are at a higher level of abstraction than attitudinal beliefs because they are not tied to any object or situation. Both instrumental and terminal values are hierarchically ordered in terms of importance, but terminal values are at a higher level because many means (instrumental) values may be subsumed under a single end (terminal) value. Hence there are three levels in Rokeach's system: belief/attitude, instrumental value, terminal value. According to the model, whenever a social object is encountered it activates two attitudes (one towards the object and one towards the situation). Each of these two attitudes activates a subset of instrumental values with which it is functionally connected. These in turn activate one or more terminal values with which they are connected. Behaviour towards the social object will be a function of the number and relative importance of all the instrumental and terminal values activated.

A criticism which can be levelled against the Rokeach model is that it is too rigid, that it poses a scheme of mental operation which is too

"organized". Rokeach's is a rather static model of man's psychic functioning, with little accommodation for interaction between cognitive elements. All mental activity seems to take place in accordance with the requirements of an inflexible hierarchical structure; not enough allowance is made in the theory for "lateral" cognitive activity.

2.2.4 The Own Categories approach

Although the theorists of the Own Categories school endorse a tripartite (cognition, affect, motivation) conceptualization of attitude, their theoretical position is sufficiently individualistic to merit separate treatment in this review. Some of the major theoretical publications dealing with the Own Categories approach are: Sherif, Sherif and Nebergall (1965), Sherif and Hovland (1961), Sherif and Sherif (1967a), Sherif and Sherif (1967b) and Hovland and Sherif (1952).

Sherif et al. (1965) state that attitudes, being unobservable, are inferred from characteristic or consistent patterns of behaviour towards objects or classes of objects. However, not all characteristic or habitual behaviour indicates an attitude. For example, the fact that we customarily walk downstairs instead of tumbling down does not require an explanation in terms of attitude. The behaviours from which attitudes are inferred are seen by Sherif et al. (1965) to be evaluative in the sense of favouring or disapproving, agreeing or rejecting.

Sherif and Sherif (1967b) define attitude as a set of evaluative categorizations formed by an individual towards an object or class of objects in the process of learning, especially in interactions with others, about his environment. A person's attitudes become constituent parts of his ego-, or self-system and have emotional and motivational aspects inseparably intertwined with cognitive content. The relative stability of the social world in which the individual moves contributes to the more-or-less lasting character of social attitudes. Features of the above statements need further elaboration.

Sherif and Hovland (1961) claim that when a subject is given a series of attitudinal statements covering a range of positions from one extreme to the other and is asked to indicate those he accepts and those he rejects, the usual pattern which is obtained is one in which there is a region of acceptance, a region of rejection and a non-committal region between the two. The authors state that the conditions and extent of past experience with the attitude object is an important determinant of the nature of an indiviudal's judgment scale. Sherif and Hovland (1961) draw an analogy with psychophysics: a weight-lifter would be expected to order a set of weights in a different manner from someone who had never lifted heavy weights. The "anchor effect" of his experience with heavy weights would predispose the weight-lifter to categorize almost all weights as light. Non-weight-lifters would be likely to detect weight-differences which would be ignored by the weight-lifter. Sherif and Hovland (1961) claim that similar anchoring effects operate in the judgment of social stimuli; in fact the more ambiguous the stimuli, the greater the effect of internal anchors. Social stimuli, being in general much more ambiguous than physical stimuli, tend to be judged in terms of internal anchors. Respected authorities and reference groups are often the source of these anchors.

Once established, the anchor tends to influence the judgment of other attitudinal positions with regard to the social object in question. Sherif and Sherif (1967a) cite two mechanisms which influence such judgments: assimilation and contrast. Positions close to the anchor (i.e., the individual's own position) tend to be judged as more similar than they actually are: they are assimilated into the individual's own position. At greater distances from this position, however, attitudinal statements tend to be seen as more different than they actually are (contrast effect).

Hovland and Sherif (1952) and Sherif et al. (1965) have done extensive theoretical and empirical work on attitudinal extremity and zones (or "latitudes") of acceptance and rejection. If given a number of statements which reflect judgments on a particular social object and asked to sort them into categories, individuals with extreme attitudinal positions tend to use relatively few categories in comparison with those individuals whose attitudes are more moderate.

In other words, there is a tendency for individuals at the extremes to see issues related to the attitude object in simple black-white terms. Statements in the middle range tend to be displaced by such individuals to the opposite extreme. Hence, an ardent Capitalist might find even a mildly Socialistic statement to be almost indistinguishable in extremity from a pro-Communist statement: both are classified into an "anti-Capitalism" category. If asked to indicate the statements which he is prepared to accept personally, the extreme individual tends to choose only a small range of statements which are very similar in extremity to his own position. In other words his "latitude of acceptance" is small. On the other hand the "latitude of rejection" of the person with extreme attitudes tends to be large: most statements are classed as unacceptable due to the operation of the contrast effect.

Sherif and Hovland (1961) state that the inference is that few individuals with extreme positions on a given issue can tolerate views alternative to their own. They claim that individuals with extreme positions generally are more ego-involved in the issue than those with more moderate views. In other words, their particular stance towards the social object in question is crucial to the maintenance of the overall structure of their belief-attitude-value system. If, for instance, an individual whose values and life-philosophies revolve largely around the Capitalist system were somehow to accept certain Socialistic principles, this would pose the threat of change on the structure of a large part of his cognitive system and might also threaten the emotional underpinnings of the system.

The relationship between attitudinal extremity and category width does not always hold. A political moderate might, for instance, reject all positions which have any hint of political extremism. The Own Categories proponents' greatest contribution to attitude theory is their conceptualization of attitude as a phenomenon which cannot be regarded simply in terms of extremity: this is but one index of a number of indices which are necessary in order to describe attitude comprehensively. The attitude of the moderate whose latitude of acceptance is small is qualitatively different from that of a moderate whose latitude of acceptance is large, a difference which will not be indicated on conventional attitude questionaires. Similarly there is

a qualitative difference between attitudes with large and small latitudes of acceptance at the attitudinal extremes.

Also the number of categories used in classification is regarded by the Own Categories theorists as an important descriptor of attitude; this index might be related to Krech et al.'s (1962) concept of multiplexity. Hence latitude of acceptance/rejection and number of categories might be added fruitfully to the extremity index in order to gain a fuller description of attitude. A further advantage of the Own Categories approach is that it gives the individual in the measurement situation more freedom to describe his attitude according to his own requirements: by being able to choose both the number and size of his categories, he has more control over the stimulus material; this allows him to "personalize" his responses.

2.2.5 The Instrumentality theories

Most of the work in the instrumentality theory paradigm comes from three sources: Peak (1955, 1960), Rosenberg (1956, 1960) and Fishbein and his associates (see later in this subsection for the actual references).

Peak (1955, 1960) and Rosenberg (1956, 1960) were the first to offer coherent theoretical expositions of the instrumentality orientation. Rosenberg (1960) says (pp.17,18):

> When a person has a relatively stable tendency to respond to a given object with either positive or negative affect, such a tendency is accompanied by a cognitive structure made up of beliefs about the potentialities of that object for attaining or blocking the realization of valued states; the sign (positive or negative) and extremity of the affect felt toward the object are correlated with the content of its associated cognitive structure. Thus strong and stable negative affect toward a given object should be associated with beliefs that the object tends to block the attainment of important values. Similarly, moderate positive or negative affects should be associated with beliefs that relate the attitude object either to less important values or, if

> to important values, then with less confidence about the relationship between these values and the attitude object.

The implications of the above passage are formulated in more rigorous terms in a hypothesis posed by Rosenberg (1956) (p.467):

> The degree and sign of affect aroused in an individual by an object (as reflected by the position he chooses on an attitude scale) vary as a function of the algebraic sum of the products obtained by multiplying the rated potency of that object for achieving or blocking the realization of that value.

The above statement can be expressed mathematically as follows:

$$A_o = \sum V_i I_i$$

where

- A_o is the attitude to the object (person, event etc.),
- V_i is the importance of value i,
- I_i is the instrumentality of the object o in realizing value i.

Peak (1955, 1960) states that an attitude toward any object or situation is related to the ends which the object serves, i.e., its consequences. If two situations are seen as similar, the affect attached to one is likely to be similar to the affect attached to the other. She claims that the affect associated with an attitude object is a function of:

(1) The judged probability that the object leads to good or bad consequences.

(2) The intensity of the affect expected from these consequences.

Hence attitudes towards any aspect of experience depend on the utility of such events in helping us achieve our goals, or rather the utility of such events in helping us achieve satisfying emotional states. If a social object, event, etc., is instrumental in the attainment of goals or the satisfaction of needs, then a positive attitude to that object is formed. Alternatively if a social object leads to the frustration of goal attainment or the failure to satisfy needs, then a

negative attitude to the object is formed. Peak (1955, 1960) sees attitude as basically a feeling state, although cognitive material might be adduced in support of the feeling state.

Peak (1955) also presents a theoretical model for relating attitude to behaviour. She states that it is necessary to postulate the operation of intervening variables (like attitude) because behaviour persists towards goals despite changes in stimulation and need states. (Peak regards the classical learning theory approach to be inadequate because it fails to posit the existence of adequate intervening variables.) Hence, Peak (1955) seems to be saying that attitudes have motivational qualities of their own. She also states that motivation is caused by a disparity between two psychological processes. The following example might illustrate Peak's orientation. If an individual perceives a discrepancy between his state of unhappiness in his present job and the state of happiness he would be in if he were working in his ideal job, then he would feel himself to be in a state of motivation (e.g., to find a more satisfactory job, or to try to improve the situation in his present job). Since Peak (1955) apparently believes that attitudes can motivate overt action, it seems reasonable to assume that in the example quoted above the motivational state which the individual experiences will be accompanied by various attitudinal states (e.g., a negative attitude towards his present job).

As far as overt behaviour is concerned, Peak (1955) claims that the probability of a motive activating a given action X is a function of:

(1) The frequency with which the motive has occurred together psychologically with X

(2) X's affective loading, or the individual's attitude towards X.

Hence overt behaviour is claimed by Peak to depend on both attitude and what might be seen as a sort of psychological habit strength. Due to the tentativeness with which Peak states many of her ideas, description and interpretation is somewhat difficult.

The most prolific modern exponent of instrumentality theory is Fishbein. He has published widely on the subject, both alone and in

collaboration with others, particularly Ajzen (Fishbein, 1967a, b, c; Fishbein, 1979; Fishbein and Ajzen, 1975; Kaplan and Fishbein, 1969; Anderson and Fishbein, 1965; Ajzen and Fishbein, 1969, 1970, 1977, 1980; Fishbein and Raven, 1967).

Fishbein and Ajzen (1975) point to the frequent reference which has been made to what has been claimed as the three aspects of attitude - affect, cognition and conation; however, they distinguish four categories of functioning - affect, cognition, conation and behaviour, and reserve only one - affect - for attitude. Beliefs about social objects "lead on" to the attitude construct. They are the building blocks from which attitudes are formed, but are not seen to be a part of the attitude construct because it is the evaluation of the beliefs rather than the beliefs themselves which constitutes attitude. Nevertheless, the Fishbein conceptualization of affect tends to be rather "cognitive" because it is seen to be based on cognitive material. The third and fourth categories of functioning, namely, conation (behavioural intention) and behaviour, are regarded as only partly motivated by attitude: attitude is one of the causative factors underlying behavioural intention and behaviour. More will be said about this later.

Fishbein and Ajzen state that their theory of attitude is partly derived from the subjective expected utility (SEU) behavioural decision model developed by Edwards (1954) and from the work of Rosenberg (1956). A mathematical expression of the predictions of the Rosenberg theory has been given already in this section. The equivalent for the Edwards model is the following:

$$SEU = \sum SP_i U_i$$

where

- SEU is the subjective expected utility associated with a given alternative,
- SP_i is the subjective probability that the choice of this alternative will lead to some outcome i, and
- U_i is the subjective value or utility of outcome i.

The Fishbein-Ajzen model is similar to that of Edwards but differs on one main count: the SEU model appears to assume a direct link between

SEU and behaviour whereas in the Fishbein model, no direct relation between attitude and behaviour is claimed. The following is the mathematical expression of the Fishbein-Ajzen expectancy-value model of attitude:

$$A_o = \sum b_i e_i$$

where

A_o is the attitude to object o,
b_i is the strength of belief i about o, and
e_i is the evaluation of belief i.

The Fishbein-Ajzen attitude measurement technique is not always used to measure attitudes to objects (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). Attitudes to activities may also be measured (e.g., going to a football match). The formula for calculating the attitude is precisely the same.

Fishbein (1967b, c) claims that his conceptualization of attitude is much "tighter" and unidimensional than the tripartite definitions, especially due to the exclusion of the conative and behavioural aspects from the definition.

Apart from the influence of the other instrumentality theorists (Rosenberg, Edwards and Peak) the Fishbein-Ajzen theory also owes a debt to learning theory. The formation of both the b_i and e_i mentioned above can be understood and accounted for partly within the learning theory paradigm. Fishbein (1967c) says: "Indeed, by following the principles of behaviour theory, a model of attitude acquisition and a model of the relationships between beliefs about an object and the attitude toward that object can be generated" (p.389).

Consistent with the perspective of Osgood et al. (1957), Fishbein (1967c) characterizes attitude as a mediating evaluative response, i.e., a learned implicit response that varies in intensity and tends to mediate or guide an individual's more overt evaluative responses to an object or concept. It is in this light that the e_i mentioned above should be understood. Fishbein (1967c) goes on to say that every individual has many beliefs about any aspect of his environment. He might, for instance, have the following beliefs about

Indians: dark skin, brown eyes, hard working, family orientated, etc. Beliefs about an object may be viewed as hypotheses concerning the nature of the object and its relationships to other objects. Fishbein (1967c) defines beliefs in terms of the probability that a particular relationship exists between the object of a belief (the attitude object) and the response (e.g., dark skin, family-orientation etc.).

He states that the system of responses associated with the stimulus of the attitude object may be viewed as a habit-family-hierarchy as conceptualized by Hull (1943). The higher the response in the hierarchy, the greater the probablility that the response is associated with the stimulus, i.e., the stronger the belief. The b_i mentioned above should be seen in the light of these comments.

According to Fishbein (1967c), attitudes are learned just as concepts are learned. He modifies Rhine's (1958) model (which was mentioned earlier under the section on learning theories). In the Rhine model, distinction is made between concepts and attitudes: all attitudes are concepts but not all concepts are attitudes. In the process of concept formation, a number of stimuli are grouped together under one head (e.g., dark skin, dark eyes, high-bridged nose etc. which make up the criterial features of the concept "Indian"). According to Rhine (1958), it is only when evaluative stimuli are added to the list that a concept becomes an attitude. Hence if we add the evaluative terms "hard working" and "good family people" to our concept of "Indian", this concept then becomes an attitude. Fishbein (1967c) on the other hand believes that all concepts are evaluative, even if the evaluative component is weak. (The concept "telephone", for example probably falls into this category. Even to this apparently evaluatively neutral concept, Fishbein claims one has some sort of weak attitudinal reaction.)

Once an attitude has been formed and the stimuli which formed the concept have become beliefs, then all these beliefs contribute to the overall evaluation of the attitude object. It is for this reason that Ajzen and Fishbein (1980) claim attitude to be the summative outcome of the evaluation of beliefs. Ajzen and Fishbein (1975, 1978) use a Bayesian approach to model attribution processes and the learning of

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beliefs; Fischoff and Lichtenstein (1978) however claim that this approach is inappropriate for describing attributional phenomena.

According to Fishbein and Ajzen (1975), only certain beliefs, the salient ones, are involved in the determination of attitude. Salient beliefs are claimed to be those which are present in an individual's habit-family-hierarchy. Fishbein and Ajzen's definition of the saliency concept lacks precision and is difficult to implement in the practical situation (see Cronen and Conville, 1975; and Cronen, 1973). The question arises: how does one know what beliefs are in an individual's hierarchy? The number of beliefs relating to a given object which one allows to be called salient will influence the overall attitude score. Belief strength cannot be used as an index of saliency. Kaplan and Fishbein (1969), apparently at a loss to find a rigorous method for determining saliency, fall back on the following argument; "Studies on the span of attention or apprehension, information processing and organization all suggest that an individual can only perceive, and attend to, a relatively small number of objects or concepts at any given time. Most estimates place this number between five and nine ... it seems that only five to nine beliefs are salient ... at any one time" (p.66). Fishbein and Kaplan's suggestion is that subjects be asked to volunteer personal beliefs about attitude objects and that the first five to nine beliefs (the exact number is chosen arbitrarily within this range) be designated as salient. Apart from other conceivable shortcomings, this approach does not allow for the possibility that different individuals may have different numbers of salient beliefs about a given attitude object.

A number of research workers have had other difficulties with the Fishbein-Ajzen method. Bagozzi (1981b), for instance, found that the evaluation of salient beliefs did not form a undimensional attitude scale, although the Semantic Differential technique, measuring the same content area, did achieve unidimensionality. In a group of people who had had no direct experience with the attitude object (blood donation), expectancy-value items did not even coalesce into a small number of sub-dimensions; instead, each item was relatively uncorrelated with all other items. Nevertheless, the Semantic Differential scale achieved unidimensionality even in this group. It appears that evaluation of beliefs is too specific to form the basis of an effective overall measure of attitude.

Miniard and Cohen (1981) claim that the Fishbein technique does not offer adequate distinction between the concepts of attitude and normative pressure. (Attitude and normative pressure are the two predictor variables in Fishbein and Ajzen's, 1975 behaviour prediction model). For instance, "Buying Sugar Puffs will please my child" would make up a component in the calculation of attitude, but "My child thinks I should buy Sugar Puffs" apparently would be regarded in the model as normative pressure. Fishbein and Ajzen (1981) attempt to refute Minard and Cohen's criticism by citing empirical evidence for the separateness of the attitudinal and normative constructs.

A contrast should be made between the Fishbein-Ajzen theory and the consistency theories described earlier (especially that of Osgood and Tannenbaum, 1955). According to the congruity principle of Osgood and Tannenbaum, an individual's attitude towards a concept is a sort of averaging of component parts. Hence, if one's attitude to "lazy" is negative and to "athlete" positive, one's attitude to "lazy athlete" will lie somewhere in between, the exact position being determined by the deviation of the original two attitudes from the point of indifference. The Fishbein-Ajzen model, on the other hand, is additive: therefore if one has a number of highly evaluated beliefs about an object, the addition of another belief which is only slightly positively evaluated will cause one's attitude to become even more positive. Osgood and Tannenbaum's (1955) theory in contrast predicts that for the sake of congruity, one's overall attitude would become less favourable, and that this effect would become more marked as one added more beliefs which were evaluated less positively than the average of the original beliefs.

One final point about Fishbein-Ajzen theory remains to be discussed. This concerns the origin of the evaluative responses to beliefs. Fishbein and Ajzen (1975) state that evaluative responses are established "through conditioning". The authors are somewhat vague about identifying the circumstances under which they view conditioning to take place. It will be remembered that Peak (1955) and Rosenberg (1956) see positive evaluations of attitude objects to result from their instrumentality in the attainment of desirable ends. Fishbein and Ajzen (1975) do not make a clear statement endorsing an instrumentality-based view of evaluation, but they do associate their

approach with that of Rosenberg (1956) and Edwards (1954), which would seem to indicate that they consider instrumentality to be basis of evaluation.

We come now to the general assessment of the instrumentality theories. It seems that these theories, and Fishbein and Ajzen's in particular, owe a large debt to learning theory. The instrumentality theory which has the smallest debt to learning theory is probably that of Rosenberg (1956, 1960). The Rosenberg theory sees attitude towards a given social object developing from beliefs about whether or not the object blocks the attainment of important values. Peak (1955) on the other hand, emphasizes the importance of need satisfaction in attitude formation. The contrast is not so stark, however, if one bears in mind that Rosenberg probably regards value in a very broad sense.

More than Rosenberg and Peak, Fishbein and his associates have offered a comprehensive exposition of their theoretical orientation. Fishbein is to be commended for restricting the definition of attitude to a more tightly specified content area, although his method of measuring attitude does not help him to demonstrate unidimensionality.

On the other hand, certain difficulties inhere in the Fishbein-Ajzen approach. No adequate definition has been framed by Fishbein and his associates to describe precisely what they mean by saliency. Even if some satisfactory definition of saliency were to be devised, problems would still exist in determining how many salient beliefs should be included when attitude has to be assessed in the practical situation. Kaplan and Fishbein's (1969) statement that, in the light of research findings in information theory, five to nine beliefs should be salient, seems both arbitrary and theoretically bankrupt. No account is taken of the possibility of individual differences in the number of beliefs which are salient for any given attitude object. If for instance a man is an ardent monetarist, it does not seem unreasonable to expect that he will have more salient beliefs about monetarism than someone who is not particularly interested in economics.

Evidence that difficulties exist with the saliency aspect of the Fishbein-Ajzen model also comes from empirical findings. Hackman and Anderson (1968) for instance found that an estimate of attitude based

on a standard set of beliefs correlated more highly with an external attitude measure than an estimate based on subjects' own elicited beliefs. Even an estimate based on an arbitrary set of beliefs correlated more highly with the external attitude measure. Thomas and Tuck (1975) also obtained results which are disturbing for the Fishbein-Ajzen attitude theory. This seems to indicate that the theory might account inadequately for the underlying psychological processes.

It is possible that the problem lies in the invalidity of Fishbein's rather odd assertion that all beliefs about an attitude object are evaluative. It will be remembered that Rhine (1958) claims that a concept becomes an attitude when evaluative beliefs are added to the non-evaluative beliefs of the concept. According to this interpretation many aspects of the attitude object are not evaluative. My attitude towards judges, for instance, might not be influenced by an evaluation of the colour and cut of the robes which they wear. On intuitive grounds, Rhine's (1958) position seems to be more defensible than that of Fishbein and Ajzen.

Also it is possible that the additive weighted model of attitude which Fishbein and Ajzen have posited might account inadequately for the psychological processes involved in attitude formation and expression. The overall attitude which an individual has towards an object might not be the result of the cumulative effect of a number of evaluations of different aspects of the attitude object: the true state of affairs might be more complicated, or simpler, than that. After considering the methodological difficulties inherent in the application of the Fishbein-Ajzen theory, it seems preferable to assess attitude at the point where the internal processes have already brought together the disparate elements into a generalized attitude towards the whole object.

It should be remembered that these criticisms refer to the Fishbein-Ajzen theory of attitude formation, not to their behaviour prediction model which will be discussed in Chapter 4.

2.3 Conclusion on Attitude Theories and Definitional Considerations

The first point that should be noted is that it is not possible to draw a clear line of demarcation between probabilistic and latent process theories of attitude. Not all the learning theories in the probabilistic camp pose a simple "black box" model of man. The theories of Doob (1947) and Osgood et al. (1957) employ mediational concepts. The instrumentality theorists on the other hand, who by most criteria qualify for inclusion in the latent process camp, make use of learning theory concepts such as habit strength and reinforcement.

The position taken by the author is that although learning theory might give useful insights into some of the processes involved in the formation of attitudes, it is inadequate as a general framework in which to study attitudes, or attitude-related concepts. Critical comparison and evaluation of the learning theory and latent process approaches is hampered by definitional problems. Latent process theorists, and particularly those endorsing a tripartite approach, see attitude as embracing a much wider range of phenomena than learning theorists. Learning theorists' conceptions are simpler and conceptually clearer, but impoverished as the result of denying attitudes an epistemic and integrative role in the personality. Rokeach's (1968) hierarchical attitude-value model, for instance, is completely foreign to the learning theorists' way of interpreting attitude.

The author accepts that attitude or attitude-related constructs perform interpretive and evaluative (i.e., mentalistic) roles in human functioning. Acceptance of this orientation, however, leads to definitional difficulties if one wishes to engage in a psychometric study of the domain; many of the latent process definitions appear to be multidimensional. Krech et al. (1962) for instance define attitude as an enduring organization of motivational, affective and cognitive processes. Examination of the definitions of the latent process theorists reviewed in this chapter reveals that almost all include affective, cognitive and conative concepts or subsets of these. The preponderance of opinion appears to be, however, that affect is the most fundamental aspect of attitude.

For this reason, and for the sake of unidimensionality, attitude is defined here as an affective response to a social object. Affective responses appear to be classifiable quite easily on a simple positive-negative dimension.

The exclusion of cognitive and conative aspects from the attitude construct should not be taken to indicate that these aspects are unimportant. The approach adopted is that affective, cognitive and conative responses to a social object are separate constructs, but all related to a single second-order construct. This second-order construct has an impact on behaviour, but is not the only factor influencing behaviour.

Most of the empirical research on attitudes has concentrated on only one aspect of attitude: extremity (i.e., the positiveness or negativeness of subjects responses to the attitude object). Many other characteristics of attitude have been cited by latent process theorists (e.g., intensity, multiplexity, latitude of acceptance). Most of these characteristics appear to be applicable to all three of the constructs which we have identified, although they may be more relevant to some than others. Extremity, for instance, may be more relevant to the affective construct and multiplexity to the cognitive. Although individuals may differ to some extent in their affective, cognitive and conative responses to a given social object on any attitudinal characteristic, it is felt that dissonance-reduction mechanisms will prevent these differences from becoming gross.

A psychometric expression of the affective-conative-cognitive model adopted in this study is given in Chapter 6.

2.4 Concepts Related to Attitude

A number of terms or constructs have been mentioned in the literature which appear to be related to some degree to attitude. These include: belief, opinion, value, ideology, faith, judgment and knowledge. A fairly large amount of disagreement exists as to the definition of most of these terms. A detailed account of the various points of view

will not be given here. The following authors have written on the terms: Newcomb et al., 1965; Katz, 1960; Cooper and McGaugh, 1966; Hovland et al., 1953; Lemon, 1973; Bogardus, 1946; Osgood et al., 1957; McGuire, 1969; Krech et al., 1962. A review of the attitude-related terms is given in Taylor (1979).

3.0 ATTITUDE MEASUREMENT METHODOLOGIES

Attitude measurement methodologies started developing soon after the emergence of the latent process approach in the mid-1920's. The classical learning theory, or behaviouristic model which held sway before that date was not congenial to the development of attitude measurement methodologies for the following reasons. Firstly, the learning theory approach, being primarily a paradigm for accounting for observable stimulus and response phenomena, is incompatible with, or at least incapable of describing adequately, any sort of construct of mental process. Hence the methodologies could go no further than concentrate on the consistencies linking observable stimuli with observable responses. Secondly, and related to the first point, the behaviouristic model is not a suitable theoretical vehicle for the development of questionnaire-type assessment methods, or any method which employs situations imitative of the situation or situations in which the actual conditioning apparently took place. Under the behaviouristic model there is no reason why there should be any sort of correspondence between an individual's responses to words on a piece of paper and his responses to stimuli in a real life situation. Behaviour is seen to be a strict function of the reinforcement history, and this history is likely to have been different for the two situations.

The latent process approach spawned three measurement methodologies in quick succession: those of Bogardus (1925, 1927), Thurstone and Chave (1929) and Likert (1932). Several other methodologies were developed later (e.g., Guttman, 1944, 1950; Rosenberg 1960; Sherif and Sherif, 1967b; Fishbein and Ajzen, 1975; and Coombs, 1964). The learning theory approach (in a form which incorporates mental process phenomena) has been the basis of one major methodology - that of Osgood et al. (1957, 1970). A number of other methodologies based on the latent process approach have also been devised, but before these different approaches to the measurement of attitudes are reviewed, some time must be devoted to a discussion of various methodological considerations which are basic to all measurement techniques.

3.1 Basic Methodological Considerations

The methodologies which we shall be considering are concerned, almost without exception, with the measurement of attitudinal extremity. This is because theoretical interest has focused most strongly on this feature of attitude and consequently methodologies have been designed to measure it. In measuring the extremity of an attitude towards a given object, the assumptions are made that:

(1) The object in question is a psychological reality for the target population, It would be pointless, for instance, to attempt to measure attitude towards deficit financing in a population of hunter-gatherers.

(2) The population evaluates the attitude object on a positive-negative dimension. I might, for instance have no evaluative reaction to "tennis balls", although they do form a conceptual category in my mind.

(3) The object in question is evaluated along one or more clearly defined dimensions. It might not be possible to measure attitude towards "South Africa", because respondents have a number of relatively uncorrelated evaluative responses to different aspects of this concept.

In some methodologies, data analyses can be applied which determine whether the above assumptions have been met adequately.

It should be noted that attitudinal extremity is not the same as attitudinal intensity. It is possible that a non-extreme attitude may be held with great intensity, although it is generally the case that extreme attitudes are held more intensely than non-extreme attitudes (Sherif et al., 1950).

Lemon (1973) points out that there is no way that attitudinal extremity can be measured directly, just as there is no way that electric current can be measured directly (only its effects can be detected by instruments). In cases as these, the evaluation of the adequacy of definitions and measurement techniques rests upon certain conventions which are generally accepted for a combination of theoretical and pragmatic reasons. These are the procedures for

evaluating the validity and reliability of a measure.

Lemon (1973) states that a system of measurement is always imposed on the data; it is often the case that a measurement methodology has good metric properties, but distorts the entity which is being measured. Lemon points out that a "trade-off" may be involved: metrically satisfactory techniques may impose scaling assumptions which the data will not bear, and metrically less satisfactory methods may allow the data to emerge with less distortion but less accurately or less reliably scaled. Standardized methods of data collection usually impose quite severe restrictions on the types of responses which the subject is allowed to make, with the result that much valuable material might be lost. On the other hand, such data that these methods do collect generally conform more closely to fundamental metric desiderata.

Webb, Campbell, Schwartz and Sechrest (1966) point out that all measuring instruments introduce some source or sources of bias. They therefore advocate a multimethod measurement approach in order to distinguish the true scores from the bias. This approach is also advocated by Cook and Selltiz (1966). In a broader context, Campbell and Fiske (1959) propose a multitrait-multimethod technique which allows the examination of convergent and discriminanat validity of different methodologies and also the validity of the constructs themselves. Campbell and Fiske use rather primitive methods to investigate these phenomena. More sophisticated techniques are now available to decompose multitrait-multimethod matrices into method, trait and unique variance: these new methods include those of Browne (1983) and Werts, Jöreskog and Linn (1973) which are used in this study.

If we think of the validity of an attitude measure in terms of the adequacy with which it monitors, not the attitudinal construct itself, but the effects which this construct has on observable phenomena (see Cronbach and Meehl, 1955), we should bear in mind that certain features of the attitude might never be manifest in observable form. Schuman and Johnson (1976) make this distinction between what they call elicited or measured attitudes and underlying, latent, or "true" attitudes. If certain aspects of attitude are unobservable, a

limitation is placed on the validity of all attitude measurement methodologies; but it should be remembered that from the practical point of view the aspects of attitude which are of most relevance are often those which have some outward observable effect.

Biases which restrict validity are not always due to limitations in the measuring instrument itself. Some might result from the interaction between the subject and the instrument or from the interaction between the subjects's responses and the experimenter's assessment of these responses. It is debatable, however, whether these factors should or should not be regarded as part of the methodology itself. Invalidity resulting from the interaction between measuring instrument and subject is usually placed under the heading of response bias or response set. Guilford (1967) defines response bias as a tendency on the part of the subject to alter responses to items in a measurement instrument such that item scores indicate something other than that which the items were intended to measure.

The two types of response bias which have probably been discussed most in the literature are acquiescence and falsification. Acquiescence is usually defined as the tendency to agree, or to favour positive to negative responses (see Couch and Keniston, 1960). Falsification is more commonly known in the literature as "faking good". Gordon and Gross (1978) say (p.772):

> Fakeability is a concept that refers to the vulnerability of some psychological instruments to deliberate systematic distortion of answers by respondents intent upon creating a particular impression of themselves in terms of the scored results of the tests. The fakeable instrument allows the respondent to emphasize socially desirable personal characteristics through careful selection of his/her answers. Presumably, a fakeable instrument also permits a person to conceal those aspects of his/her "real" character, revelation of which might jeopardize the opportunity to obtain certain rewards mediated by the individual who administered the test.

Edwards (1957b) and Marlowe and Crowne (1960) have done seminal work

in the conceptualization and assessment of the tendency to fake in order to create a socially desirable impression. Some recent research in the area of social desirability, especially with respect to its dimensionality, has been undertaken by Schuessler (1978).

Faking good which is usually associated with the falsification of responses in formalized measuring instruments can be regarded as a manifestation of Tedeschi et al'.s (1971) more general construct of impression management which was discussed in connection with dissonance theory in Chapter 2.

Rundquist (1950) identifies a response bias which he calls extreme responses set - the tendency to endorse extreme alternatives on questionnaires.

Measurement techniques vary in their susceptibility to different types of response bias. Extreme response set, for instance, is of no account in an agree-disagree type questionnaire: this type of bias can occur only when a larger number of response alternatives is open to the subject.

Invalidity arising from the interaction between the subject's responses and the experimenter's assessment of responses is a problem especially in techniques where the subject is given large amount of response freedom. In an open-ended interview, for instance, the subject has a large measure of freedom in responding to questions. The interviewer then has to take this mass of largely unstructured verbal material and infer the subject's position on a number of latent process dimensions. The danger exists that in interpreting these data the assessor will be influenced by his own ideas, prejudices, fears, needs, etc. (Lemon, 1973). Even in the situation where a limited number of response alternatives is allowed to the subject, it is possible that, in forming these alternatives, the test contructor might infer erroneous relationships between given response alternatives and the underlying latent variable. If for instance an individual endorses the statement: "I am amost never late for work", this might be taken by the experimenter as an indication of the individual's positive attitude to his work; however the real situation might be that he dislikes his work but is afraid of being fired

because of the lack of alternative employment opportunities.

Several other possible sources of invalidity are mentioned by Webb et al. (1966). Among these are the following:

(1) Role selection. The subject might select one of a number of possible "true selves" or "proper" behaviours available to him. The testing context might bias the subject towards a particular role.

(2) Measurement as change agent. The process of measuremnt can produce changes in what is being measured. Attitudes may be created in this way. It might be, for instance, that the individual prior to assessment has no attitude towards a given object, but by being exposed to evaluative material concerning the object, develops an attitude towards it. A study by Upshaw (1978) shows how the extremity and social desirability of scale anchors can influence subjects' responses. The importance of the measurement-change effect can be guaged when one realizes that it is not limited to "soft" sciences like psychology. The physics of quantum mechanics has shown that even in "hard" sciences the observer and the observed cannot be properly separated and that measurement changes what is being measured.

(3) Change in the measurement instrument. This is especially the case in subjective assessment methods. For instance, an interviewer may become more or less competent within the space of a single, or several, interviews.

All measurement assumes a nomothetic standpoint. We assume for example that real-life objects have physical dimensions which can be measured in the same way: the height of a tree and the height of a vase can be measured using basically the same method. Height is a variable that is in no way dependent upon or influenced by the particular object being measured: height in the context of trees and height in the context of vases is the same concept. Parsimony is one of the cardinal principles of the scientific approach - hence the adoption by science of the nomothetic, rather than idiographic, orientation. We should, however, always be open to the possibility that the nomothetic assumption is unjustified. Latent process psychology is strongly nomothetic.

Bem and Allen (1974) point to the latent process procedure of imposing dimensions like a template on man in general, or at least on large populations of individuals, in an attempt to account for behaviour and mental functioning as economically as possible. Unfortunately, Bem and Allen conclude, the concepts which the experimenter tries to impose might not exist as such in the individual on which he tries to impose them. This is usually the case, according to these authors, when the individual shows a large amount of inconsistency in his responses to the items of the measuring instrument. When this happens, the only acceptable course of action is to exclude the individual and others like him from all parts of the research which assume the existence of the construct in question.

There are four kinds of measurement scales: nominal, ordinal, interval and ratio (Nunnally, 1978). These scales vary in the strictness of the requirements which they impose on the data, ratio being the most demanding and nominal the least. It is general scientific practice to use the strictest type of scale which the data will bear. For example, we do not measure the temperature of an object merely by saying it is either above or below the freezing point of water. It is possible to determine precise intervals or units of temperature, enabling us to determine that this body is so many units hotter or colder than that body. However, it would be incorrect to say that a temperature of $60^{o}C$ is twice as hot as a temperature of $30^{o}C$, because the centigrade scale, being of the interval variety, does not have true zero, and therefore does not conform to the requirements for a ratio scale.

For the measurement of attitudes, a variety of underlying scaling models are used, depending on the technique in question. The usual conceptualization of attitudinal extremity as a dimension running from positive, through zero, to negative would seem to imply that extremity can be measured on a ratio scale. In practice, however, this is not often attempted, and the imposed scaling model is usually of the interval or ordinal variety. The reason for the infrequent use of the ratio scale is that it is very difficult in practice to establish the zero point of the scale. In fact it is possible that no single zero point for a given population exists: it might be that each respondent sees the point of attitudinal indifference (i.e., the zero point) at

a different place. Nevertheless, Stouffer, Guttman, Suchman, Lazarsfeld, Star and Clausen (1950) and Guttman and Suchman (1947) have tried to ascertain population zero points by obtaining both intensity and extremity scores. After each item, subjects are asked to indicate how strongly they feel about the response which they have just made. The assumption is that the more extreme views are held with greater intensity. The point on the extremity scale which corresponds to the lowest intensity scores is designated as the zero point for the population. This method is rather crude because the relationship between intensity and extremity, if plotted graphically, is usually of a rather flat dish shape. Determining the exact zero point is therefore difficult.

3.2 An Overview of the Different Types of Measurement Techniques

The different types of attitude measurement techniques have been categorized in several different ways. Kidder and Campbell (1970) have a 2x2x2 classification of techniques:

(1) Direct vs indirect: In the direct method, the respondent's understanding of the purpose of the measurement procedure and the pyschologist's understanding are the same. In the indirect method the psychologist interprets the subject's responses in terms of dimensions and categories different from those held in mind by the subject while responding.

(2) Voluntary vs objective: In the voluntary method, the respondent is given to understand that any answer is acceptable and that there is no external criterion of correctness. In the objective method, the subject is told that there are externally verifiable correct answers.

(3) Free response vs structured response: This has already been discussed and needs no further clarification.

Nunnally (1978) classifies the attitude methodologies into three categories:

(1) "Simple asking" (interviews, self-report questionnaires, etc.)

(2) Physiological measures.

(3) Projective methods.

Like Kidder and Campbell (1970), Scott (1968) also distinguishes between direct and indirect methods and open (free response) and closed (structured response) methods. He includes physiological measures and overt behaviour as separate categories.

Cook and Selltiz (1966) identify five types of methodology:

(1) Self-reports of beliefs, feelings, behaviour etc.

(2) Tasks involving partially structured material relevant to the attitude object.

(3) Overt behaviour towards the attitude object (either in a contrived laboratory situation or in real life).

(4) Specially designed objective tasks where functioning may be influenced by the subject's attitude towards the object.

(5) Physiological measures.

These different categorizations should have given some impression of the variety of methodologies available. By far the most widely-used type, however, fits into Kidder and Campbell's (1970) direct-voluntary-structured sub-category. The techniques falling into this subcategory are for the most part the pencil-and-paper questionnares which present the subject with items directly concerning the attitude object and require him to respond to these items in one of a fixed number of ways; the scoring of the responses is usually a simple clerical task. The following sections will review some of these popular, quick, and easy-to-administer methods. Special attention will be devoted to the Thurstone, Likert, Osgood and Guttman techniques.

3.3 The Thurstone Methodology

The methodology of Thurstone (Thurstone and Chave, 1929; Thurstone, 1931) was the first of the major methodologies. Throughout the history of latent process theory, the Thurstone approach has been prominent in the measurement situation. Probably only the Likert (1932) technique has been used more widely. Issuing the dictum that attitudes can be measured, Thurstone (1928) put an end to much unproductive debate regarding the accessibility of attitudes to

observation. Thurstone concedes that attitude is a complex concept which cannot be described wholly by a single numerical index just as it would be impossible to describe the form of a table using only one index.

For the purpose of measurement, Thurstone (1928) defines attitude as the sum total of an individual's inclinations, feelings, prejudices, preconceived notions, ideas, fears, threats and convictions about any specified topic. Opinions are regarded as verbal expressions of attitudes. Thurstone, therefore, regards attitude as an overall evaluation of a social object, largely affective, but with cognitive material to act as a framework for the emotional material.

Thurstone and Chave (1929) measure attitudes through the use of opinion statements which may be accepted or rejected by the respondent. These statements are ordered on a scale of extremity. Thurstone and Chave state that as attitudes are multidimensional, using a linear scale to measure attitude is a compromise; one's overall attitude (as measured) is probably a composite of a number of correlated dimensions.

The Thurstone methodology is based on what Nunnally (1978) calls a nonmonotone probability model. the model is illustrated graphically in Figure 1.

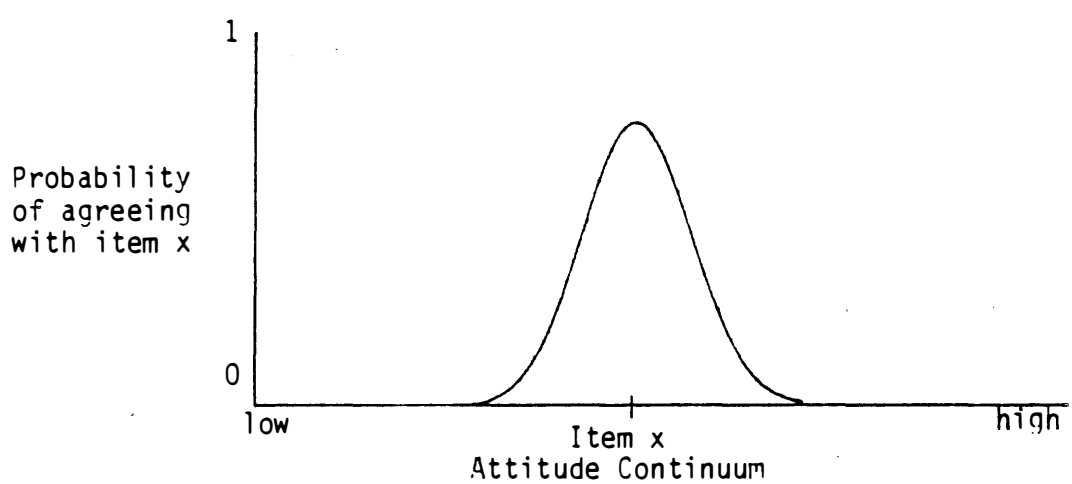


Figure 1. Nonmonotone Probability Model

As can be seen from Figure 1, subjects whose attitudinal position is close to that of a given opinion statement x are more likely to endorse the statement than those whose positions are further away from x. Hence, if one selects a set of opinions which are distributed along the attitude continuum and gives this set to individuals for their reactions, the respondents are likely to endorse the statement or statements which are close to their own attitudinal position and to reject all others.

The Thurstone technique therefore assumes that it is possible to write opinion statements such that some individuals will find a given statement too "strong", some will find it too "weak" and some will find it congenial to their own position. In practice this is often found to be quite a difficult task. It is generally easier to write statements which those people below a given attitudinal position will tend to reject and those above it will tend to endorse (or vice versa). Items based on the nonmonotone probability model are, according to Lemon (1973), often ambiguous. It is all too easy to write items for the middle range of the scale which are "double-barrelled" (e.g.: "I believe in the church, but am tired of denominatialism").

The following is the procedure used by Thurstone and Chave (1929) for the construction of an attitude questionnaire. Once the attitudinal domain has been defined this definition is given to a team of item writers as a guide and a large pool of items (about 150) are created. The items should take the form of statements about the attitude object which can be either accepted or rejected by the respondent. An edited pool of items (of 80-100) is then given to a group of judges (at least 200 according to Thurstone, 1928). The judges are asked to rate the statements in terms of extremity on an 11-point scale (7- and 9-point scales are also used sometimes). After the rating procedure, a final set of about 20-25 items is selected on the basis of a number of criteria, including the following:

(1) Items should be unambiguous.

(2) Statements should not be "double-barrelled".

(3) The selected set should span the extremity dimension evenly (e.g., two statements at each scale point).

(4) The most important requirement concerns the degree of inter-judge agreement. Each item has been judged on an 11-point scale; therefore a measure of dispersion of the judgment scores can be calculated (inter-quartile range or standard deviation are commonly used). Items with small dispersions are preferable to items with larger dispersions, because a higher level of unanimity exists about the degree of attitudinal extremity.

Thurstone and Chave (1929) also assess items according to an index which they call the "criterion of irrelevance" but this need not concern us here.

Once the final set of items has been selected, these are compiled into a questionnaire which is then ready to be administered to subjects. In the instructions, subjects are asked to endorse only those statements with which they agree. As each statement has a pre-determined scale value, scoring is relatively easy. The usual method is to take the mean of those items which the subject has endorsed although there is cause for concern if the subject has endorsed a number of items at widely-differing scale values.

The Thurstone method probably comes, at the conceptual level, closer than any other method to the type of measurement approach adopted in the more exact sciences. Nevertheless, a number of difficulties and shortcomings inhere in the method, not the least of which is the considerable investment of time required to construct the questionnaire. The ratio of created to selected items is very high, which means that time is spent on creating many items which are not used. The reason for the high rejection rate of items seems to be largely due to the difficulty of creating acceptable nonmonotone statements without making them "double-barrelled". Also, the necessity of having to administer all items to judges in a pre-test is time-consuming and tedious.

3.4 The Likert Methodology

The Likert technique is based on a summative model and is often known as the method of Summated Ratings (Nunnally, 1978). This method makes

the fairly weak assumption that items are monotonically related to the underlying attitude. Hence, unlike the Thurstone approach, attempts are not made to construct items which individuals will be likely to endorse only over a small range of the attitude continuum; instead items are constructed which individuals at the high end of the attitude continuum are more likely to endorse than those at the low end (or vice versa). The summative model is represented graphically in Figure 2.

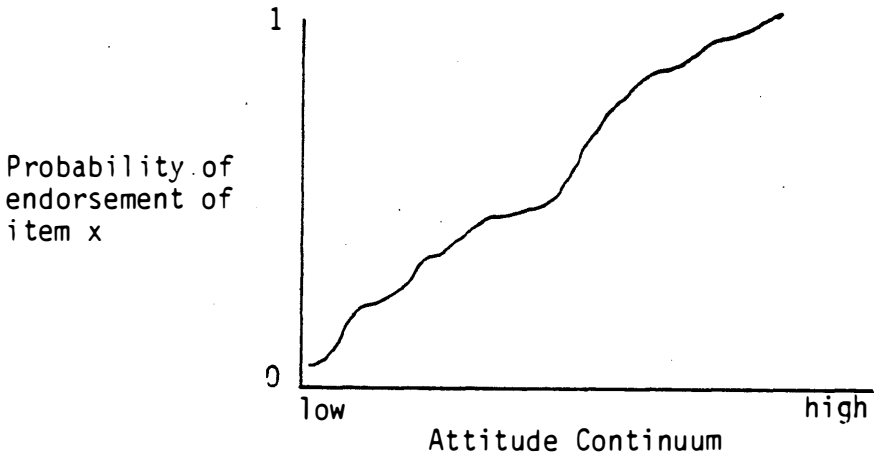


Figure 2. Summative Model

Although for any given item the relationship between probability of endorsement and the underlying attitude continuum may not be close to linear, the approximation to linearity is likely to improve substantially once a number of items are summed, because item peculiarities tend to be "averaged out" (Likert, 1932).

In the construction of a Likert questionnaire, usually two to three times the number of items finally required are written. All items are statements which comment evaluatively on the attitude object or some aspect of the attitude object. In some cases the subject has either to agree or disagree with each of the statements, but in other cases, provision for responses of varying intensity are made (e.g., strongly agree, slightly agree, slightly disagree, strongly disagree).

The use of the multichoice response format sometimes makes it possible to attain a given reliability with less items than are necessary with a two-choice response format, as more variance is normally obtained from multi-choice items (Nunnally, 1978). Ray (1980) found a substantial decline in the reliability of a Likert type scale when he reduced the number of response alternatives from five to three. It is usual to write about half the statements in such a way as to indicate a positive evaluation of the attitude object and half to indicate a negative evaluation. This is done in order to minimize the effects of one type of response bias: the tendency to agree or disagree with statements irrespective of their content. Also, "justifications" can be incorporated in statements in order to reduce possible effects due to social desirability (see Edwards, 1957a; 1957b). This in effect makes it "easier" for an individual to endorse a statement for which there might be some social disapproval.

Once the items have been constructed, the full set is administered to a sample of subjects, preferably drawn from the population for which the questionnaire is ultimately intended. Each respondent's attitude score is the sum of his scores on the individual items. In the case where a two-choice (agree-disagree) response format has been used, items are usually scored in the following way:

agreement with a statement positively evaluating the attitude object or disagreement with a statement negatively evaluating the attitude object	1 point
disagreement with a statement positively evaluating the attitude object or agreement with a statement negatively evaluating the attitude object	0 point

The next step is the refinement of the questionnaire. This entails the removal of "poor" items which do not appear to be tapping the

underlying attitudinal dimension effectively. At this point it will also become clear whether the questionnaire as a whole is measuring one, or more than one, dimension. If groups of items can be identified which correlate more highly with one another than with other items, then evidence for multidimensionality exists. Factor analytic procedures can be used to investigate the dimensionality of the questionnaire in a rigorous manner. If the questionnaire is found to be multidimensional, then a complete re-evaluation of the definition and conceptualization of the attitudinal domain will be necessary. If, however, the questionnaire appears to be unidimensional, then a subset of the "best" items which seem to be tapping the underlying dimension most effectively can be selected for the final questionnaire. This item analytic procedure will have the effect of making the refined questionnaire more strongly unidimensional than the original questionnaire. A final pool of items can be selected purely to maximize the reliability of the questionnaire (i.e., the correlation of the questionnaire with the underlying dimension), or other considerations can also be borne in mind when making the final selection (e.g., questionnaire length, distribution of scores, etc.).

A variety of item analytic procedures are available (Nunnally, 1978). In the NP50 method used at the National Institute for Personnel Research (NIPR), for instance, a reliability index is computed for each item. This is done by correlating each item score with the total score on the questionnaire and multiplying the obtained correlation by the item standard deviation. This index is used as a criterion for the selection of items (Maughan-Brown, 1974). A more elaborate NIPR procedure known as the Item Response Evaluation, which amongst other refinements, correlates each item alternative with the total score, has been developed by Coulter (1973).

The Likert or summative model is more widely used than any other method, not only as a basis for the construction of attitude questionnaires, but also in devising many other types of psychological scales (e.g., personality questionnaires and ability tests). Nunnally (1978) regards the Likert model as the best currently available. He lists four major advantages which this model has:

(1) The underlying model is realistic.

(2) The scales are easy to construct.

(3) The scales based on this model are generally found to be more reliable than scales constructed on other commonly used models.

(4) Likert scales have been used successfully in many studies.

Methods other than simply adding up item scores have been suggested occasionally in the literature (e.g. Monk and Eiser, 1980). However, alternative techniques are usually cumbersome and time consuming to use.

Andrich (1978) applied a latent trait model to Likert-type items. Each response category, each item and each respondent were parameterized. Maximum-likelihood estimates of parameterized variables were derived. The findings indicated that total score (i.e., the sum of item scores where alternatives are keyed with successive integers) was a sufficient statistic to describe the subject's performance on Likert-type stimulus material. Andrich has therefore provided rigorous support and formalization for the scoring procedure used in most scales measuring attitudes and personality variables.

3.5 The Guttman Methodology

The Guttman methodology is based on what Nunnally (1978) calls a deterministic model. Each item is hypothesized to have a perfect biserial correlation with the underlying attitude variable. This is illustrated graphically in Figure 3.

The scales based on the Guttman methodology are ordinal. Comparing this methodology with the Thurstone methodology, Guttman (1950) states that in the former case individuals are ranked whereas in the latter case items are ranked.

Guttman (1944) has specific criteria for the definition of a scale. He states that a set of items may be called a scale if the following holds: if person A has a higher total rank than person B, then A's

score must be as high or higher on every item than B's score is. This statement might become clearer if considered it in conjunction with Figure 3. In this illustration, the items are dichotomous (they are either endorsed or not endorsed, or answered either "yes" or "no"). If one looks at item x in Figure 3, it is clear that at a given point on the attitude continuum, a, the response to item x abruptly changes from one state to another: hence, if δ is any positive value indicating an increment on the attitudinal continuum, then an individual whose attitudinal level is at $a-\delta$ will, according to Guttman's (1944) model, respond to item x differently from an individual whose attitudinal level is at $a+\delta$. (For example, if p and q are the alternatives to item x, then individuals who fall below a on the attitude continuum will respond with p and those above a with q.) Similarly with items y and z, there are specific points on the attitude continuum where the responses to these items change from one alternative to another.

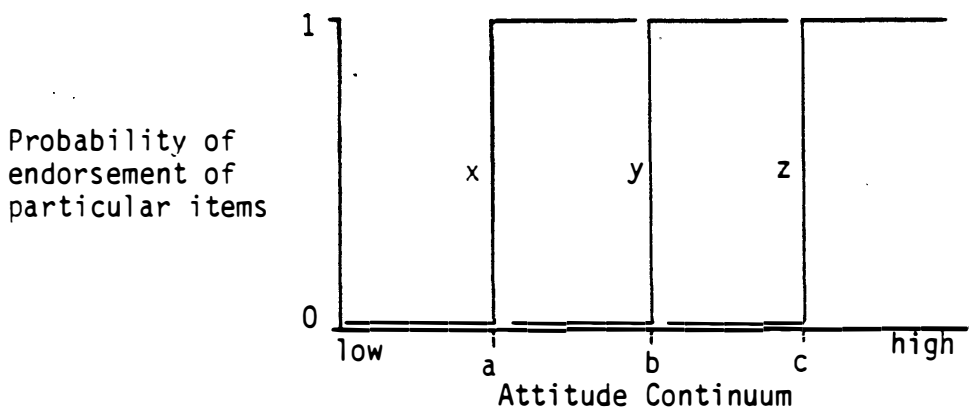


Figure 3. Deterministic Model

The items x, y and z are therefore ordered on the attitude continuum in terms of the points at which the change of response occurs; if a set of items forms a Guttman scale, then individuals' responses to the items can be used to order them (the individuals) on the attitudinal continuum. If items x, y and z form a Guttman scale, then any individual who endorses item z positively will also endorse items x and y positively. An individual's score is the number of items which

he endorses positively (or the number of items in which he chooses to alternative which is meant to be selected by individuals who are "high" on the dimension in question).

Usually Guttman scales are fairly short (six to ten times) because of the difficulty of devising long questionnaires which achieve the criterion of scalability. It follows from what has been said above that if a set of items forms a perfect scale, then an individual's response to every item in the questionnaire can be predicted purely from a knowledge of his total score. No scale, however, conforms perfectly with the criterion of scalability; in order to describe the degree to which scales do approach perfect scalability, Guttman (1944) has devised an index called the coefficient or reproducibility. It is calculated by counting the number of responses which would have been predicted wrongly for each subject on the basis of his scale and subtracting the resulting fraction from unity. (See Guttman, 1950, for a more detailed description.) An acceptable approximation to a perfect scale was arbitrarily set by Guttman (1944) at 0,90, but this was later raised to 0,95.

The Guttman methodology is not widely used currently, due to a number of shortcomings not suffered by other techniques like the Summated Ratings (Likert) technique. Therefore a detailed description of the scale construction procedures will not be given.

The following are some of the major shortcomings of the technique. Firstly, the deterministic item model is clearly unrealistic. It is very difficult to find items which have characteristics even approaching those required by the model. Nunnally (1978) points out that the model ignores the existence of unique item variance. A further problem inheres in the difficulty of determining scalability with any accuracy. The coefficient of repreducibility suffers from the shortcoming that it is influenced by the popularity of answer categories. The reproducibility of any individual item can never be less than the proportion of respondents falling into a single answer category for that item. Also, the method provides insufficient checks on the unidimensionality of the resultant scale. It is quite possible to have a multidimensional scale which is highly scalable. Another shortcoming is the "crudeness" of the scaling. Only ordinal

discrimination can be made among subjects and due to the small number of items, this discrimination is not very fine.

Scott (1968) makes a number of other telling points against the Guttman method. His conclusion is that this method should be rejected as a model for attitude measurement.

3.6 The Osgood Methodology

It will be remembered from Chapter 2 that Osgood et al. (1957) define attitude, or evaluation, as one of the dimensions (in fact the most powerful dimension) of semantic space, the other two dimensions commonly found being activity and potency.

The measuring instrument used by Osgood et al. (1957) in their investigations of semantic space is called the Semantic Differential. Osgood et al. (1957) claim that the Semantic Differential unites the best features of free association and scaling procedures. Spontaneous associations to a stimulus may have the advantage of validity and sensitivity but a drawback is the inability of certain subjects to verbalize their feelings; in addition there is the problem of scaling and comparing subjects. In order to overcome these difficulties, Osgood et al. devised a system whereby the subject is provided with a concept to be evaluated and a set of bipolar adjectival scales against which to do this. The subject's only task is to indicate for each item (i.e., pairing of a concept with a scale) the direction of his association and its intensity on a 7-point scale.

By means of factor analysis Osgood et al. (1957) were able to identify a subset of adjectival pairs which loaded heavily on an evaluative dimension. These adjectival pairs (e.g., good-bad, valuable-worthless, honest-dishonest, fair-unfair) can be used as a set of scales to measure evaluation, or attitude. All that is necessary is to supply the subject with the concept (i.e., the attitude object) and ask him to rate the concept on the given scales. The subject's overall score is simply the total of his scores on the individual scales. In this regard, the Semantic Differential method is similar to the Summated Ratings method and can in fact be subsumed under that model.

The scales are usually presented to the subject in a graphic form (a line divided into seven segments) and in addition a verbal description of each segment is sometimes given: for a scale X-Y, these would vary from "extremely X', through a neutral zone, to "extremely Y". The differences between qualifiers are taken to be approximately equal. Linking up their measurement methodology with their attitude theory, Osgood et al. (1957) state that "extremely X", "quite X" etc. will elicit an r_m of the quality X and of the intensity given by the qualifier (see 2.1).

Dolch (1980) compared Semantic Differentials having verbal anchors but no verbal descriptions for the categories with those which did have category descriptions. The scales were highly correlated (r=0,929). There was a tendency, however, for subjects answering the version which did not have category descriptions to endorse the extremes more frequently. The presence of the anchors with no other descriptive material seems to have encouraged subjects to make more use of categories physically adjacent to the anchors.

Osgood et al. (1970) state that although the pure attitudinal domain is tapped only by the evaluative dimension, the activity and potency dimensions can add extra information about the individual's reaction to the attitude object and can be used in conjunction with the evaluative dimension to boost correlations with other variables or to predict behaviour more effectively.

A considerable amount of research has been done using the Semantic Differential. Osgood (1965) himself has conducted an impressive series of studies in a cross-cultural context. Others like Kaplan (1972), Brinton (1961) and Triandis (1964) have elaborated on Osgood's work. Kaplan (1972) suggests splitting up Semantic Differential scales into positive and negative halves in order to study attitudinal ambivalence: he states that there may be aspects of the attitude objects which the individual evaluates positively and other aspects that he evaluates negatively and that the degree to which this ambivalence occurs can be ascertained by requiring the subject to make positive and negative evaluations separately. Brinton (1961) has developed Semantic Differential scales, then subjected them to Guttman scale analysis (coefficient of reproducibility was found to be

0,975). Triandis (1964), in a study aimed at investigating the behavioural component of attitudes, modified the Semantic Differential into what he calls the "Behavioural Differential". This technique taps the degree to which the subject expects that he would or would not engage in specific behaviours in relation to given social objects.

We come now to the criticisms which have been levelled against the Semantic Differential technique. Tittle and Hill (1967) state that the Semantic Differential seems to suffer from the defects of transparency and social desirability. In their study, the measure based on the technique proved to be quite reliable (split-half: 0,87) but inferior to the Likert method in predicting behaviour, apparently because of "faking". Lemon (1973) says: "Acquiescence and yes-saying can be controlled as much as possible by alternating the poles of the evaluative adjective pairs, but the instrument is still open to bias from the effects of extreme response set" (p.109).

Heise (1969) is also of the opinion that the Semantic Differential scales are more transparent than Thurstone and Likert scales. One way of reducing the transparency problem is to intersperse "dummy", non-evaluative scales amongst the evaluative ones, but this certainly does not solve the problem completely. Nickols and Shaw (1964) found that for a high saliency attitude object, the correlation between the Thurstone and Semantic Differential was lower than was the case when attitude object was of low saliency, and the reliability of the Semantic Differential scale suffered due to reduced variance.

Osgood et al. (1957) claim that the Semantic Differential taps both intensity and extremity of attitude. Lemon (1973) questions whether there are good grounds for Osgood et al.'s claim that the Semantic Differential measures intensity. Tittle and Hill (1967), in comparing the Likert and Semantic Differential as predictors of a behavioural criterion, state that the Semantic Differential's inferior performance as a predictor was probably due to the fact that it has a smaller intensity component than the Likert method.

The most serious disadvantage of the Semantic Differential concerns what is often called "concept-scale interaction". An adjectival pair might be evaluative for one concept but not for another. This can be

illustrated in the context of an experiment by Brinton (1961). Brinton found that, when applied to the concept "capital punishment", the adjectival pair "beautiful-ugly" did not distinguish between individuals who called themselves pro-capital punishment and those who regarded themselves as anti-capital punishment. This adjectival pair, however, has been found by Osgood et al. (1957) to have a high loading on the evaluative dimension. Hence, for the concepts studied by Osgood et al., "beautiful-ugly" had evaluative qualities, but this proved not to be the case with "capital punishment". Heise (1969) states that concept-scale interaction can arise because a scale has different degrees of relevance for different concepts; it can also arise, according to Heise, because of semantic shifts in the scale adjectives which are caused by the environment provided by a concept. Hence it is unjustifiable to call Osgood's semantic scales "universal" (i.e., scales which can be used to measure any attitude object).

One way out of this problem is to develop evaluative scales de novo for each new concept that is to be evaluated, but this removes one of the advantages which the Semantic Differential supposedly has over the Likert method, as some form of item analytic or factor analytic procedure will have to be applied, as Brinton (1961) did. Bynner and Romney (1972) suggest that by carrying out both within-concepts and across-concepts factor analysis and inspecting the factor loadings it should be possible to decide empirically for which concepts the factors are valid. But for any new collection of concepts, the problem remains.

3.7 Other Direct, Closed Response, Questionnaire Methodologies

The methodologies which will be reviewed briefly here are those of Bogardus (1925, 1927, 1946), Rosenberg (1960), Sherif and Sherif (1967a, 1967b), Fishbein and Ajzen (1975) and Coombs (1964).

Bogardus (1925, 1927, 1946) has concentrated particularly on the attitudinal domain which he calls social distance, and which he labels as the degree of "sympathetic understanding" which exists between persons and groups. Bogardus describes his social distance scale as a technique for measuring the distance between persons or between a

person and social groups through the use of a series of graded social reactions against which a person checks his own reactions. The method can be used to assess attitudes towards social or ethnic groups. The subject is told to consider a member of a particular social or ethnic group and is then asked either to endorse or refrain from endorsing a series of statements about that individual, which range from allowing him to marry into the family to excluding him from the country.

The Bogardus methodology seems to be limited in its applicability, mainly due to the limited number of situations where it is possible to identify a set of behaviours which are clearly graded in terms of their favourability to the attitude object.

Rosenberg's (1956, 1960) methodology has already been referred to briefly in Chapter 2. The procedure may be summarized as follows: subjects are given a fairly lengthy list of values (e.g., being allowed to maintain the privacy of one's opinions and beliefs, being liked by the opposite sex, etc.) and are required to rate these values in terms of their perceived importance. The subjects are then given a specific attitude object (or attitude situation) and are asked to rate the perceived instrumentality of the attitude object in the attainment of the listed values. Attitude is then the sum of the product of value importance and perceived instrumentality.

The Fishbein-Ajzen method is different in that the two factors which are multiplied together are belief strength and the evaluation of the belief (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). Also, the terms of the sum are limited to salient beliefs (see Section 2.2.5).

Both Fishbein-Ajzen and Rosenberg type questionnaires are time-consuming to construct. Also, both are somewhat arbitrary in their specification of the beliefs/values which should be included in the assessment. Hackman and Anderson (1968) calculated attitude according to the Fishbein-Ajzen model using both population (modal) and personal salient beliefs about the attitude object. They also measured attitude using a standard attitude measure. Unexpectedly, attitudes calculated using personal salient beliefs correlated only 0,46 with attitudes assessed on the standard measure, whereas attitudes

calculated using modal beliefs correlated 0,62. Thomas and Tuck (1975) partially replicated Hackman and Anderson's study and obtained comparable results. Even Kaplan and Fishbein (1969) failed to obtain results which supported the superiority of the personal beliefs method. A further unexpected finding of Hackman and Anderson (1968) was that the evaluation of beliefs concerning the physical attributes of their attitude object (the Negro) correlated more highly with the external measure than the evaluation of beliefs concerning the personality and behavioural attributes of the attitude object.

It appears that the Fishbein-Ajzen model does not account adequately for the mental processes which are involved in attitude formation. It can be argued that when an individual has an overall attitude towards a social object (as would be expected to the the case with "unidimensional" attitude objects), he cannot reasonably be expected to be able to evaluate different aspects, or beliefs, about the attitude object, without being influenced by his overall orientation. These evaluations might therefore be meaningless and reflect, more than anything else, the subject's intuitive idea of how the experimenter will combine the individual evaluations in order to obtain an overall attitudinal score. This raises another point - the linearity or additivity of the model. Fishbein and Ajzen seem to have selected a linear model purely because of its simplicity rather than for any theoretical reason. The adequacy of the linear model has been examined by Ramsay and Case (1970) and Stewart (1973) with somewhat conflicting conclusions. Infante (1970) has modified the Fishbein-Ajzen formula into a more complex linear function.

Considerably less research has been undertaken using the Rosenberg model. Sheth and Park (1973), however, compared the two models using Coca-Cola as the attitude object. Thirteen attributes of Coke (e.g. "thirst quenching") were identified and these were used as values in the Rosenberg model and beliefs in the Fishbein-Ajzen model . Each measure was also correlated with an overall measure of attitude towards Coke. The Fishbein-Ajzen and Rosenberg measures correlated only 0,27 with each other, but the Fishbein-Ajzen measure correlated more highly with the attitudinal measure than did the Rosenberg method (0,605 vs. 0,121). It is conceivable that the experiment was unfair to the Rosenberg model, for the "values" used might be too trivial to

qualify as such. But one should still ask how it would be possible to measure attitude towards Coca-Cola using the Rosenberg instrumentality-value model.

Sherif and Sherif's (1967a, 1967b) methodology is unusual in that it aims at measuring more than attitudinal extremity. Sherif and Sherif (1967a) criticize questionnaires of the yes-no type, because they give the respondent so little freedom to categorize the stimulus material as he sees fit, and give little information about the respondent's attitudinal orientation. The usual procedure in the Sherif and Sherif methodology is to give subjects a set of cards, each bearing a statement referring to the attitude object under study. As in the Thurstone approach, the statements vary from highly positive, through more moderate positions, to highly negative, but unlike the Thurstone method, items are not chosen to have small standard deviations (or inter-quartile ranges) of judgment. Subjects are requested to categorize the statements into as many piles as they like, in terms of their favourability towards the attitude object. After this, the subjects are asked to indicate the pile of statements which approaches their own position most closely, and the pile which is most foreign to their position. A restricted number of categories with a mode at the "objectionable" end of the continuum and a secondary mode at the acceptable segment is typical of highly involved persons. Sherif and Sherif (1967a) point out that this method (the Own Categories method) gives more information about the respondents attitude than ordinary attitude scales.

The unfolding model was originally developed by Coombs (1964). This model has the advantage that the task required of the subject is very simple. The usual method is to present the subject with pairs of statements and require him to indicate in each case the alternative with which he agrees more closely. Figure 4 illustrates why the method is called an unfolding model. If A, B, C, D are statements at various points on a unidimensional attitudinal continuum and X is the attitudinal position of a particular individual, then (assuming unidimensionality) the paired comparisons judgements of the individual can be mapped onto a line as indicated in the example (the line in question is labelled the I-Scale). On the I-Scale, X is closest to B, followed by C, A and D. The problem is to "unfold" the I-Scale in

order to establish the underlying J-Scale. The J-Scale can be broken up into a number of intervals, obtained by taking the midpoints between all pairs of statements. In the 4-statement situation shown in Figure 4, it is possible to generate 7 segments. By assessing the subject's responses to all pairs of statements, it is possible to assign him to one of the segments; the method therefore allows an ordinal scaling of individuals.

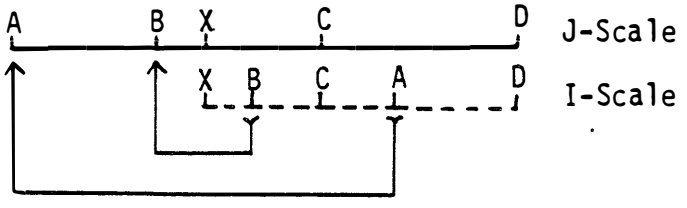


Figure 4. Unfolding Model

The original Coombs (1964) model is beset with a number of methodological difficulties, especially in the multi-dimensional case (Muller, 1977). A study by Hall (1970) illustrates some of the Coombs method's shortcomings. Some theorists (e.g., Schönemann and Wang, 1972) have offered modifications of the original Coombs model, but the unfolding approach is not yet ready for application in the practical situation, although there might be prospects for it in the future.

The other methodologies, those of Kelly (1955) (Repertory Grid) and Stephenson (1953) (Q-Sort) will not be reviewed here. These methods offer imaginative approaches to the assessment of attitude, but have two serious disadvantages:

(1) Scoring difficulties.

(2) Both are applicable to the assessment of the structure of a single individual's attitudes, but not well suited to making inter-individual comparisons.

3.8 Overall Evaluation of the Direct Questionnaire Methodologies

The major advantage of the assessment methods reviewed in the previous five subsections is their objectivity. The fixed-response format effectively eliminates scorer bias; the items are directly related to the attitude object and hence presumably tap the underlying attitudinal dimension more directly than more disguised methods; sampling of the attitudinal domain can usually be accomplished effectively using rational strategies, and it is common to obtain quite satisfactory levels of reliability (internal consistency and test-retest) with a fairly modest number of items. Also, nearly all the direct objective questionnaire-type measures are capable of being administered to groups of subjects; they are quick and easy to administer and also quick and easy to score.

On the other hand, they are, according to Cook and Selltiz (1966), susceptible to distortion. The subject can control and "fake" his responses. The objective questionnaire can also suffer from a number of other types of response bias (e.g., extreme response set, social desirability) which are liable to introduce unwanted variance and reduce the validity of the questionnaire as an index of the underlying attitudinal variable. Efforts have been made to minimize these disadvantages (e.g., by introducing buffer items, assuring anonymity, using various techniques to reduce social desirability), but even with these refinements, some influence on scores due to response bias is likely to remain. However, no study appears to have succeeded in demonstrating that the objective questionnaire methods are less valid than any other approach. Whatever else they may lack seems to be made up for, or more than made up for, in high reliability and relevance to the attitudinal domain (Kidder and Campbell, 1970).

Several studies have compared two or more of the four major questionnaire methodologies (Likert, Osgood, Guttman and Thurstone). Edwards and Kenney (1946) and Edwards (1957a) compared the Thurstone and Likert methods and found the Likert was both more reliable (0,94 vs. 0,88) and quicker to construct. Barclay and Weaver (1962) and Poppleton and Pilkington (1964) came to a similar conclusion. Seiler and Hough (1970), after reviewing a number of studies comparing the Thurstone and Likert methodologies, conclude that the Likert-type

questionnaire is approximately 40% faster to construct and equally, or more, reliable.

Kamenetzky and Burgess (1956) used the Guttman and Likert methods and a projective measure (the Rosenzweig Picture-Frustration test) to predict a criterion (the willingness of college students to sign a petition in favour of fair employment practices legislation). Little difference was found in the predictive capabilities of the three measures (r=0,58, 0,61 and 0,54 for the Guttman, Likert and Rosenzweig techniques respectively). Guttman and Likert methods correlated 0,93 with each other, but both of these questionnaires correlated less than 0,40 with the projective measure. Somewhat unexpectedly, a multiple correlation using one of the questionnaires and the Rosenzweig as predictors failed to predict the criterion significantly better than the questionnaire alone.

Probably the most comprehensive comparison of the major questionnaire methodologies was undertaken by Tittle and Hill (1967). They compared the Likert, Guttman, Thurstone and Osgood methods both on reliability, and predictive validity (the criterion was voting behaviour in a student election). Fifteen-item Thurstone and Likert scales were constructed, and the Guttman and Osgood scales were 10 and 9 items long, respectively. (Due to technical and other reasons, Guttman and Osgood scales are usually short, so the comparison is not unfair). The reliabilities (split-half) were as follows: Likert: 0,95; Osgood: 0.86; Guttman: 0,80; Thurstone: 0,67.

The correlations between the attitude measures and the behavioural criterion were: Likert; 0,543; Osgood: 0,339; Guttman: 0,419; Thurstone: 0,255. Even a 10-item version of the Likert correlated more highly with the criterion than any of the other measures (0,518). The poor criterion prediction of the Thurstone measure is probably due in part to its low reliability.

Fisher, Weiss and Dawis (1968) compared the Likert method with a paired comparisons method which displayed some marginal advantages over the Likert (slightly larger spread of scores and slightly more platykurtic, symmetrical distribution of scores), but the reliabilities for both were comparable. Fisher et al. conclude: "On

the other hand, the Likert scales were able to achieve almost the same degree of technical precision as the pair comparisons scales with only a fourth as many items" (p.92).

North and Schmid (1960) compared different ways of phrasing Likert-type attitude items, the major comparison being between personalized (e.g., "My supervisor is excellent") and impersonalized (e.g., "Air Force supervisors are excellent") types of item. The results indicated that on a number of statistical criteria (standard deviation, internal consistency, test-retest reliability) the personalized type of item is superior. There was some rather tenuous evidence that qualified personalized items (e.g., "My superior is better than other supervisors I might have had") are superior to unqualified personalized items.

Edwards and Kilpatrick (1948) suggest a method for combining the Guttman, Likert and Thurstone methodologies. They point out that the Guttman technique provides no satisfactory means of selecting the original set of items for scale analysis. They suggest first scaling a large number of items using the Thurstone method of equal-appearing intervals, then selecting the best of these (according to the Thurstone criteria) and subjecting them to a Likert-type item analysis. A final group of items which have passed this second selection procedure could then be tested for scalability using the Guttman technique. This procedure would, however, be extremely time consuming.

The empirical evidence is strongly in favour of the Likert method as the best of the "big four" methodologies: Likert scales are easy to construct, reliable and have good predictive validity. Tittle and Hill (1967) suggest that the Likert's superiority in predicting behavioural criteria is due to an "intensity" factor which is found more strongly in Likert items than in the items of the other three methods (which are apparently purer measures of extremity). The Osgood method suffers from transparency and concept-scale interaction. The Thurstone scales are time-consuming to construct, items fitting the model are difficult to find and reliabilities are not always high. The Guttman technique offers only a rather crude ordinal classification of subjects, inadequate procedures exist for

checking whether the items are tapping the desired content area, and the method for ascertaining scalability lacks true objectivity.

Only limited research has been understaken on comparisons between any of the major methods and other questionnaire methods. Some work has been done comparing the Fishbein-Ajzen model (which, outside the "big four", is possibly the strongest contender for acceptance as a major methodology) with that of Osgood. Results have shown only a moderate relationship between these two measures; the Fishbein-Ajzen technique seems to be influenced by the method of selecting salient beliefs (Thomas and Tuck, 1975; Alexander, 1976). Bagozzi (1981b), in a latent factor study, examined the dimensionality of the Fishbein-Ajzen and Semantic Differential methods under different conditions. Under all conditions examined, the Semantic Differential proved itself to be unidimensional. The Fishbein method suffered from the disadvantage that the items failed to achieve unidimensionality. Bagozzi's (1981b) study is reviewed in Section 4.5.3.

There is no alternative but to conclude that the evidence which has so far come to hand points strongly to the superiority of the Likert method amongst objective questionnaires.

3.9 Methodologies other than the Direct, Closed-Resonse Questionnaire

Apart from the direct, closed-response questionnaire methodologies, there are several other types of attitude assessment techniques. Of these, the most frequently used are probably the following: the interview, projective measures, physiological techniques, behavioural measures and indirect questionnaire methods. To date no evidence has emerged indicating the superiority of these methods over conventional questionnaire techniques on relevant indices such as construct validity, predictive validity or internal consistency. In addition, many of these techniques are cumbersome to administer, difficult to score and unusable in certain applications.

A critical review of the above-mentioned methodologies is presented by the author in Taylor (1979).

The following is a brief listing of references in which the techniques are discussed.

The interview: Maccoby and Maccoby (1954); Fear (1973); Black (1970); Holsti (1954).

Projective methods: Rotter and Willerman (1947); Cook and Selltiz (1966); Maher, Watt and Campbell (1960); Kamenetzky and Burgess (1956).

Physiological methods: Mueller (1970); Westie and de Fleur (1959); Rankin and Campbell (1955); Hess and Pott (1960); Hess (1965); Caldini, Petty and Cacioppo (1981); Mewborn and Rogers (1979); Rankin and Campbell (1955); Krevanick (1966); Tursky, Lodge and Reeder (1979); Tognacci and Cook (1975); Cacioppo and Sandman (1981); Cacioppo and Petty (1981).

Behavioural measures: Jones and Sigall (1971, 1973); Webb, Campbell, Schwartz and Sechrest (1966); de Fleur and Westie (1958); Cherulnik (1975).

Indirect objective measures: Hammond (1948); Kubany (1953); Thouless (1959); Feather (1964); Doob (1953); Kidder and Campbell (1970).

4.0 THEORY AND RESEARCH ON BEHAVIOUR PREDICTION

Many definitions describe attitude as a predisposition to behave in a certain way towards the social object in question (e.g., Sherif and Sherif, 1967b; Rosenberg and Hovland, 1960). There has been a tradition in attitude theory dating right back to the emergence of the latent trait approach in the mid-1920's, that attitudes determine overt behaviour, either through their own motivational power, or as agents which channel motivational forces from a central source. This expectation, that attitude should predict behaviour, is also grounded in the belief that man is a consistent being; if an individual evaluates a social object in a negative manner, we expect him also to behave in a negative manner towards the object in question; similarly we expect positive attitudes to be accompanied by positive acts.

A classic study conducted by La Piere (1934) dealt a decisive blow to this rather nineteenth-century view of man. La Piere and a well-dressed Chinese couple travelled extensively in the United States. In their travels they were received in 66 hotels (and refused in one) and were served in 184 restaurants. Thereafter, inquiries were sent to all the establishments visited concerning the acceptability of Chinese persons as guests or patrons. In 92% of the cases, the owners or representatives of the hotels and restaurants replied that they would not allow Chinese people on their premises. This study has its shortcomings: in particular, the situation presented in the enquiry and the situation which confronted proprietors at their hotels or restaurants were not strictly comparable; the owners of these establishments were asked whether they would allow Chinese people on their premises, not whether they would admit two presentable Chinese people who spoke fluent English and were accompanied by a White person. Nevertheless, La Piere's study did sound a warning that attitudes cannot be trusted to give infallible predictions of behaviour. This warning has been ignored by many subsequent research workers who have expressed surprise at the inconsistency of their attitude and behaviour data. Currently, however, attitude-behaviour inconsistency is a topic which is generating a large amount of theoretical and research interest.

In this chapter we shall review first some of the research which has

examined the relationship between attitude and behaviour; then we shall describe a number of theoretical proposals which have been made to account for attitude-behaviour inconsistency; these will be illustrated by referring to some of the pertinent empirical research. Next, the topic of causality and prediction will be discussed, followed by a description of some of the major behaviour prediction models. Finally, studies using causal modelling techniques will be reviewed.

4.1 Some Research Findings on the Relationship Between Attitude and Behaviour

The studies referred to in this section by no means constitute an exhaustive review of the research done in this area; the number of experiments conducted on attitude-behaviour consistency is too large to make anything possible beyond a modest sampling of representative studies.

Kutner, Wilkins and Yarrow (1952) conducted a study similar to that of La Piere (1934). They compared the verbally expressed willingness or unwillingness of restauranteurs to accept racially mixed parties with their actual behaviour when presented with the prospect of having a mixed party in their establishments. No relationship between expressed willingness and actual behaviour was found.

Fendrich (1967) assessed students' attitudes to Negroes using a standard questionnaire method. The students were then asked whether they would be willing to attend a small group discussion with Negro and White members of a campus chapter of the National Association for the Advancement of Colored People. The attitude-behaviour correlation was only 0,12. Fendrich attributes this inconsistent relationship largely to the "play-like" quality of the questionnaire; respondents treated the questionnaire as a game, not realizing that they would be presented with a behavioural option at a later stage.

Sample and Warland (1973) used a Likert-type questionnaire to measure students' attitudes toward student government. The criterion was voting behaviour in a student election. A correlation of 0,29 was obtained between attitude and behaviour.

De Friese and Ford (1969) measured student attitudes towards Negroes; the behavioural measure was the signing of petitions for or against integrated housing (it was also permissable not to sign either petition). These behaviours were scored 1 (for signing the anti-integration petition), 2 (for abstaining) and 3 (for signing the pro-integration petition). These scores correlated 0,39 with the attitude scores.

Ostrom (1969) conducted a large study on attitude-behaviour correspondence. A total of 12 attitude scores (3 Thurstone, 3 Guttman, 3 Likert and 3 self-rating) were obtained from students on the affective, behavioural and cognitive aspects of their attitudes towards the church. The students also reported on their behaviour with regard to church-related activities: eight behavioural self-reports were obtained, including church attendance, money donated, time spent meditating and time spent on church-related activities. A matrix of attitude-behaviour correlations was computed. Church attendance was the only behaviour for which predictor-criterion correlations exceeded 0,40. A large proportion of the correlations were below 0,15 (non-significant). For church attendance, the measure of the behavioural aspect of attitude proved the best predictor: the Thurstone, Guttman, Likert and self-report measures correlated 0,59, 0,68, 0,66 and 0,50 respectively with church attendance. The mean correlations of the affective and cognitive measures with church attendance were 0,53 and 0,47 respectively. It is arguable, however, whether the measures of the behavioural aspect of attitude can validly be called attitude measures; a more suitable way to describe them would probably be to call them measures of behavioural intention.

Wicker (1969) also conducted a study on the relationship of attitude towards the church with church-related behaviour. Three Semantic Differentials (using the "church in general", "own church", and "associations with own church" as concepts) and one Thurstone measure of church attitudes were administered to 152 church members. Behavioural indices were service attendance, contributions, responsible positions in church activities and a behavioural composite. The Semantic Differential using the church in general as an attitude object proved totally ineffective as a predictor. The remaining three measures correlated between 0,28 and 0,36 with church

attendance. All other correlations were lower, mostly below 0,25. The failure of attitude towards the church in general to predict church-related behaviour supports Ajzen and Fishbein's (1977, 1980) argument that the attitude measure must be as relevant as possible to the criterion behaviour and at the same level of specificity as the criterion behaviour if reasonable attitude-behaviour correlations are to be expected.

Mention was made in the previous chapter of the behavioural measure developed by De Fleur and Westie (1958) in which the subject is presented with a set of photographic release forms which authorize the use and publication of photographs showing the subject with Negroes. These release forms allowed subjects options ranging from permitting the use of the photographs in laboratory experiments to their use in a national racial integration publicity campaign. In this way, De Fleur and Westie devised an 8-point scale of behavioural intensity. In the analysis, however, they dichotomized their behavioural and attitudinal scores at the mean. A statistically significant correspondence was found ($p<0,01$ with a phi coefficient of 0,40).

In a similar experiment Green (1972) found, like De Fleur and Westie (1958), that those who showed greater willingness to sign photographic release forms tended to have pro-Negro attitudes and vice versa. Linn (1965) also used the photographic release technique to study the relationship between attitudes and behaviour in relation to the Negro. He found a non-significant correlation of 0,29.

Brannon, Cyphers, Hesse, Hasselpart, Keane, Schuman, Viccaro and White (1973) in a field experiment recorded the expressed attitudes of 453 home-owners towards open housing versus owners' rights. (In the former situation, the seller does not have the right to refuse to sell his house to a prospective buyer on the grounds of his race, colour or religion, whereas in the latter the owner retains this right.) Later, these same home-owners were presented with a petition addressed to the State Governor either urging that the Governor should support any law aimed at ending racial discrimination in housing or urging that he should veto any such law. The findings are too involved to present here in detail, but the general conclusion was that the vast majority of respondents were reasonably consistent in their responses to

attitudinal questions and to the petitions. Respondents supporting owners' rights substantially outnumbered respondents favouring open housing; respondents supporting owners' rights were also more consistent than those supporting open housing. It seems possible that social pressures contributed to the greater inconsistency of the latter group of subjects. The authors speculate that the substantial correspondence found in this study was largely due to its "real-life" setting; unlike many laboratory-based experiments, the attitude-assessment phase was not regarded as a "game". However contamination can occur when the subject is aware that both his attitude and his behaviour (or behavioural intention) are being monitored. Such knowledge on the part of the subject can cause him to demonstrate a pseudo-consistency between attitude and behaviour; this can result in the spurious inflation of the correspondence between predictor and criterion.

A study by Veevers (1971) also has the shortcoming mentioned above. Veevers measured attitude, using a number of instruments, to the drinking of alcoholic beverages. He also asked his subjects to report on their drinking behaviour. Attitude-behaviour correlations varying between 0,46 and 0,72 were obtained. These correlations would probably have been appreciably lower if Veevers had measured actual behaviour and if the subjects were not aware that their behaviour was to be measured.

Kothandapani (1971) found correlations up to 0,82 between attitudes to birth control and reported use of birth control methods in a sample of 100 Negro women of a low socio-economic class. In this study, four attitude measurement techniques (Thurstone, Likert, Guttman and a self-rating scale) were used to assess the affective, cognitive and behavioural components of attitude. As was the case in Ostrom's (1969) study, the behavioural intention measure was superior at predicting behaviour for all four measurement techniques. The Likert and Thurstone techniques were the best predictors, with the Likert possibly having the edge on the Thurstone. The author designed the study to be compatible with Campbell and Fiske's (1959) multitrait-multimethod model, the "traits" being the three aspects of attitude as described by the tripartite attitude theorists (see Subsection 2.2.1). Kothandapani's data showed that the affective, cognitive and

behavioural components were discriminable, as did Ostrom's data.

Substantial attitude-behaviour associations also have been found in several other studies. Campbell et al. (1960) found a correlation of 0,52 between attitude towards Eisenhower and voting behaviour in the 1956 presidential election. Fishbein and Coombs (1974) found that attitude towards Goldwater and voting behaviour correlated 0,73 in the 1964 election. Frideres, Warner and Albrecht (1971) found a gamma of 0,84 between attitude towards marijuana and willingness to sign a petition to legalize the drug. Albrecht and Carpenter (1976) obtained a correlation of 0,54 between attitude and behaviour in a study similar to that of Frideres et al. (1971). Acock and De Fleur's (1972) study was also similar to that of Frideres et al. In this study, the attitude-behaviour correlation was found to be 0,53.

It is clear, then, that a wide variation has been found in the relationship between attitude and behaviour. In some studies the relationship has been almost negligible (in fact, even slightly negative correlations have been found in a few cases), while in other studies the relationship has been moderate, or even substantial (voting behaviour in particular seems to be an area where attitude is a good predictor).

Wicker (1969) reviews a large number of studies published up to the late 1960's. He remarks on the wide variation in reported attitude-behaviour correlations, but concludes that attitudinal and behavioural variables seldom share more than about 10% of their variance. (This corresponds to a correlation of about 0,3.)

Our next undertaking is to examine the main explanations which have been put forward to account for the widely varying, but generally modest, attitude-behaviour relationship.

4.2 Explanations of Attitude-Behaviour Inconsistency

Before going into the reasons which have been proposed to explain the inadequacy of the single variable (attitudinal) model of behaviour prediction, we must examine some of the possible experimental and

methodological factors which might cause attitude to seem a poorer predictor of behaviour than it really is.

Firstly, inadequacies in the attitude measures themselves might contribute to poor attitude-behaviour correspondence. Ajzen and Fishbein (1977), Weigel, Vernon and Tognacci (1974) and Weigel and Newman (1976) have emphasized the importance of using attitude measures which are at the same level of specificity as, and compatible with, the criterion behaviour. Rokeach's (1968) and Rokeach and Kliejunas's (1972) injunction should also be borne in mind - that social objects always occur in social contexts and that our behaviour towards the object is likely to be influenced by the context in which we encounter it. Hence, if one measures attitude towards the Negro in general and then measures a specific type of behaviour towards particular Negroes in a specific situation, it is not surprising if attitude and behaviour are not highly correlated. Liska's (1974b), Heberlein and Black's (1976) and Weigel et al.'s (1974) experimental findings provide support for this point. Even if the attitudinal and behavioural measures are at more-or-less the same level of specificity, they may not be compatible with one another (see Wicker and Pomazal, 1975).

Ideally, attitude-behaviour consistency should be studied by selecting a criterion behaviour which is the "natural" mode of expressing the attitude. In practice this is often difficult or impossible to do, for there is frequently apparently no single obvious or "natural" manner in which an attitude is expressed. In some cases there are many possible behavioural outcomes to a given attitudinal orientation (Weinstein, 1972). If one has a positive attitude to a particular political party, for instance, there are several ways in which this attitude could be realized in overt behaviour: by becoming a party member, by working in the party offices during elections, by seeking nomination as a candidate, by voting for the party, etc. It is fortunate that in this instance there is one behaviour (voting) which is a fairly "natural" and universal expression of one's attitude towards a political party. (It is probably partly for this reason that attitude-behaviour correlations are usually found to be high in voting studies.) There are many instances however where, within the range of possible behaviours to the attitude object, there is no

universal mode of attitudinal expression. There is no universal means, for instance, of translating a positive attitude towards separate taxation into action, whereas for chocolate fudge, there is. It might be the case that suitable behavioural outlets are not readily accessible to the individual. If I have a positive attitude towards being an astronaut, there is very little that I can do about it.

Fishbein and Ajzen (1975) have proposed a method of overcoming the compatibility and specificity problems by measuring not attitude to an object, but attitude to an act. In this method, one would attempt to predict a specific behaviour towards (say) Negroes from scores on a measure which assesses the subject's attitude to performing the criterion behaviour; hence if the criterion behaviour is going to a mixed meeting to promote racial integration, then the predictor would be the subject's attitude to going to such a meeting. The disadvantage of the Fishbein and Ajzen approach is that, by fragmenting attitude into such small units, one tends to destroy the value of the attitudinal concept as a means of accounting for human behaviour parsimoniously; for every criterion behaviour, an instrument to measure attitudes to that specific behaviour has to be constructed. As Rokeach (1979) points out, social scientists would end up measuring billions of attitudes. Nevertheless there is evidence (e.g., Jaccard, King and Pomazal, 1977) that, at least in some circumstances, attitude-to-act predicts behaviour substantially better than attitude-to-object.

There are several other areas where our attitude measurement methods might be inadequate. Prediction might be improved if dimensions other than extremity are taken into account. These have been variously identified in the literature as salience, centrality, intensity, certainty, multiplexity, ambivalence, etc. Schuman and Johnson (1976) point out that the more intense an attitude, the more likely it is to predict behaviour accurately. Norman (1975) demonstrated that attitudes held ambivalently are poorer behavioural predictors than those which are held with a relative lack of ambivalence. The measure of ambivalence was the discrepancy between scores on "cognitive" attitude and scores on "affective" attitude.

Then there is the problem of the reliability of the measurement

instruments. The intercorrelation between predictor and criterion is limited by the unreliability of both predictor and criterion measures. It is also possible that genuine change might occur in the interim between the measurement of the attitude and the criterion.

Tittle and Hill (1967) and others have shown that the different attitude measurement techniques have different efficacies in predicting behaviour. These authors speculate that one reason why the Likert method seems to be superior to others in predicting behaviour is that it measures a composite of extremity and intensity.

The definition on which the attitude measure is based can also have an effect on the strength of the attitude-behaviour relationship. Studies reviewed in Section 4.1 (Ostrom, 1969 and Kothadapani, 1971) have shown that attitude questionnaires which purport to measure the "behavioural" aspect of attitude correlate more highly with overt behaviour than "affective" or "cognitive" measures. As was said earlier, it is arguable whether "behavioural" questionnaires should be regarded as bona fide measures of attitude. Some authors have claimed the need for using all three, or at least two, of the components of attitude in behaviour prediction (e.g., Bagozzi, 1979; Seibold, 1980; O'Keefe, 1980). Usually only one index of behaviour is used and it is often not clear what aspect of attitude it measures.

We should also be clear about the theoretical assumptions which we make regarding the nature of the relationship between attitude and behaviour. La Piere (1934), for instance, examined the degree of literal consistency between attitude and act; he investigated the degree of correspondence between what his subjects said they would do and what they actually did. The attitude-behaviour relationship investigated in most subsequent experiments is of a much less literal nature, because continuous attitude scales are generally employed. It is assumed that the higher the subject's score on the attitude scale, the greater the probability he will perform a particular behaviour, or the more intensely he is likely to perform a particular behaviour. Almost invariably it is assumed that there is a linear relationship between extremity of attitude and the probability of occurrence (or intensity of performance) of a criterion behaviour. These assumptions might not be justified.

Campbell (1964) has made a valuable contribution to the theory of the attitude-behaviour relationship with his threshold concept. He claims that a certain dispositional strength or force is necessary before the individual performs a given act. Therefore there are thresholds which must be passed before a behaviour is emitted. These thresholds may be hierarchically ordered. It may, for instance take a dispositional strength of x before an individual votes for a given party; x+y may be required before he goes and offers his services at the party offices and x+y+z before he seeks to have himself nominated as a party candidate. (The values of x, y and z are all positive in this example.)

There might be different thresholds for responding to items in a questionnaire (or making a verbal statement) and actually taking action in real life. The threshold for saying: "We do not accept Chinese patrons in our restaurant" might be lower than the threshold for actually preventing the admission of Chinese individuals to the restaurant. Campbell (1964) applied his model to La Piere's (1934) data and to the data of other studies where weak attitude-behaviour relationships have apparently been found; he claims that much of the supposed inconsistency is actually "pseudo-inconsistency" and that much behaviour which was thought to be inconsistent actually can be brought within the compass of prediction models once the threshold concept is taken into account. Raden (1977) tested Campbell's (1974) hypotheses and found that when a scalogram or situational threshold method of assessing inconsistency was applied, inconsistency was substantially reduced. Raden argues, however, that pseudo-inconsistency can be part of a general "item difficulty" artifact which can also result in pseudo-consistency.

Harkins and Becker (1979) mention another type of pseudo-inconsistency based on the different perspectives which experimenter and testee might have. The testee might think that his attitudinal and behavioural responses are consistent while the experimenter thinks they are inconsistent due to differing criteria for judging consistency.

We have already mentioned the necessity of finding behavioural indices which are appropriate to, and at the same level of specificity as, the

attitudinal construct being measured. The suitability of a behavioural measure should be checked from certain other points of view as well. In fact one should apply the same standards to a behavioural index as one does to a psychological test. Hence the behavioural measure should be reliable, it should sample the intended behavioural domain adequately and it should be capable of ordering individuals on a scale which possesses, or at least approaches, some of the basic metric requirements. Some of these requirements are: reasonably large number of scale divisions of the same size, reliability of the scale on repeated measurement and "pure" measurement of the intended dimension. Fishbein and Ajzen (1974) point to the necessity of determining the nature of behavioural items' trace lines when developing criterion measures. Hence they advocate a procedure similar to that used in attitude scale construction.

In order to fulfil these requirements, the idea of using more than one behavioural index has started to take hold (see for example, Borman, Rosse and Abrams, 1980). Even if these indices are insufficiently correlated to justify combining them into a single composite measure, the chances of finding a compatible behavioural manifestation of the attitude are increased and consequently more can be learned about the pattern of relationships between attitude and aspects of the behavioural domain.

Although the criteria for satisfactory behaviour measurement are relatively easy to identify in theory, they are somewhat more difficult to achieve in the practical situation. Generally, "real" behaviour is difficult to measure in a metrically satisfactory way. Most behavioural manifestations cannot be mapped onto a multi-alternative scale or rated accurately in terms of intensity. Also, it is usually difficult or impossible to find sufficient relevant behavioural "items" to make up a reasonable scale. Often behavioural measures occur in a specific situation which can add unique variance. Self-reported behaviour, on the other hand, is easier to convert into a metric instrument. For instance, one can ask a respondent: "How do you rate your behaviour towards your mother-in-law?" and require him to endorse one of the following five alternatives: Very friendly, friendly, neutral, unfriendly, very unfriendly. Assuming that one can generate a number of "mother-in-law behaviour" items such as this, one

could construct a scale which would have as much right to be called an interval scale as many psychometric instruments. Some authors, such as Howard, Maxwell, Wiener, Boynton and Rooney, (1980), advocate the use of self-report assessments rather than direct behavioural measures. But self-report measures have their own metric problems (see Saal, Downey and Lahey, 1980) and suffer from the problem that they can be falsified by the subject in order to be consistent with other responses, or in order to create a favourable impression on the experimenter.

The factors mentioned above (specificity, compatibility, reliability, adequacy of sampling of the behavioural domain, etc.) must be borne in mind when considering the reasons for the large variability in the attitude-act correspondences which have been reported in empirical studies. However, there seem to be other important variables which mediate the relationship between attitude and behaviour. Below is a discussion of some of the mediating variables which have been cited in the literature.

Fendrich (1967) has demonstrated the importance of commitment in the attitude-behaviour relationship. Fendrich defines commitment as the act of making perceived voluntary decisions to participate in a consistent pattern of action that involves some risk. He points to the fact that in a typical test-taking situation, respondents are not subject to the normal coercive forces of everyday life. In contrast, in the real world people are held to account for what they have said and how they have acted. Hence it seems likely that many respondents regard the attitude measurement situation as a game which has little bearing on real life. Behaviour assessment situations on the other hand (e.g., agreeing to attend a Civil Rights meeting), are much less of a game and are subject to the host of social and situational pressures which are liable to influence behaviour.

Hyman (1959) and Burhans (1971) propose that attitude measures should be designed to incorporate the major features of the real world in order to minimize their play-like qualities. In the Fendrich (1967) study, the predictor was attitude to the Negro and the criterion was agreeing to attend a Civil Rights discussion. Subjects were also administered a scale to determine their commitment to participate in

interracial activities. For those subjects who completed the attitude questionnaire before the commitment questionnaire, the attitude-behaviour correlation was 0,12, but for those who completed the commitment questionnaire first, the attitude-behaviour correlation was 0,69. The commitment questionnaire apparently had the effect of making the attitude assessment situation less artificial.

A further point concerning the nature of the "real" attitude should be borne in mind when considering these results. All attitudes unavoidably contain a behavioural aspect since we cannot measure attitude except via its behavioural effects. However, some ways of measuring attitude are more "behavioural" than others. By giving the subject to believe that his attitudinal responses will be used "seriously" or in some behavioural context, the experimenter might encourage the subject to give an attitude which is more behaviourally orientated or more in keeping with possible future behaviour. Tedeschi et al's (1971) impression management concept is relevant here. Many subjects may be prepared to tolerate a degree of "real" attitude-behaviour dissonance in exchange for public consonance. Not only attitude, but also behaviour may be "managed" in order to create a favourable impression. Subjects may be apprehensive that their behaviour is being evaluated by the experimenter for its acceptability (Rosenberg, 1969). Zanna, Alson and Fazio (1981) in a study involving church attitudes and behaviour, found that a higher correlation was obtained when attitudes were measured after behaviour was reported: a much lower correlation was obtained than when attitude and behaviour were assessed in the other order. In this case it was probably attitude rather than behaviour which was "managed" in order to create an overt impression of consistency.

Nichols and Duke (1977) have pointed to the possible importance of locus of control as a mediator in attitude change. Seibold (1980) makes a similar comment. The locus of control concept was developed by Rotter (1954) and may be described as the degree to which an individual believes that events occur in his life as a result of his own initiatives (internal control) as opposed to the belief that luck or outside forces determine the course of his life (external control). According to Nichols and Duke, individuals with a high internal locus of control are highly resistant to attitude change,

whereas those whose locus of control is largely external are liable to be more susceptible to attitude change. Nichols and Duke speculate that the same principle might hold in the attitude-behaviour relationship, i.e., that the attitude-behaviour relationships might be stronger in internally controlled individuals than externally-controlled persons, the reason for this being that internally-controlled persons are less susceptible to environmental factors and therefore more likely to act in accordance with their internal attitudinal state.

Schwartz (1968) defines a construct, ascription of responsibility, which bears a close resemblance to locus of control. In his sample of undergraduates, Schwartz found that attitude-behaviour consistency was greater in those subjects who were high on the tendency to ascribe responsibility to the self than in those who were low on this construct.

Like Nichols and Duke (1977), Snyder and his co-workers have also taken the position that individuals differ in the extent to which situational and dispositional factors influence their behaviour (see Snyder and Monson, 1975; Snyder and Swann, 1976; Snyder and Tanke, 1976). Snyder and Monson (1975) have developed a construct called self-monitoring. Individuals who monitor their behavioural choices on the basis of situational information are claimed to demonstrate considerable situation-to-situation discrimination in their behaviour. For these people, the attitude-behaviour relationship is expected to be weak because situational and not attitudinal factors are the primary determinants of behaviour. On the other hand, individuals who monitor their behaviour on the basis of internal (dispositional or attitudinal) factors are expected to demonstrate much higher attitude-behaviour consistency. Snyder and Monson (1975) have developed a scale to measure self-monitoring behaviour. Some empirical support for this theory is presented by Snyder and Swann (1976), Snyder and Kendzierski (1982) and Zanna, Olson and Fazio (1980).

Zuckerman and Reis (1978), however, performed a comparative study in which behaviour prediction models of Fishbein and Ajzen (1975), Schwartz (1968) and Snyder and Monson (1975) were compared. Fishbein

and Ajzen's model produced the best prediction and Snyder and Monson's the worst. No evidence was found to support the hypothesis that self-monitoring moderates the attitude-behaviour relationship.

Bem and Allen (1974) also observe that individuals might differ in the degree to which attitudinal and situational factors influence behaviour. An analysis of the item responses of people who are primarily influenced by situational factors should, according to Bem and Allen, indicate that for these people there is no clear underlying attitudinal dimension. Because the attitude in question is either absent or poorly formed in such individuals, behaviour is directed primarily at situational factors and hence lacks the greater measure of across-situational consistency which it would have if it were being directed by an underlying attitude. In these circumstances, attitude measures are of little or no use in predicting behaviour and the experimenter should rather resort to predicting behaviour on the basis of situational variables. Norman (1975), in an empirical study, found evidence supporting Bem and Allen's (1974) claim that the attitude-behaviour relationship is weaker for attitudinally inconsistent individuals than for those who are consistent. (In this study, consistency was defined in terms of the agreement between cognitive and affective aspects of attitude.)

Liska (1975) states that attitudes are not well-formed unless the three components (cognitive, affective and conative) are present. He claims that much attitude-behaviour inconsistency may be the result of trying to predict behaviour from ill-formed attitudes. It is largely on these grounds that attitude salience or centrality has been cited as a factor in attitude-behaviour consistency (e.g., Newcomb et al., 1965; Milord and Perry, 1976). The argument is that the attitude-behaviour relationship is stronger in the case of salient attitudes because these attitudes are well-formed and important to the individual and hence are more likely to direct behaviour.

Relevant to the above discussion is Sample and Warland's (1973) work on response certainty. These authors measured students' attitudes towards student government using a 5-category 15-item Likert scale. The students were also requested to indicate on a 5-point scale how certain they were of each of their responses. The sample was divided

into high-certainty and low-certainty groups. For the high-certainty group, the correlation between attitude and the criterion of voting behaviour was 0,47, whereas for the low-certainty group the correlation was only 0,06. Sample and Warland claim that response certainty is an index of the degree to which attitudes are well-formed.

Wicker (1971) conducted a study into attitudes towards the church and church behaviour. Several behavioural criteria were employed. The mean attitude-behaviour correlation was only 0,22. On the other hand, the mean correlation with the criteria of subjects' judgement of the importance of extraneous events (e.g., inclement weather, week-end guests, etc.) on church behaviour was 0,36. These findings are in accordance with the views of Lewin (1951), who is pessimistic about the prospects of behaviour prediction models due to the influence of extraneous or situational factors. But, as will be seen later, it seems that it might be possible to take at least some of these factors into account in prediction paradigms.

The effect of perceived consequences of behaviour on the attitude-behaviour relationship has been mentioned by Linn (1965). Linn found in a sample of female first-year university students that racial prejudice was less marked in questionnaire responses than in actual behaviour (signing photographic release forms). Linn analyzed the situation as follows. At the particular university campus there was substantial normative pressure to espouse liberal attitudes towards Negroes - hence the low level of racial prejudice expressed in the attitude questionnaire. But the normative attitude of the community at large and of the students' parents towards Negroes was much more conservative. Therefore, when the subjects realized that if they translated their liberal expressed attitude into behaviour they would receive wide exposure to a largely disapproving public, they "backed out". This study illustrates the difficulty of distinguishing "true" attitudes from social pressures. Social pressures had apparently caused the subjects to espouse more liberal racial views, but it is impossible to determine whether an actual change of attitude had taken place. The failure of the subjects to behave in accordance with their expressed attitudes cannot be taken as watertight evidence against the conclusion that real attitude change had taken place, because the pressure of social norms might have had a mediating effect.

Linn's study high-lights the importance of social pressures in the determination of behaviour. (This topic will be discussed in some detail later in this section.) It also indicates the probable influence of social pressures in the formation of attitudes. Inconsistency in Linn's study was apparently due to conflicting social pressures. Age is a factor which should also be taken into account: Linn's subjects were young. It is possible that younger individuals, having attitudes which are still somewhat uncrystallized (and less rigid), are more likely to be influenced in their behaviour by situational factors.

A further factor which appears to play an important role in attitude-behavior consistency is familiarity, or habit. Triandis (1977, 1979) and Tittle and Hill (1967) make the point that behaviour is more likely to be consistent with attitude if the behaviour in question is familiar to the individual. The more frequently he has engaged in the behaviour in the past, the more likely it is that the behaviour will be elicited in response to the relevant attitude. Apart from any behaviouristic explanation for the influence of habit on attitude-behaviour consistency, there may be strong social pressures against changing well established behaviour (Andrews and Kandel, 1979).

Bandler, Madaras and Bem (1968) claim that behaviour can influence the direction and intensity of attitudes, just as attitudes are held to influence behavior. With repeated performance of a given behaviour, attitude and act are more likely to be in accord. Kendler and Kendler (1949), however, warn that attitudes and behaviour are different "habits" and hence there is no a priori reason to expect that they should covary. They suggest that the phenomenon of inconsistency should be analyzed in terms of S-R reinforcement theory: if the history of reinforcement associated with an overt act differs from that associated with responses to a given attitude measurement instrument, then it is only to be expected that inconsistency will be found.

The issue of whether attitudes "cause" behaviour or vice versa will be discussed in more detail in Subsection 4.5.2, in a review of studies by Bentler and Speckart (1981), Bagozzi (1981b) and others.

Knowledge, or possession of relevant information, can also affect attitude-behaviour consistency. Weigel and Amsterdam (1976) found a very poor relationship between attitudes towards dental health and self-reports of dental care behaviour. The authors attribute this inconsistency largely to the subjects' lack of knowledge about proper dental care. Cacioppo, Harkins and Petty (1981) also stress the importance of cognitive factors on the attitude-behaviour relationship. In a study involving a control group and an experimental group in which the latter was encouraged to compile a "balance sheet" of advantages and disadvantages of a given behaviour, the experimental group had a much higher level of attitude-behaviour consistency than the control group. Triandis (1977, 1979) also stresses the importance of what might be called 'perceived consequences.

Regan and Fazio (1977) make a distinction between attitudes formed from direct experience with the attitude object and those formed at second hand (e.g., through reports from friends or associates, accounts from the mass media, pronouncements of "experts" or "authorities", etc.). The authors hypothesized that attitudes which have been formed by direct experience with the attitude object will be more consistent with behaviour than those which have been formed by exposure to indirect sources of information. The rationale behind this is that attitudes are less "hypothetical and more part of one's real-life experience if formed through actual interaction with the attitude object; they should therefore be expected to be better indicators of behaviour towards the attitude object than attitudes formed at second hand. In a study involving attitudes towards a student housing crisis and attempts to alleviate the crisis, Regan and Fazio (1977) did find that those students who had had direct experience with the housing crisis showed greater attitude-behaviour consistency than those who had not.

In a follow-up study, Fazio and Zanna (1978a) examined the role of response confidence as a mediating variable in the relationship between mode of attitude formation and attitude-behaviour consistency. It was found that subjects who formed their attitudes through direct experience held their attitudes more confidently and showed higher attitude-behaviour consistency than those subjects whose

attitudes were formed through indirect experience. A further finding was that, irrespective of the mode of attitude formation, subjects who held their attitudes more confidently displayed greater attitude-behaviour consistency. The authors claim that confidence should be regarded, not only as a mediating variable, but also as a determinant of attitude-behaviour consistency.

Fazio and Zanna (1978b) looked at response certainty and latitude of rejection as possible mediating variables. Both variables were found to be significantly related to attitude-behaviour consistency. In the latter variable, large latitudes of rejection were associated with high levels of attitude-behaviour consistency, and vice versa.

Liska (1975) points out that in most instances it is probably naive to think that behaviour is determined by a single attitude. Most social situations are complex and probably evoke a number of attitudes in us. The resultant behaviour might be a product of the influence of all these attitudes. Nearly all research into attitude-behaviour consistency, however, takes only a single attitude into account. Poole and Hunter (1980) have a hierarchical model of attitude organization and use this model to illustrate how more than one attitude (or value) can influence behaviour. In Figure 5, both ethnic tolerance and feelings of financial security can lead to the same behaviour.

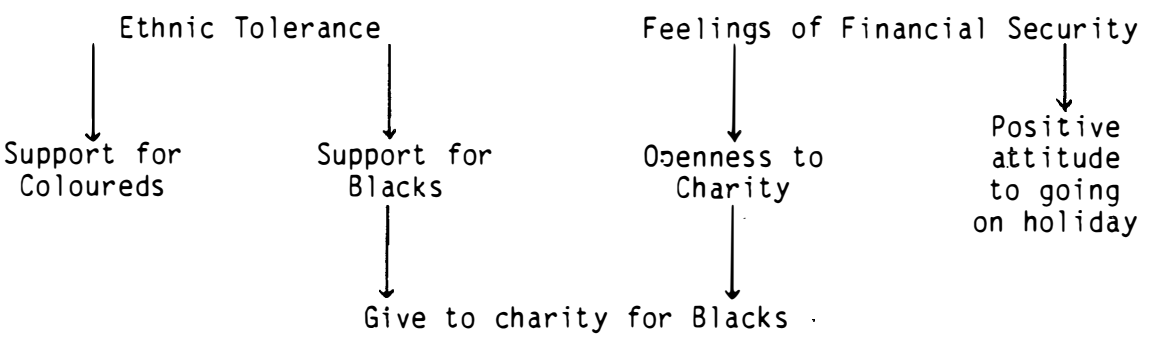


Figure 5. Poole and Hunter (1980) Model

Finally, one must not forget the importance of personal control or capability as a factor in the attitude-behaviour relationship. In Vroom's (1964) model of work motivation and work performance, ability is actually included in the model as a predictor. General behaviour

prediction models, however, usually ignore any ability or control factor. This is not always justified. Davidson and Jaccard (1979), for instance, found a higher attitude-behaviour correlation when the attitude-behaviour domain was the use of contraceptives than when it was having children. Having children was under less voluntary control by the subjects than using contraceptives.

Before going on to discuss further what has been regarded by many theorists as the most important factor influencing attitude-behaviour consistency, social or normative pressure, an attempt will be made to place the factors influencing attitude-behaviour consistency into some sort of conceptual framework. Gross and Niman (1975) distinguish three main groups of factors: personal, situational and methodological. Under personal factors, they include:

(1) Other attitudes.

(2) Competing motives. The authors apparently believe that not all motives work through attitudes. Motives or drives underlying a given behaviour may be stronger than motives related to a relevant attitude.

(3) Verbal, intellectual and social abilities. Attitude-behaviour inconsistency may be due to an individual's inability to make appropriate verbal or behavioural responses.

(4) Activity levels. A highly active person may be more likely to act in a way consistent with his attitudes than one who is more indifferent to his environment.

Under situational factors they list the following:

(1) Normative prescriptions of proper behaviour.

(2) Alternative behaviours available.

(3) Specificity of attitude objects.

(4) Unforeseen extraneous events.

(5) Expected and/or actual consequences of various acts.

The following are the methodological factors mentioned by them:

(1) Reliability of attitude measurement instruments.

(2) Discriminating power of behavioural measures.

(3) Difficulties in determining what attitudes are associated with what behaviours.

Ehrlich (1969) also attempts a categorization of the variables mediating attitude-behaviour consistency, but Gross and Niman's (1975) categorization of the area is "neater" and more comprehensive.

It will be noticed that almost all the factors mentioned by Gross and Niman (1975) have been discussed in this section. Apart from Triandis (1977, 1979), no theorist has tried to incorporate Gross and Niman's first group of factors (personal factors) in behaviour prediction models, probably because most of these are idiographic or difficult to measure. Gross and Niman's third group of factors (methodological) are of relevance, not so much in the conceptualization of models of behaviour prediction, but rather in the methodologically satisfactory implementation of such models. This leaves us with the second group, situational factors. It is these factors which have generated a large amount of theoretical and research attention; they have been used in attempts to account for poor attitude-behaviour correlations, or to predict behaviour with greater effectiveness than is possible with the simple attitude model. Theorists such as Fishbein and Ajzen (1975) and Rosenberg (1956, 1960) hold that peoples' actions are influenced by both internal (primarily attitudinal) and by external (primarily social) forces. This approach has an immediate intuitive appeal, for it recognizes fully that man is both an individual and a member of a social milieu. The simple attitude prediction model tends to overplay the former and ignore the latter.

Situational and attitudinal factors may interact in a number of ways. Lemon (1973) distinguishes three possible relationships between attitudes, social structure and behaviour:

(1) Social factors influence both behaviour and attitudes. In the extreme case, attitudes have no influence on behaviour. Lemon uses as an example a slave society where personal attitudes are almost totally unrelated to overt behaviour.

(2) Social factors influence attitudes which in turn influence behaviour. This is the situation where attitude is an intervening variable. In this model, effective prediction of behaviour can be obtained by assessing attitudes. However, if there is a one-to-one relationship between some measure or measures of social factors and attitudes, then attitude becomes a redundant, possibly meaningless, concept. Lemon claims that this may be the case in "simple", traditional and "rigid" societies where there is little discrepancy between personal attitudes (if one may call them such) and social structural factors.

(3) Social factors and attitudes influence behaviour. Here we have two distinct, at least partially independent, sets of causative variables. This model also admits the possibility of an interaction between social factors and attitudes which can lead to effects which could not happen if either factor were acting alone.

The third model appears to be most appropriate to the situation in Western society. In Western society, individualism is valued: people are expected to hold personal attitudes and opinions, and to act in accordance with these. On the other hand, organized and informal groups and society at large do not let the pursuit of individualism get out of hand, for this would pose a threat to the security of their existence. To some extent behaviour is kept within prescribed bounds by enforceable structures (laws), but most daily behaviour is influenced and modified by the unenforceable but nevertheless powerful effects of social pressure. This pressure probably modifies attitudes as well as behaviour (as in Lemon's, 1973, first model) but not to the extent that personal attitudes and social norms become identical. The individual in Western society is urged to be his "own man" but at the same time not to be a "scab".

The importance of social factors in the determination of behaviour has been recognized ever increasingly by attitude theorists since the late 1950's, and today it is a relatively infrequent experience to come across research which naively assumes that behaviour is directed purely and simply by attitudes. The following is a review of some of the research which has illustrated the importance of social factors in the determination of behaviour.

De Friese and Ford (1969) measured attitude towards Negroes in a sample of 262 homeowners in a White residential area. The behavioural criterion was the subjects' endorsement of legal-looking documents indicating either willingness or refusal to support racially open occupancy. Respondents were also asked to indicate their perception of the attitude of each of five reference groups, considered by the experimenters to be influential in the process of individual decision-making: immediate family, close relatives, close friends, neighbours and work associates. De Friese and Ford found that they were able to predict overt behaviour substantially better when both reference group positions and own attitudinal position were taken into account than when own attitudinal position alone was used.

Ewens and Ehrlich (1972) claim that people are motivated to behave in a manner both consistent with their attitudes and with the expectations of their reference groups. Since reference group views and the individual attitudes will not necessarily be in full agreement, attitude and reference group pressure can have independent effects on behaviour. Ewens and Ehrlich measured attitudes to Negroes, perceived reference group attitudes to Negroes and willingness to engage in various Civil Rights activities. The experimenter found that for some Civil Rights activities, attitude was a better predictor than reference group attitude, while for others the opposite was true and for yet others the predictive powers of the two variables were about the same. Ewens and Ehrlich speculate that the influence of reference group attitude on behaviour seems to be mediated by a number of characteristics of the behaviour in question, including its visibility, centrality and legitimacy. Ewens and Ehrlich's contention that reference group pressure and attitude have a relatively independent effect on behaviour was supported by the finding that in nearly all cases prediction was improved by using both predictors.

Warner and de Fleur (1969) studied students' racial attitudes and racial behaviour under "public" and "private" conditions (disclosure or non-disclosure of behaviour to fellow-students). The relationship between attitude and behaviour was smaller in the public than in the private condition. Warner and de Fleur conclude (p.164): "Since the requested act was one generally disapproved within relevant norms, the

exposure to potential surveillance provided by the condition of high social constraint produced inconsistency between attitudes and action for the least prejudiced subjects".

In a study involving attitudes towards legalizing marijuana and relevant overt behaviour (signing a document indicating commitment), Frideres et al. (1971) found that attitude-behaviour correspondence was higher when subjects were under the impression that others participating in the study had attitudes congruent with theirs than when they thought that the opposite was the case.

Some other authors who have studied or commented upon the effect of social factors on behaviour are: Miniard and Cohen (1981); Perry (1977); Davey (1976); Deutcher (1966); Arie, Durand and Bearden (1979); Tarter (1969); Burhans (1971); Albrecht (1971); Carpenter (1976); Silverman and Cochrane (1971); Zuckerman and Reis (1978); Bowers (1968, 1973) and Kelman (1974). Liska (1974a) succinctly sums up the main finding of the attitude studies which have looked at social factors: when social support and attitude work together, then attitude-behaviour consistency is high, but when these two factors are at variance with each other, then attitude-behaviour consistency is low.

4.3 Causality

All major theorists of behaviour prediction claim that their models are true causal models rather than useful prediction techniques. In other words, they claim to have identified the true causal factors rather than correlates. As causality features so prominantly in the models, it is appropriate to examine the concept of causality before proceeding to discuss the models themselves.

Heise (1975) distinguishes between causal and developmental relationships. In a causal relationship, the occurrence of a first event is a sufficient condition for the occurrence of a later event. A developmental relationship is one in which the occurrence of a first event is necessary for the occurrence of a later event. These relationships may be represented graphically as follows:

where C occurs before E and A before B. Causality does not require the absence of E when C is absent: E might occur with C absent because E may be caused by events other than C.

According to Kenny (1979), a causal relationship (or "law") is more accurately expressable as follows:

$$\forall Q: \; C \longrightarrow E$$

Where

Q is some set of elements, and
C and E are events.

In the social sciences, Q is usually some subset of people, but Q might also refer to situations, generations, mental states or other phenomena. Q is often ignored when stating a causal relationship, with the result that the relationship may be taken to be more general than it actually is. External threat may, for instance, generally cause social cohesiveness, but this is not true for a population of infants.

Sometimes C exists but E does not result because some sort of requirement, be it structure or process, is necessary in order to initiate or facilitate the emergence of E. Phenomena which play this role are known as operators (Heise, 1975).

Heise lists a set of four necessary and sufficient conditions for the inference of causality. However, the use of vague terminology and concepts which are not defined with enough rigour precludes the employment of these conditions as an infallible test for causality. (One condition, for instance, refers to "compatible components" and "overlapping event fields".) In fact, it may be argued on philosophical grounds that there never can be an infallible set of

specifications for causality. Nevertheless, efforts such as Heise's are salutary in that they help to clarify the conditions under which causality can definitely not be inferred.

Efforts have been made to infer causality through the use of what is known as "cross-lagged" correlational analysis, a procedure described in Kenny and Harackiewicz (1979). In the domain of the present study, for instance, Kahle, Klingel and Kulka (1981) and Kahle and Berman (1979) attempted to establish that attitudes cause behaviours (rather than the opposite). Within the limitations of their methodology, these researchers were successful, but critics such as Bentler and Speckart (1981) have a number of powerful arguments against the procedure. In both the Kahle et al. (1981) and the Kahle and Berman (1979) studies a similar approach was used. The following is a brief description of the method. T_1 and T_2 are two times when two phenomena (in this case, attitude and behaviour) are measured. T_2 is after T_1. Let the attitude (A) and behaviour (B) measures taken at T_1 and T_2 be A_1 and B_1 (at T_1) and A_2 and B_2 (at T_2). According to the above authors, the causal relationship $A \longrightarrow B$ can be inferred if the correlation $r_{A_1 B_2}$ is substantially larger than the correlation $r_{A_2 B_1}$.

Bentler and Speckart (1981) claim that the cross-lagged correlational technique can be useful in ruling out spurious relations, but not in inferring causality. They assert that the technique makes dangerous assumptions with regard to the stabilities, variance changes and reliabilities of variables. In addition, cross-lagged methods do not specify the structure of hypothesized relationships. What is required is a model which precisely specifies the hypothesized causes. The model should specify links between latent variables, not manifest variables which are unreliably measured and which are merely indicators of the latent variables. In order to do this, multiple measures of each factor or latent variable should be taken. What Bentler and Speckart are advocating is in fact the structural equation modelling technique put forward in a number of varieties by Jöreskog (1974), Werts et al. (1973), Goldberger (1973), Bentler and Weeks (1980) and others. These methods will be discussed in detail in Chapter 7 which deals with statistical methods employed in this study. The discussion below refers only to those aspects of

structural equation modelling which are of relevance to the present chapter.

If the supposed cause and effect are both variables, the relationship between them can be put in some functional form. The typical form is a linear one:

$$Y = b_0 + b_1 X$$

Where

Y	is the effect,
X	is the cause,
b_0 and b_1	are constants, b_1 being known as the causal parameter.

Instead of one X causing one Y, there may be a set of Xs. In some cases, there may even be a set of Ys. The links between these variables may be specified in terms of linear (structural) equations. Structural models therefore have two basic elements, variables and parameters (called structural parameters in the context of this kind of modelling). Each structural parameter is multiplied by a variable. In cases where multiple measures of a given construct have been made, structural parameters can indicate the strength of the relationships among latent variables, not manifest ones. When variables are standardized, structural parameters are theoretical regression coefficients (Long, 1981).

In structural equation modelling, there are two types of variables: causal variables, called exogenous, and effect variables, called endogenous. Exogenous and endogenous variables are usually identified by ξ and η designations respectively.

As the structural equation approach can handle multiple causation, a high level of complexity is introduced into the analysis, because a given effect can be composed in a number of different ways (Heise, 1975). When trying to study the relation between a specific cause and an effect, all other causes act as disturbing factors that confound the analysis. In some experimental studies, it is possible to isolate a single putative cause-effect pair from other causal influences. In doing this, one runs the risk of disrupting the system under study, so that the findings on the single cause-effect pair are

not valid. It might in some cases be possible to leave the pair in the system and to establish a passive control over the disturbing factors by monitoring them. This, however, presupposes a detailed knowledge of the system which is usually not attainable in psychological research. A third approach is a statistical one, which is followed in this study. Any single observation of an outcome of a causal process given certain inputs will represent the effects of the factors involved in a hopelessly confounded way. But if enough observations are made, disturbing factors may cancel one another out and it may be possible to determine the effect of a given cause "on average". In structural equation models several causal relationships are studied simultaneously. The procedure for making allowance for the influence of a second cause while studying the first requires making allowance for the first cause in order to determine how much to adjust for the second cause (Heise, 1975). This sounds irretrievably circular and complex, but procedures exist for the simultaneous disentanglement of cause-effect relationships, given numerous observations on all pertinent variables.

The terms "cause" and "effect" have been used rather freely in the above discussion. This should not be taken to mean that structural equation modelling somehow magically solves the problems of determining the true structure of cause and effect in any system. Structural equation modelling cannot correct for the absence from a model of important causative factors. The absence of such a factor can lead to fallacious conclusions about the causative role of another variable. In a study using structural equation modelling, Bagozzi (1981a) for instance found that the inclusion of past behaviour as an exogenous variable attenuated the impact of attitude on behaviour intentions. Attitude appeared to be a more important predictor of behaviour intention than it turned out to be when past behaviour was included.

Diagrams of structural equation models always contain arrows going from one variable to another; these arrows are meant to indicate the direction of the causal effect. A given endogenous variable for instance might be modelled as a sum of effects (determined by structural parameters) from exogenous and other endogenous variables. In reality, however, the structural parameters are regression

coefficients of one variable on the other (diagrammatically represented by arrows from the latter to the former).

The fact, however, that the structural parameters are worked out in the context of a whole structural model lends more credibility to causal interpretations than would be the case with a more atomized approach. Proper use of structural models involves the translation and specification of theoretical expectations in the form of structural equations. Almost all well-developed theories make causal statements: if these, expressed as a set of structural equations, turn out to be compatible with the data, one has a stronger case for inferring causality than if ad hoc and expedient adjustments have to be made to coax a set of equations to produce a structure compatible with the data. A further advantage of structural equation modelling is that error in both the measurement and the structural models can be taken into account (through the ε, δ and ζ parameters, which will be discussed in the chapter dealing with the statistical methods). This accommodation of error is achieved by measuring each factor in more than one way, thus allowing the separation of common variance from unique variance. A more veridical picture of causal relations is likely to emerge when these relations are between latent variables rather than manifest variables which are unreliable.

Not all theorists regard causality as a necessary concept in prediction models. Siebold (1980) claims that the soundest approach is to regard the relationships between factors as "associations". Causality cannot be apprehended or definitely demonstrated, and, according to Siebold, causal accounts seem too mechanistic to be good models for human functioning. However, causal models can be divided into two categories, strong and weak. In the strong approach, causal factors are seen as predetermining. If a completely comprehensive model were specified and if the measuring instruments were good enough to allow the extraction of precisely the intended underlying factors, then the model should fit the data perfectly. In the weak approach a model can be seen as no more than useful in predicting certain outcomes: predictor variables in whatever combination do not exert an immutable and perfectly specifiable effect on future events. The strong and weak models may be called respectively the scientific and the statistical. Hewes (1980) refers to them as deterministic and stochastic.

The issue of whether human functioning (and possibly even the functioning of other phenomena in the universe) is best accounted for by deterministic or statistical explanations is not likely to be resolved in the near future, if ever. Hewes (1980) states that as our knowledge of human functioning is incomplete, our ability to explain that functioning is statistical even if a deterministic explanation were possible given god-like knowledge. As such knowledge is not available to today's psychologists (and probably will not be to their successors) the statistical-deterministic argument reduces to a difference of opinion regarding the nature of man.

This author endorses the statistical viewpoint, that no scientific model, even under perfect conditions, will be able to predict behaviour faultlessly due to the intervention of fundamentally unknowable "factors". In this regard, he endorses Kenny's (1979) contention that human free will "rests in the error term" along with other sources of variance which the experimenter has not been able to account for due to weaknesses in his approach.

In terms of actual experimental practice, however, it seems to make little difference whether one supports a statistical or a deterministic approach. The most clearly observable difference between these two approaches is in the extravagance of the claims made for their prediction models.

4.4 Models of Behaviour Prediction

Three important behaviour prediction models will be discussed in this section: those of Fishbein, de Fleur, Triandis and their co-workers.

4.4.1 Fishbein-Ajzen model

A description and theoretical justification of the Fishbein-Ajzen behaviour prediction model can be found in a number of publications, including Fishbein (1967b, 1979); Ajzen and Fishbein (1969, 1970, 1973, 1980) and Fishbein and Ajzen (1975). Fishbein and Ajzen see behaviour towards an attitude object as the resultant of the weighted sum of attitudinal and normative effects:

$$B \approx BI = [Aact]W_0 + \Sigma[NB_i MC_i]W_1$$

where

B	is behaviour towards the attitude object,
BI	is behavioural intention,
Aact	is the individual's attitude towards the behaviour in question,
NB_i	is the normative belief of reference group i concerning the behaviour in question,
MC_i	is the motivation to comply with the norms of reference group i and
W_0 and W_1	are empirically derived weights to maximize the multiple correlation between expressed behavioural intention and the prediction model.

Several explanatory comments must be made about this model. Firstly, no fundamental distinction is made by Fishbein and Ajzen between behaviour and behavioural intention. It is assumed that these two variables are highly related to each other, but it is accepted that the strength of the relationship is affected by the generality of the behavioural intention and the length of time between the measurement of behavioural intention and the occurrence of the overt behaviour.

Secondly it should be noticed that the attitudinal variable is an index of attitude towards the behaviour in question rather than an attitude towards a social object. The model is therefore usually used to predict a specific behaviour rather than a more general behavioural orientation.

A third point is that Fishbein and Ajzen do not regard normative pressure per se as a factor influencing behaviour; this factor has an effect on behaviour only inasmuch as the individual is motivated to comply with normative pressure. In some experimental applications, however, the "motivation to comply" multiplier has been dropped from the model without any appreciable loss in predictive power (see Ajzen and Fishbein, 1969). It should be noticed also that Fishbein and Ajzen make provision for a number of sources of normative influence in their model.

Fourthly, Fishbein and Ajzen regard the attitudinal and normative factors as the only two factors which (jointly) determine the nature and intensity of behaviour. Any other variables do not affect behaviour directly but do so through the attitudinal and normative variables. Hence Fishbein and Ajzen regard their model as comprehensive and not as a first approximation to a more complex state of affairs.

Fifthly, it should be noted that a single weight is applied to all NB variables, although there is no reason why separate weights should not be applied to each NB.

Sixthly, it should be noticed that the Fishbein-Ajzen model is purely additive: no provision is made for any possible interaction or causal relationship between attitudes and social norms, but allowance is made for the possibility that the relative strengths of the two factors might vary from one situation to another. Apart from the omission of an interactional term or terms, the Fishbein-Ajzen paradigm is a concrete example of Lemon's (1973) third type of model (described in this chapter).

Fishbein and Ajzen have tested the model empirically in a number of studies. Ajzen and Fishbein (1969) modified the model to include a further predictor which they called personal normative beliefs: also they used NB as a predictor on its own. The authors measured students' attitudes to eight possible Friday night activities, using four seven-point Semantic Differential scales (examples: watching a western on T.V., going to a concert, going to a party). Personal normative beliefs were measured on a single 7-point scale, e.g.:

I personally think I should go to a party on a Friday night.

Probable |——|——|——|——|——|——|——| Improbable

Normative beliefs of a reference group (personal friends) were measured in a similar way. In the example quoted above, the statement accompanying the probable-improbable scale was: "My friends expect me to go to a party on a Friday night".

Behavioural intention was also measured on a seven-point scale of

probability. A paired comparison design (which pitted all Friday night activities used in the study against each other in pairs) was employed as an alternative way of determining behavioural intention.

For all activities the correlations of attitude, normative belief and personal normative belief were significant beyond the 0,01 level. The multiple correlations (R) of the three predictors with the criterion (behavioural intention) varied from 0,68 to 0,82. In six of the eight activities, personal normative beliefs carried the heaviest β weight. Correlations of this variable with the criterion ranged from 0,54 to 0,82; in many cases only a slightly better prediction was obtained by employing the other two variables in the prediction models. (Most of the correlations of these variables with the criterion were nevertheless substantial, indicating that the predictors were for the most part highly correlated.)

In subsequent studies, Fishbein and Ajzen abandoned the personal normative belief variable on the grounds that it is merely an alternative way of determining behavioural intention. (The weakness of employing behavioural intention instead of genuine overt behaviour as a criterion can be seen here: if overt behaviour had been used, personal normative belief could have been used more justifiably as a predictor.)

Ajzen and Fishbein (1970) devised a prisoner's dilemma type game, which made it possible to measure actual behaviour in the laboratory. The game was played under three conditions: co-operation (with fellow player), individualism and competition (with fellow player). The authors hypothesized that NB (the perceived expectation of the other player) would be more effective than Aact (attitude to choosing particular alternatives in the game) in the co-operative condition. The opposite was hypothesized to occur in the competitive condition, with the individualistic condition falling in between. The relevant variables were measured in a similar way to that used by Ajzen and Fishbein (1969). Multiple correlations between the predictors and the criterion (actual behaviour in the game) ranged from 0,50 to 0,79. Aact correlations with behaviour varied from 0,27 (co-operation) to 0,77 (competition), demonstrating the substantial effect which situational variables have on the attitude-behaviour relationship.

Behavioural intention and behaviour were found to correlate 0,84. The different experimental conditions were found to affect the β weights in the expected manner. The correlation between the two predictors was also found to vary from condition to condition (from 0,20 under the co-operative condition to 0,65 under the condition of individualism). Ajzen and Fishbein (1970) claim that their results indicate that behavioural intention mediates the effect of the other two variables on overt behaviour: when behavioural intention was statistically controlled, the correlations of the attitudinal and normative variables with overt behaviour were reduced substantially.

A point should be borne in mind, however. The behaviour required of the subjects was unfamiliar, not part of their day-to-day repertoire and the experimental situation was highly artificial. It is possible, even likely, that in the real life situation many factors influence behaviour which were not present in the experimental situation. Therefore it cannot be concluded that this study offers any conclusive evidence that behavioural intention mediates behaviour in real life, or that the Fishbein-Ajzen model, with its two predictors which are held to mediate all other behaviour-influencing effects, predicts behaviour accurately in real life. Only a study conducted in more natural circumstances could demonstrate that. The issue of mediation will be discussed further in this section and in 4.5.3.

De Vries and Ajzen (1971) used the model to predict cheating behaviour in college. Only self-reports of cheating were used as the criterion; thus both predictor and criterion variables were measured using pencil-and-paper self-report instruments. The common measurement method and the likely presence of a substantial "lie" factor probably boosted the level of prediction to quite a substantial degree. De Vries and Ajzen's study utilized the Fishbein-Ajzen model's provision for incorporating more than one normative factor. (Three factors: family, friends and classmates were included.) Multiple correlations ranging from 0,57 to 0,71 were obtained for three types of cheating behaviour. Aact correlated between 0,32 and 0,40 with the criteria and NB correlated between 0,35 and 0,53 with them. In all cases the multiple correlations were substantially higher than the correlation of any individual predictor with the criterion.

Bearden and Woodside's (1978) study on marijuana usage amongst college students also employed self-reports of behaviour as a measure of actual behaviour. Using the Fishbein-Ajzen model, a multiple correlation of 0,56 was obtained with the criterion. Both the normative and the attitudinal components of the model contributed significantly to the prediction.

A study by Harrell and Bennett (1974) comes closer to being in a "real life" situation than those used by Fishbein and his colleagues. This study attempted to predict the behaviour of physicians in prescribing five different brands of drugs for diabetes. The authors compared the Fishbein-Ajzen model with an alternative model which, instead of employing a single weighted attitudinal variable, used a number of separately weighted beliefs about the drug (e.g., "Might cause hypoglycemic reactions"). For the five brands, the Fishbein-Ajzen model produced multiple correlations ranging from 0,41 to 0,54. The alternative prediction model managed multiple correlations ranging from 0,43 to 0,60. Therefore there was very little difference in the predictive powers of the two models, despite the greater complexity of the new model. The experimenters found fairly modest correlations between behaviour and behavioural intention (between 0,27 and 0,52). They suggest using measures of behavioural intention as predictors rather than a criterion. This study reveals that in a more realistic setting both the strength of the behaviour-behavioural intention relationship and the overall predictive power of the Fishbein-Ajzen model is reduced, probably because of the influence of variables which are not operating strongly in the laboratory situation. These variables might influence the process of forming behavioural intentions and mediate the relationship between behavioural intention and overt behaviour.

Zuckerman and Reis (1978) also attempted to predict behaviour in more realistic circumstances. Blood donation was the content area. Three behaviour prediction models were compared, but we will concern ourselves only with the Fishbein-Ajzen model, which was the most successful. Subjects were approximately 200 university students. The experimenters measured attitude, normative pressure and behavioural intention at one point in time; two weeks later, the Red Cross conducted a blood drive and Zuckerman and Reis were able to collect

actual blood donation behaviour. A stepwise regression analysis was performed on the data. As in the Harrell and Bennett (1974) study, behavioural intention was used as a predictor. The most parsimonious and effective set of predictors was behavioural intention and attitude. This combination produced a multiple correlation of 0,49 with the criterion. The Fishbein-Ajzen model's prediction that all the predictive power of attitude (and normative pressure) should be channelled through behavioural intention was not upheld. (Bagozzi's 1981a, and Bentler and Speckart's 1979, studies also examined this issue. See Subsections 4.5.2 and 4.5.3.) The correlation of approximately 0,5 with the criterion which Zuckerman and Reis (1978) and Harrell and Bennett (1974) obtained is probably more of the order which one would find in many real-life situations than those found in artificial situations (as in the Ajzen and Fishbein, 1970, study) or in experiments where the criterion is of the self-report variety (as in Ajzen and Fishbein, 1969).

Songer-Nocks (1976) set out to investigate the performance of the Fishbein-Ajzen model under various conditions, albeit in a laboratory setting. Subjects were given a task akin to the prisoner's dilemma game used by Ajzen and Fishbein (1970). Several different conditions were included in the study: competitive vs. non-competitive, feedback vs. no feedback, prior experience vs. no prior experience, incentive vs. no incentive. Sex was also taken into account as a variable. Altogether, 160 pairs of subjects were involved. Experience was found to have a dramatic effect on the nature of the model: Aact carried a non-significant regression weight when participants had had no prior experience with the behaviour, but a significant weight when subjects were experienced in the task. Also NB carried a non-significant weight under the competitive condition but significant under the non-competitive condition. Both of these findings make theoretical and intuitive sense. In particular the former is in accord with theory on the effect of behavioural familiarity on the attitude-behaviour relationship. Songer-Nocks regards the changes in the sizes of the regression weights from condition to condition as a weakness of the Fishbein-Ajzen model, but it is arguable whether the model should be blamed for this.

Songer-Nocks also computed the predictive powers of a number of other

models incorporating experience, feedback, incentive, motivational set and sex variables; she also allowed for double and triple interaction of the variables. In this way 77 variables were generated, which produced a multiple correlation of 0,87 with the criterion (as opposed to 0,56 using the original two Fishbein-Ajzen variables). It should be borne in mind, however, that the likelihood of substantially capitalizing on chance variance is very large when employing so many predictor variables. An 11-variable model correlated 0,71 with behaviour, but the inclusion of one more variable - behavioural intention - significantly increased the size of the multiple correlation with behaviour (to 0,77) and also reduced the β weights of Aact and NB to non-significance; this suggests that BI was sufficient to account for the variance in B explained by Aact and NB. This finding indicates that equally effective behaviour prediction might be obtained merely by asking the individual what he will do rather than by assessing his attitude and determining his perception of normative pressures. However, different results might have been obtained under more realistic circumstances. Also the BI variable is likely to be a useful predictor only when attempting to predict specific behaviours, not more general behavioural orientations.

Schwartz and Tessler (1972) investigated the effectiveness of the Fishbein-Ajzen model in predicting behavioural intention to donate kidneys, hearts and bone marrow to relatives and strangers. There were six (3x2) conditions for the organ donation. The sample comprised 195 adults in Midwestern US city (who were approached to fill in questionnaires while waiting at bus and airport terminals and laundromats) and 125 employees drawn from a telephone company. The three component version of Fishbein-Ajzen model was used. (Personal normative beliefs was used as the third predictor.) The authors found that the β weights were relatively stable across the six conditions. Multiple correlations with behavioural intention varied from 0,67 to 0,77. The authors question Ajzen and Fishbein's (1969, 1979) assertion that Aact is a superior predictor to A_0 (attitude-to-object). When A_0 rather than Aact was used in the prediction equation, the predictive power of the model was not affected appreciably ; the multiple correlations ranged from 0,63 to 0,75.

Schwartz and Tessler also investigated the effectiveness of the

Fishbein-Ajzen model in mediating seventeen other variables. In several cases the partial correlations of these variables with behavioural intentions (while controlling for the effects of the model's components) were significantly different from zero, thus indicating that the model was not adequately mediating the effects of these variables. Age, religiosity and occupational prestige were not mediated completely by the Fishbein-Ajzen predictor variables. In a follow-up study involving overt behaviour (volunteering to become a transplant donor), BI and B correlated only 0,38. The time lapse is probably partly responsible for the weakness of the BI-B relationship, but it seems likely that the correlation was attenuated by one or more factors mediating this relationship.

Fishbein and Ajzen's (1975) claim that their model is "complete" (i.e., that the two predictors account for all behaviour-causing influences) has not found a great deal of empirical support. Schlegal, Crawford and Sanborn (1977) used the model's two predictor variables as well as 33 other possible predictor variables in a study of adolescent alcohol use. The 33 other variables added very little to the prediction provided by the basic model. Most studies, however, such as those of Landis, Triandis and Adamopoulos (1978), Bagozzi (1981a, b), Bentler and Speckart (1979, 1981) (all to be reviewed in this chapter), as well as the Schwartz and Tessler (1972) study which we have just reviewed, find that the Fishbein-Ajzen model does not qualify to be called complete or deterministic.

Graen (1969) used an instrumentality-value model based on that of Vroom (1964) to predict job performance. The Vroom and Graen models are not general models of behaviour prediction, but Graen's conclusions might have relevance for the more general Fishbein-Ajzen paradigm. Graen suggests that performance improvement (in the work situation) is a function of three main factors:

(1) "External pressure", i.e. the individual's perception of what others expect him to do, and the pressure he feels they would apply to influence him to comply with their expectations. This factor bears a very strong resemblance to Fishbein-Ajzen NB (normative beliefs) factor.

(2) "Path-goal utility" a concept borrowed from Georgepolous, Mahoney

and Jones (1957). This is defined as the attitude towards a behaviour as a means to attain the role of effective performer with its accruing role outcomes. In Fishbein and Ajzen's more general behaviour prediction paradigm this could be interpreted as simply attitude towards the act (Aact).

(3) The individual's perceptions of the probability of various intrinsic consequences of the act and his preferences for attaining these various consequences. This third factor is not represented in the Fishbein-Ajzen model.

It will be remembered from Section 4.2 that Gross and Niman (1975), amongst the situational factors which they claim affect behaviour, list one which they call expected and/or actual consequences of various acts. Gross and Niman claim that this factor covers most, if not all, situational effects; hence all other situational factors (like normative pressures) should be seen as special cases of this general factor. Fishbein and Ajzen's model takes into account only social situational factors. If we interpret Graen's (1969) third component as a "non-social situational factor", then the incorporation of this in the Fishbein model might improve its predictive powers, especially when behaviour rather than behavioural intention is the criterion. In Schwartz and Tessler's (1972) study, for instance, the poor BI-B correlation might be due to the fact that when actual behaviour was involved, the subjects started taking certain consequential factors into account which they had not done when they were merely asked to express their intentions. (They might have considered the following factors: having to stay off work to donate an organ ard possible negative physical effects to themselves.)

An alternative way of seeing the perceived consequences factor is to interpret it not as an external factor, but an internal one, representing the cognitive component of attitude, or a separate cognitive factor. These comments should be borne in mind while reading the review of the Triandis model.

The Fishbein-Ajzen paradigm makes no provision for interactive (multiplicative) effects. Lemon (1973) suggests that attitudinal and situational effects might interact to produce behaviour; Fishbein and

Ajzen on the other hand assume that attitudinal and social factors have a purely additive effect on behaviour. Liska (1974a), in a reanalysis of the data of Warner and de Fleur (1969) and Fendrich (1967), found significant or near-significant interaction effects. Magura (1974) puts forward what he calls an interactive model which in effect is an extension of the Fishbein-Ajzen model:

$$\text{Behaviour} = W_1(A) + W_2(SS) + W_3(A)(SS) + E$$

where

A	is attitude,
SS	is social support,
E	is error, and
W_1, W_2 and W_3	are empirically derived weights.

The results of a study by Rosen and Komorita (1971), although not conducted within the Fishbein-Ajzen paradigm, show that the most effective combination of their two predictors (behavioural intention and perceived effectiveness of act) was multiplicative and not additive. (The product of the predictors correlated 0,59 with the behavioural criterion whereas the multiple correlation with the criterion was 0,48.) The studies of Schwartz and Tessler (1972), Andrews and Kandel (1979), Songer-Nocks (1976) and Acock and de Fleur (1972) indicate that interactive effects might be important in behaviour prediction.

A criticism which has been levelled against the Fishbein-Ajzen model is that insufficient distinction is made between the attitudinal and normative factors (Miniard and Cohen, 1981). This appears to be due to Fishbein and Ajzen's (1975) "cognitive" way of measuring attitude through evaluation of belief. Perceived normative pressures are also beliefs, and it is sometimes possible to rephrase an element which would be used normally in the computation of attitude so that it appears to be a normative pressure element. Fishbein and Ajzen (1981) refute Miniard and Cohen's assertion that their attitudinal and normative pressure constructs are not sufficiently distinct from each other. Nevertheless, a case can be made for interpreting attitude in a more "affective" way (see for instance Triandis, 1979).

That concludes the discussion of the Fishbein-Ajzen model. A number

of studies using structural equation modelling have also investigated the Fishbein behaviour prediction theory (e.g., Bagozzi, 1981b; Bentler and Speckart, 1979; Bentler and Speckart, 1981). These studies are discussed in a separate section (4.5.3).

4.4.2 De Fleur model

De Fleur and Westie (1958), in a study on the verbal and behavioural manifestations of racial prejudice, comment as follows on the modest relationship between these two variables which they found (p.672):

> The lack of a straight-line relationship between verbal attitude and overt action behaviour more likely may be explained in terms of some sort of social involvement of the subject in a system of social constraints preventing him from acting (overtly) in the direction of his convictions, or otherwise "legitimizing" certain behavioural patterns. These channelizing influences on behaviour have received theoretical attention in terms of such concepts as "reference groups", "other directedness" and "significant others".

From this orientation came the contingent consistency approach of Warner and de Fleur (1969). Like Fishbein and Ajzen's approach, the contingent consistency approach does not see attitude as the sole causative factor underlying behaviour; overt behaviour is claimed to be contingent on a number of variables and interactions of variables. However the variables are not identified and defined with sufficient rigour.

Albrecht and Carpenter (1976) point out one of the basic problems of the Warner-de Fleur approach: it pays scant heed to the scientific requirement of parsimony. The model (if one can use so strong a term to describe it) fails to give guidance for the selection of those social constraint variables which are crucial and require inclusion in the prediction paradigm. Widespread interest in the contingent consistency orientation has led to the identification by researchers of a large number of variables which may mediate the attitude-behaviour relationship. But "parsimony demands that these be limited

to some manageable set", as Albrecht and Carpenter (1976, pp.2, 3) say. In this respect the Fishbein-Ajzen model is superior, for it clearly identifies its predictor variables.

Acock and de Fleur (1972) alter position slightly and made the model more precise: they call the modified theory a "configurational" approach to contingent consistency. This approach, inspired by the theoretical insights of Yinger's (1965) field theory of behaviour, assumes that both social and attitudinal factors influence behaviour, but to a somewhat limited degree. The most powerful behaviour-influencing factor is seen to be the interaction between attitude and social variables.

Acock and de Fleur (1972) applied this model in a study involving voting behaviour (for or against legalizing marijuana). Two hundred-and-two students responded to a Likert-type questionnaire on attitudes towards legalizing marijuana. The experimenters also measured perceived parental and peer position on the legalization of marijuana. Subjects were dichotomized into favourable and unfavourable groups. Subjects were in addition categorized according to whether their parents were perceived to be opposed or not opposed to legalization and also according to whether their peers were perceived to be opposed or not opposed to legalization. Having thus categorized the subjects in three ways (on one attitude and two normative variables), the authors were able to calculate the probability of a "yes" vote for subjects in different categories.

It was found that over the whole sample there was an estimated probability of 0,204 of voting "yes" to marijuana legalization. For those whose attitude to legalization was positive, this probability jumped to 0,429; hence attitude had a fairly substantial effect on the behaviour, but it certainly could not be used to predict behaviour accurately. Perceived favourability to legalization on the part of peers also increased the estimated probability of voting "yes" (from 0,204 to 0,375) but perceived favourability on the part of parents unexpectedly reduced this probability. The estimated probability of those subjects voting "yes" whose attitudes were positive and who perceived their peers to be favourable was 0,822. The estimated probability of those subjects voting "yes" who responded positively to all three predictor variables was 0,942.

Prediction becomes very uncertain for those subjects who experience what Acock and de Fleur call "cross pressures". For instance, in the case where personal attitudes were positive, parents were perceived to be positive and peers were perceived to be neutral, the probability of a "yes" vote was only 0,300.

4.4.3 Triandis model

We come now to the model developed by Triandis. The sources from which the following description of the model was obtained are Triandis (1977, 1979) and Landis et al. (1978).

In this model, behaviour is seen to be a function of the following four factors:

(1) Behavioural intention, which itself is a function of attitude and social norms.

(2) Habits or past behaviours which are relevant to the attitude object in question.

(3) Relevant arousal; physiological phenomena are to be included in this category.

(4) Facilitating conditions; these are environmental factors relevant to the behaviour.

Triandis (1979) mentions a welter of other factors which have direct or indirect influence on behaviour, but we will confine ourselves to the basic model in this discussion.

The main relationships between attitude and behaviour are contained in two equations. The first is:

$$Pa = (w_H H + w_I I)P \times F$$

where

Pa	is probability of an act's occurrence,
H	is habit or history of performing the act,
I	is behavioural intention,
P	is physiological arousal,
F	is facilitating conditions and
w_H and w_I	are empirically derived weights.

The Triandis model incorporates three factors which are not explicitly present in the Fishbein-Ajzen and de Fleur models. These are habit, physiological arousal and facilitating conditions. Physiological arousal and facilitating conditions are generally very difficult to assess adequately and are often left out of the equation for this reason. Habit, however, is included where there is a past history of performing a given act in the population under study.

Habit can influence the weight assigned to the I variable. According to Triandis (1979, p. 216):

> H is the habit to perform the act that reflects automatic behaviour tendencies developed during the past history of the individual, such that particular stimuli elicit the act even when the individual does not instruct himself or herself to perform the act. Habit reflects both the individual's ability relative to the task, and past experience, such as rewards or punishments which followed the performance of the act.

Hence the theory holds that as habit builds up, the importance of intention as a predictor of behaviour declines until, in the case of highly overlearned activities, intention plays virtually no role. The model therefore is an amalgam of latent process and learning theory concepts.

Intention is seen as a function of other factors. The second basic equation expresses this relationship:

$$I = w_S S + w_A A + w_C C$$

where

S	is the individual's self-instruction to do what is correct from the point of view of his moral code,
A	is the affect attached to the behaviour,
C	is the value of perceived consequences, and
w_S, w_A and w_C	are weights.

In mathematical terms, the consequences factor is expressed:

$$C = \sum_{i=1}^{n} P_{C_i} \times V_{C_i}$$

where

P_{C_i} is the perceived probability that the act will have consequence i, and

V_{C_i} is the value of consequence i.

The S factor shares some similarity with Ajzen and Fishbein's (1980) normative factor but also includes a moral element. The Fishbein-Ajzen model's attitudinal concept is a mixture of A and C. Fishbein and Ajzen's theory is "based on the assumption that humans are rational animals that systematically utilise or process the information available to them" (Fishbein 1969, p.66). The theory is therefore very "cognitive"; even affect is seen to have a cognitive base. Affect (attitude) results from cognitive considerations, hence C is involved in the creation of A, but does not have an independent role to play in behaviour prediction. Triandis, on the other hand, allows for the separate influence of rational (C) and more affective, possibly irrational, factors (A).

Landis et al. (1978) and Triandis (1977) offer support for the H and C factors. Triandis (1977) associates C with subjective utility, a construct which has been discussed in 2.2.5. Landis et al. (1978) studied the prediction of teacher behaviour in the classroom. They found habit to be a more potent predictor than attitude. The importance of the H factor in this study was apparently due to the fact that the teachers had engaged in the measured behaviours in the past and with different frequencies.

Support for Triandis's habit factor also comes from a sophisticated structural equation study conducted by Bagozzi (1981a). He found that past behaviour (blood donation) had a considerable impact on behavioural intention and future behaviours; also the inclusion of past behaviour as a predictor attenuated the weight carried by attitude in the prediction equation.

Brinberg (1979) compared the Fishbein-Ajzen and Triandis models in the domain of church/synagogue going activity. Three groups of subjects were involved: Catholics, Protestants and Jews. Overall, the Triandis model tended to outperform the Fishbein-Ajzen model. In this study, a distinction was made between moral norms (Triandis) and

social norms (Fishbein); hence the normative components of the two models differed. For the Protestants, consequences, C, which the Fishbein-Ajzen model does not have, carried the heaviest prediction weight. For Catholics, moral norms (obligations) was the most important predictor (again, the Fishbein-Ajzen model does not have this factor). For Jews, the heaviest weight was carried by affect (attitude). Moral norm might not always be as effective a predictor as it was in this study which dealt with religious activities. The Fishbein-Ajzen model does, however, seem to be at a disadvantage due to the lack of separate affective and cognitive components.

Before moving on to the next section it would be useful to compare and contrast the three prediction models which have been reviewed. All three acknowledge the importance of internal (attitudinal) and external (normative or situational) factors. The Fishbein-Ajzen model limits external factors to social pressures from reference groups. The contingent consistency theory also appears to restrict its situational component to social factors, although, unlike the Fishbein-Ajzen approach, interaction between internal and external factors is allowed. The Triandis model differs from the Fishbein-Ajzen model in three major ways. Firstly, the Triandis model makes separate accommodation for affective and cognitive responses, whereas these are combined into a single index in the Fishbein-Ajzen model. Secondly, the Triandis model makes provision for past behaviour or habit as a predictor of future behaviour. In the Fishbein-Ajzen model, habit is not accorded causal status and is presumably seen to have its effects completely mediated by attitude. Thirdly, the Triandis model admits the influence of a number of other personal and physiological factors, whereas the Fishbein-Ajzen model does not.

Both the Triandis and Fishbein-Ajzen models can accommodate the situation where both predictors and criterion vary along a continuum, whereas the de Fleur model is more stochastic and aims at determining probabilities of particular types of behaviour given a certain set of conditions. Generally only two types of behaviour are involved (presence or absence), but one could imagine the method expanded to accommodate more. The theoretical work of Jaccard, Knox and Brinberg (1979) and Jaccard (1981) is moving in this direction. The major problem with this type of approach, however, is that it cannot be used

unless a comprehensive universe of alternative behaviours can be specified. The Fishbein-Ajzen and Triandis models can be used even when such a universe cannot be specified.

4.5 Research using Structural Equation Modelling

In recent years, flexible programmes have become available which can analyze data intended to examine a wide variety of structural models. The programmes have found ready applications in econometrics and the social sciences, both disciplines which are striving to develop and test models incorporating increasingly complex sets of interacting phenomena. (See for instance Maruyama and McGarvey's, 1980, study on the interrelationships between socioeconomic status, peer and adult acceptance and achievement orientation.) In the field of attitude measurement and behaviour prediction, structural equation modelling is beginning to take over from the more primitive and limited regression methods used in many studies such as those mentioned in Section 4.2. The emergence of generalized structural modelling techniques postdates all major theoretical developments in the behaviour prediction domain. The authors of all three of the prediction models described in the previous section have not attempted to specify and test their theories using structural equation modelling. Users of modelling methods on the other hand are not theorists in any large sense of the word: up to this point, they have restricted themselves to testing aspects of existing theories, not developing new ones.

The computer programme most widely used in studies investigating structural interrelationships is LISREL, which is a contraction of linear structural relations analysis. LISREL has been developed by Jöreskog and his co-workers and exists in various versions. A description of one of the more recent versions of the programme can be found in Jöreskog and Sorbom (1978).

Not all the studies described in this section concern themselves with behaviour prediction; some deal purely with attitudes. Also some of the studies do not investigate models strictly based on the Fishbein-Ajzen theory or other formal theories. However, it is thought desirable to present the structural equations research in one section.

The studies to be reviewed here can be divided roughly into three categories: those dealing with interrelationships among attitude components or among attitudes; those mainly concerned with the attitude-behaviour relationship; and those which examine more comprehensive behaviour prediction models. We shall deal with these three categories in turn. The review presented in the following three subsections assumes some knowledge of structural equation techniques. A detailed description of the techniques is contained in Chapter 7.

4.5.1 Attitude organization

Campbell and Fiske's (1959) multitrait-multimethod (MTMM) approach is well suited to the study of the interrelationships among the components of attitudes. This approach requires the employment of a number of distinct methods to measure each of more than one attitude component. If there are m methods employed to measure n components ("traits"), then there will be mn distinct measures or scales. Once these scales have been applied to a sample of respondents, the data may be used to generate a mn x mn covariance or correlation matrix.

Campbell and Fiske (1959) identify three types of element in this matrix: correlations amongst different traits using the same method (heterotrait-monomethod correlations); correlations amongst the same traits using different methods (monotrait-heteromethod correlations); and correlations amongst different traits using different methods (heterotrait-heteromethod correlations). Campbell and Fiske (1959) are concerned with the examination of convergent and discriminant validity of data collected using the MTMM approach. Convergent validity can be described as the degree to which the results of different measurement methods are in agreement with one another in the measurement of a trait, and discriminant validity the degree to which different traits are distinguishable from one another. Four criteria are mentioned by Campbell and Fiske for evaluating convergent and discriminant validity in MTMM matrices.

Criticisms have been levelled against these criteria (Jackson, 1969; Kenny, 1976; Schmitt, 1978). Campbell and Fiske's (1959) methods for analyzing MTMM matrices amount to little more than comparing the

magnitude of different types of correlation. (See Section 7.3 for a discussion of the weaknesses of the Campbell and Fiske method of analyzing MTMM data.)

Several investigations into the construct validity of the affective, cognitive and behavioural components of attitude using multiple measures of each component have been undertaken, but analysis methods have often been inadequate. Examples of studies using exploratory factor analysis or Campell and Fiske techniques are Woodmansee and Cook (1967), Ostrom (1969) and Kothandapani (1971), but due to the weaknesses in the techniques, the findings are open to question.

Schmitt, Coyle and Saari (1977) review six methods of analyzing MTMM matrices, including a form of structural equation analysis, analysis of variance and principle components analysis. Although these methods tend to be used for slightly different purposes, Schmitt et al. come to the conclusion that the structural equation approach is closest to being satisfactory on all counts. In structural equation analysis, the experimenter is forced to specify precisely the hypothesized interrelationships between methods and traits. An index of how well the reproduced matrix incorporating these structural specifications compares with the original matrix is available and inspection of the residual matrix can suggest modifications to the model in some cases.

Bagozzi (1978) and Bagozzi et al. (1979) examined the construct validity of the tripartite model of attitude using structural equation analysis. Bagozzi (1978) reanalyzed Ostrom's (1969) and Kothandapani's (1971) data which were originally analyzed using Campbell and Fiske's (1959) methods.

Ostrom's data deals with affective, cognitive and behavioural components of attitude to the church; 189 undergraduates responded to four types of scales measuring each component: Likert, Thurstone, Guttman and self-rating.

In Bagozzi's (1978) first hypothesis for the Ostrom data, three trait factors and no method factors were specified. All measures of the same trait (component) were constrained to have the same loading on the trait factor. The first hypothesis therefore was aimed at testing

for discriminant and convergent validity very strictly: only if all the measures of the same trait were congeneric could it be expected that the model would produce a good fit to the data. It is rare in the analysis of MTMM data to be able to reproduce a covariance matrix which is not significantly different (using a chi-square overall goodness-of-fit test) from that given by the data, when only trait factors are hypothesized. This is especially true when a large sample is involved, as the chi-square test of fit is sensitive to sample size. Not surprisingly therefore, Bagozzi (1978) did not find a satisfactory fit for the three trait (i.e., three attitude component) model and in addition, inspection of the residual matrix indicated large residuals for the self-rating scales. Bagozzi concluded that these scales might contain an excessive amount of error and excluded them from further analysis.

The second hypothesized model had six factors, one for each trait and one for each method. Method and trait factors were constrained to be independent. This model provided a very good fit to the data. Inspection of the intercorrelations among method factors indicated that the Likert and Thurstone factors were highly correlated. Consequently a third model was posited with three trait factors and two method factors, one for Guttman and one for Likert and Thurstone. This model provided a satisfactory fit. The Ostrom data hence gives support for the existence of three components of attitude, although a satisfactory fit could not be obtained until method factors were introduced. Unfortunately, Bagozzi (1978) does not report the correlations among trait factors which would give an indication of how closely related the attitude components were.

Bagozzi (1978) approached the analysis of Kothandapani's (1971) data in a similar way. In the Kothandapani study, affective, cognitive and behavioural aspects of attitudes of low-income Black women to contraception were measured. Bagozzi was not able to obtain a satisfactory fit even when a full set of trait and method factors was modelled.

The author explains these discrepant results in terms of the differing antecedent conditions of attitude formation obtaining in the two cases. Church attitudes, especially in fairly well-to-do groups, have

probably had a chance to crystallize into the three components through the long-term action of stable antecedent factors which would establish the affective, cognitive and behavioural aspects. Conditions antecedent to attitude formation are likely to have had a shorter history and been less coherent in the Kothandapani sample. A further possible reason for the failure to demonstrate clear attitudinal factors in this sample could be that, because of a lower level of literacy, the Kothandapani subjects were less able to fill in their questionnaires so as to reflect their true attitudes. The data might have more "noise" in it.

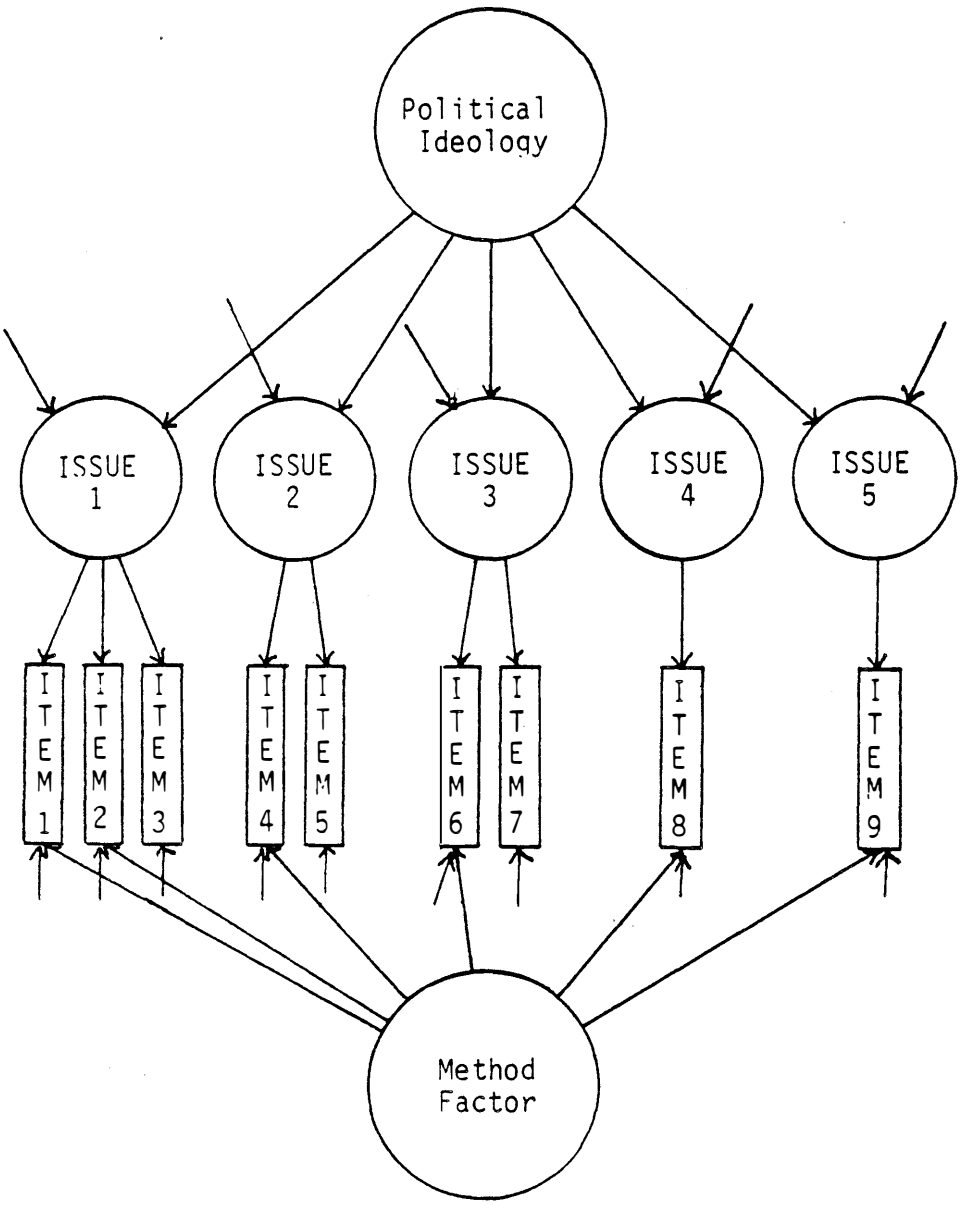
In a further study investigating the tripartite model of attitude, Bogozzi et al. (1979) measured the three components before and after subjects had been requested to perform an attitude-relevant behaviour. (The attitude measured was towards participating in laboratory experiments.) The two attitude measurement sessions were one month apart. Bagozzi et al. (1979) examined the tripartite hypothesis in a composite structural model which incorporated both measurement sessions. Unlike the Bagozzi (1978) study, only one measure of each attitude component was taken; hence the study was not in the MTMM format. However, structural relationships were modelled between an unmeasured latent trait, "overall attitude", and the three components. A border-line fit for the model was obtained. This study would have benefitted from the use of more than one measurement variable to assess each attitude component. As it stands, the component measures are manifest, not latent variables and hence not free of error. Nevertheless, the incorporation of the "overall attitude" factor in the model tests more effectively the convergent validity of the components than is possible in the MTMM studies.

It seems to the present writer that in order to investigate the validity of the tripartite theory rigorously a model which incorporates the following is needed: several (at least three) related attitude objects; the three components of each attitude measured by at least three methods each; and second-order "overall attitude" factors for each attitude which are allowed to correlate with one another. To date, no study of this type appears to have been done.

Judd and Krosnick (1982) used a structural equation approach to investigate attitude centrality and attitude organization. This study therefore did not deal with the relationship between attitudinal components but rather between attitudes themselves under two conditions: high centrality and low centrality. (An attitude may be called central to an individual if the attitude object is of importance to him.) In this study, political survey data covering five American national issues were used: social protest, the war in Vietnam, Civil Rights, industrial pollution and national health insurance. Altogether nine measures were used: the first issue was measured in three ways, the second and third both in two ways and the fourth and fifth only once. Respondents were asked to say how important the above issues were to them, and on this basis were divided into high and low centrality groups.

The structural model posited by the experimenters was as follows. Variation in the manifest variables was specified to be the sum of three components: a latent factor representing the respondent's attitude to the issue in question; a latent method factor (only six measures which shared the same method were hypothesized to be influenced by this factor); and uncorrelated error variance. The five latent issue factors were in turn modelled to be related to a second-order (political value) factor. Variance in each first-order issue factor was hypothesized to be caused by two sources: the single second-order value construct and residual variance. Figure 6 illustrates the structural relationships.

It is possible to use the LISREL structural relations analysis programme to compare the structure of the domain of the two groups. If one wishes to establish whether a particular set of parameters differs between two groups, the parameters are first estimated with no between-group equality constraints; then they are re-estimated with such constraints imposed. Each of these solutions has an associated chi-squared statistic. As the difference between two chi-squared statistics is itself a chi-squared statistic, it is possible to determine whether the model without the between-groups constraints fits significantly better than the other.



NOTE: Unlabelled arrows are uniquenesses.

Figure 6. Judd and Krosnick (1982) model

The authors posed the following hypotheses:

(a) That more central attitudes would be more strongly based on underlying values.

(b) That more central attitudes would be more extreme or polarized.

(c) That more central attitudes would be measured with less random error.

(d) That more central attitudes would be less susceptible to measurement influence due to questionnaire format or method.

Structural equation analysis as performed by LISREL makes it possible to examine all four of the above hypotheses in a rigorous way. To test the first hypothesis, two models are set up: one in which the coefficients of the issue-value links are allowed to differ between the two groups, and one in which the coefficients are constrained to be equal. The first hypothesis posits that the models will differ significantly because issue-value coefficients will be larger in the high centrality group. The second hypothesis can be tested in a similar way by comparing the standard deviations of the issue latent variables and the value latent variable. The third hypothesis can be examined by comparing the unique and error variance of the manifest variables. Finally the contribution of questionnaire format (the method factor) to scores can be determined by looking at the sizes of the structural coefficients linking the method factor to the manifest variables in both groups.

Only the second and fourth hypotheses were confirmed. No evidence was obtained to support the hypothesis that individuals who thought that the five political issues were important to them had organized their attitudes more tightly into a political ideology than those for whom the issues were less salient. Similarly no evidence was found for the hypothesis that there would be more random error in the responses of subjects for whom the issues were less salient. However, the attitudes of committed subjects were more polarized and questionnaire format did have less effect on the responses of these individuals.

Judd and Krosnick's (1982) study involves one of the most elegant and sophisticated applications of structural equation analysis to have been reported in the social science literature and illustrates the power of this type of analysis in the study of complex relationships among latent and manifest variables.

Other studies investigating the structure of attitude systems were undertaken by Judd and Milburn (1980) and Judd, Krosnick and Milburn (1981). Similar models to the one described above were used to

investigate the existence and stability of underlying political ideologies in different groups of people.

4.5.2 Attitude-behaviour relationship

It is generally claimed in attitude-behaviour theory that attitudes, being enduring traits, exert at least a partial direction over behaviour (Ajzen and Fishbein, 1980; McGuire, 1976). However, some authors (e.g., Bem, 1972) hypothesize that the causal relationship goes in the opposite direction: behaviours condition attitudes. Bentler and Speckart (1981) used structural equation analyses to investigate this question. Subjects were university students and the attitude/behaviour domains used were dating, studying and exercise. Attitude and behaviour were assessed at two points in time separated by two weeks. Three manifest variables were used to measure each of the four latent variables. Figure 7 depicts the cross-lagged model. The curved double headed arrow indicates covariance, not causality, between Attitude 1 and Behaviour 1. Attitude 2 is modelled to be influenced by both Attitude 1 and Behaviour 1; the same causal influences are modelled for Behaviour 2.

The model provided an acceptable fit for studying and dating but not for exercise. The poor fit for the third behaviour domain appeared to be due to problems with measurement rather than the hypothesized structure. In all three content areas the Attitude 1-Behaviour 2 links were significant; but in only one content area, studying, was the Behaviour 1- Attitude 2 coefficient significant. The authors concluded that their study offers support for the hypothesis that attitudes cause behaviour.

Modest and low correlations between attitude and behaviour sometimes might be due to the fact that only one component of attitude is measured. It is not always clear what this component is (if indeed it is a component). Some scales tend to be somewhat affectively biased (e.g., the Semantic Differential) while others are phrased in a more cognitive fashion (e.g., Thurstone).

Bagozzi and Burnkrant (1979) selected three "cognitive" attitude

scales and two "affective" scales. The attitude-behaviour area under consideration was religion, and the sample was composed of university undergraduates. (Data was actually taken from a study conducted by Fishbein and Ajzen, 1974.) Bagozzi and Burnkrant were unable to obtain a satisfactory fit to the data when all five attitudinal scales were modelled to be components of the same underlying attitudinal construct. Once the affective and cognitive scales were modelled to be related to separate latent traits (which were permitted to correlate), a reasonable fit to the data was obtained.

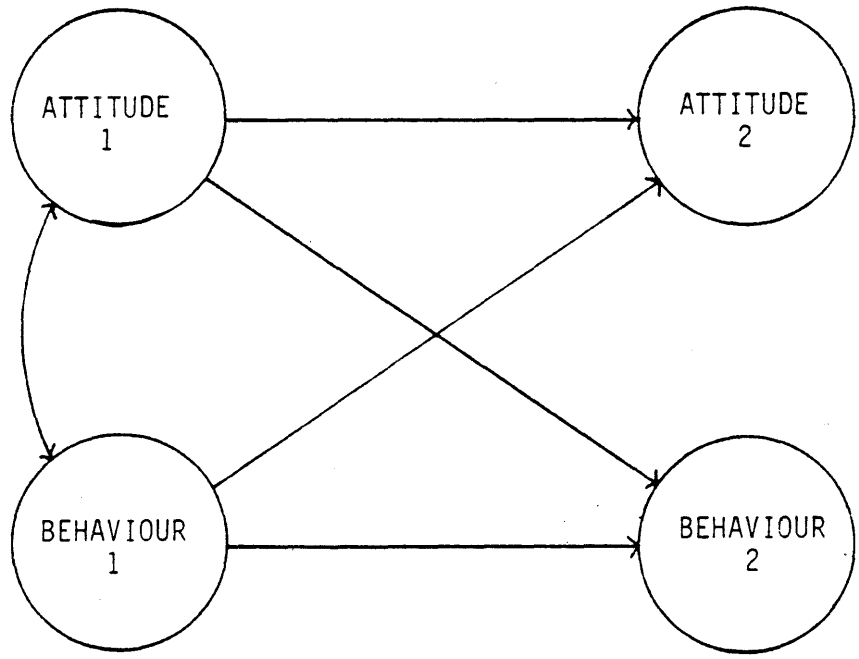


Figure 7. Bentler and Speckart (1981) Attitude-Behaviour model (Details omitted)

Both attitudinal components were then included in a behaviour prediction model. Behaviour was structured to be caused by separate affective and cognitive components which were allowed to correlate. Again, an acceptable fit to the data was secured. A noteworthy finding of this study is that the coefficient of the structural link between affect and behaviour was approximately twice the size of the coefficient of the link between the cognitive factor and behaviour. The cognitive and affective traits were quite highly correlated with

each other (0,83), so it is possible that the regression coefficients were unstable.

Bagozzi (1981a) introduced the factors of past behaviour and behavioural intention into the study of the attitude-behaviour relationship. In this study the attitude-intention-behaviour domain investigated was giving blood. This is one of the very few studies where a "real" (rather than self-report) behaviour was used. One week before a blood drive, students, faculty and staff were asked to express their attitudes towards and intentions to giving blood. The subsequent behaviour of the subjects was obtained unobtrusively from Red Cross files.. Four months later behaviour was again monitored in a similar way after another Red Cross blood drive. The experimenter therefore had two samples of behaviour, which he called "proximal" (for the behaviour which occurred immediately after the attitude measurement session) and "distal" (for the behaviour which occurred four months later).

Bagozzi's (1981a) study is complex and only certain aspects of it will be reported here. Two basic models were employed in the study: the first incorporated attitude, behavioural intention, proximal and distal behaviour; the second included in addition past behaviour as a latent variable. According to Fishbein and Ajzen (1975), attitude acts on behaviour not directly, but through behavioural intention. Fishbein and Ajzen claim that attitude and social pressure are the only factors which cause behaviour. If past behaviour has an influence on future behaviour, presumably it must effect this indirectly through attitude.

Figure 8 illustrates Bagozzi's (1981a) first model. In line with the Fishbein-Ajzen theory, the model mediates the effect of attitude on proximal behaviour through behavioural intention. Distal behaviour, however, is seen to be influenced purely by proximal behaviour.

The second model, which is presented in Figure 9, is an extension of the first model. Past behaviour (measured by asking subjects how many times they had given blood in the past) is modelled to have a direct effect on behavioural intention and distal behaviour, but not proximal behaviour, which is hypothesized to be influenced only indirectly via

behavioural intention. No causal link between past behaviour and attitude is posited, but these two factors are allowed to covary. Bagozzi (1981a) therefore proposes a structure not in accord with the expectations of the Fishbein-Ajzen theory.

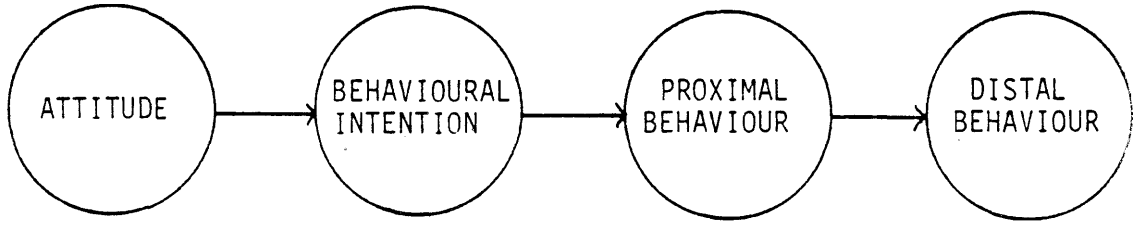


Figure 8. Bagozzi's (1981a) first model (Details omitted)

In both models past behaviour has an effect which is unmediated by attitude. In the second model this is done explicitly. There is no explicit past behaviour factor in the first model, but proximal behaviour is past behaviour by the time that distal behaviour is assessed. Bagozzi's (1981a) structures are more in keeping with the theory of Triandis (1977, 1979) than with that of Fishbein and Ajzen (1975). In the Triandis theory, past behaviour (habit) is seen to have a direct influence on future behaviour (see Subsection 4.4.3).

The causal links depicted in Figures 8 and 9 are those which Bagozzi (1981a) hypothesized would have significant structural coefficients. Other links were included, but their coefficients were expected to be non-significant. (The LISREL programme supplies standard errors of measurement for all parameters: it can be determined easily whether the value of a parameter differs significantly from zero by calculating the ratio of the parameter's magnitude to its standard error of measurement.) The following are the hypothesized non-significant links for the first model: between attitude and proximal behaviour; between attitude and distal behaviour; and between behavioural intention and distal behaviour. In the second model, an additional causal link was hypothesized to have a non-significant coefficient: between past behaviour and proximal behaviour.

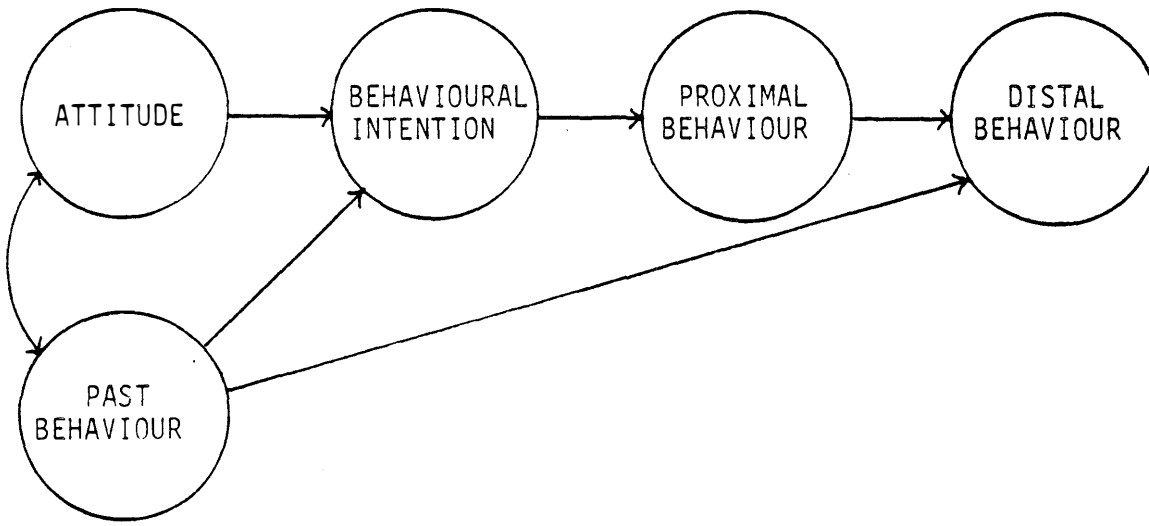


Figure 9. Bagozzi's (1981a) second model (Details omitted)

From the Fishbein-Ajzen theory, a non-significant attitude-proximal behaviour link and a non-significant past behaviour-proximal behaviour link would be expected. The theory cannot be used validly to make predictions about the other links mentioned in the previous paragraph, because attitude was not reassessed immediately prior to distal behaviour.

Both models provided satisfactory fits to the data. Those coefficients hypothesized to have non-significant values were found to have such values. Hence, the models portrayed in Figures 8 and 9 do appear to explain the data well. (In a study conducted by Bentler and Speckart, 1979, however, it was found that attitude influenced behaviour both directly and through behavioural intention. This study will be reviewed in the following subsection.) Bagozzi (1981a) found that the inclusion of the past behaviour variable in the second model attenuated the attitude-behavioural intention coefficient and the behavioural intention-proximal behaviour coefficient. This finding illustrates how the exclusion of important causal variables from a model can produce a distorted or erroneous picture of the importance of other variables as causal agents.

Although Bagozzi's (1981a) study produced some supportive evidence for

the Fishbein-Ajzen theory, it also found evidence for causal links which this theory excludes. Attitude was found to have only an indirect impact on proximal behaviour via behavioural intention, as the theory predicts. But past behaviour was found to have a direct effect on behaviour, contrary to the expectation of the Fishbein-Ajzen theory, but in accord with the Triandis theory.

4.5.3 Behaviour prediction models

The division of the structural equations literature into three subsections is somewhat artificial, and some of the studies reported in the previous subsection could arguably belong in this subsection. Nevertheless, it is felt that splitting the literature into three subsections makes it possible to present it more clearly.

The models described in the previous subsection do not include a social pressure factor, an omission which calls into question the validity of the findings based on these models.

Like Bagozzi (1981a), Bentler and Speckart (1979) examined the relationships between attitude, behavioural intention and behaviour. Bentler and Speckart question Fishbein and Ajzen's (1975) assertion that attitude (or affect) influences behaviour only through behavioural intention (or conation). These authors state (p.454): "However, since behavioral intention is quite conscious and hence cognitive in nature, a theory proposing that affect impacts behavior only via the regulation of conation-cognition would seem counterintuitive in most domains."

Bentler and Speckart's (1979) first model, which excludes past behaviour, is presented in Figure 10. In this model, attitude affects behaviour both directly and via behavioural intention. Normative pressure, on the other hand, has only an indirect influence on behaviour. Curved double-headed arrows, as usual, indicate covariance, not causality.

Bentler and Speckart (1979) introduce a past behaviour variable into a second model. As Fishbein and Ajzen (1975) see attitude and normative

pressures as the only causative factors, past behaviour must presumably act on behavioural intention and behaviour only indirectly via attitude and normative pressures. Bentler and Speckart (1979) also take exception with this aspect of the Fishbein-Ajzen model. According to them (p.454): "In contrast, the theory proposed in this article is that behavior may circumnavigate these factors in its causation of subsequent behavior in the same way that attitudes circumnavigate intentions". The complete (second) Bentler and Speckart model is shown in Figure 11.

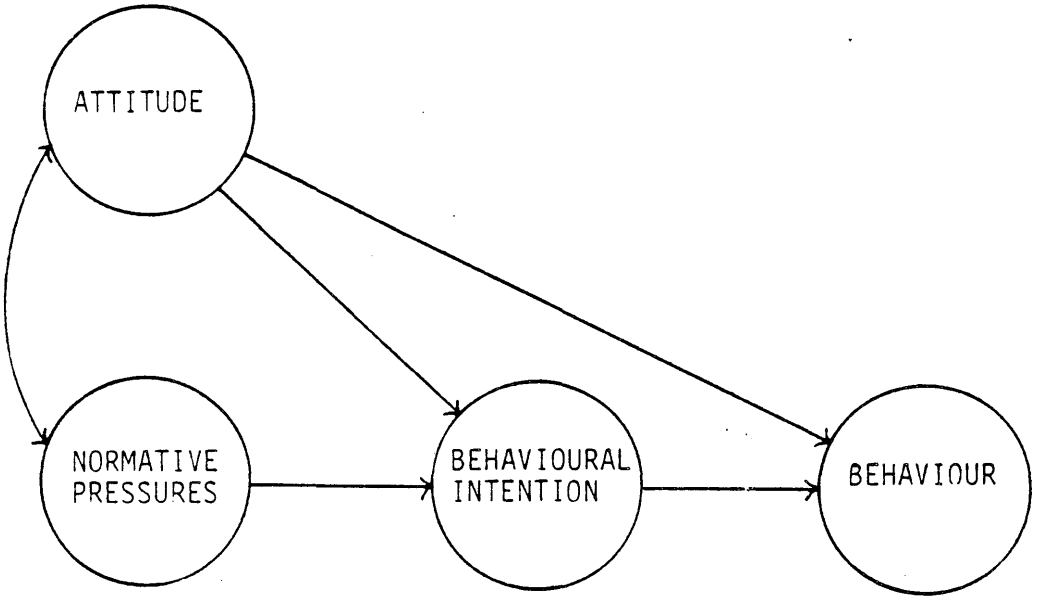


Figure 10. Bentler and Speckart's (1979) first model (Details omitted)

Subjects were 228 university students and the attitude objects were use of alcohol, "soft" drugs and "hard" drugs. Attitudes, normative pressures, intentions and past behaviour were measured at one session. Behaviour was measured a second time two weeks later and was assessed by asking the respondent the number of times that he had taken the particular type of drug in the past two weeks. All variables were measured in three ways (i.e., using three methods).

Both the Bentler and Speckart (1979) models provided satisfactory fits to the data. The critical ratios of the regression weights (i.e., the ratios of the estimated coefficients to their estimated standard

errors) indicate the indispensability of all links in the models. The simpler Fishbein-Ajzen model did not provide a good fit. The direct attitude-behaviour link in the first model is substantial; and the past behaviour-behavioural intention link and the past behaviour-behaviour link are necessary in the second model. The critical ratio of the attitude-behavioural intention coefficient is considerably lower in the second model than in the first. To a lesser extent this is also true for the attitude-behaviour coefficient. Again, it seems that the introduction of a new causal variable (past behaviour) has attenuated the causal impact of attitude in the second model, and the comments made at the end of 4.5.2 are applicable.

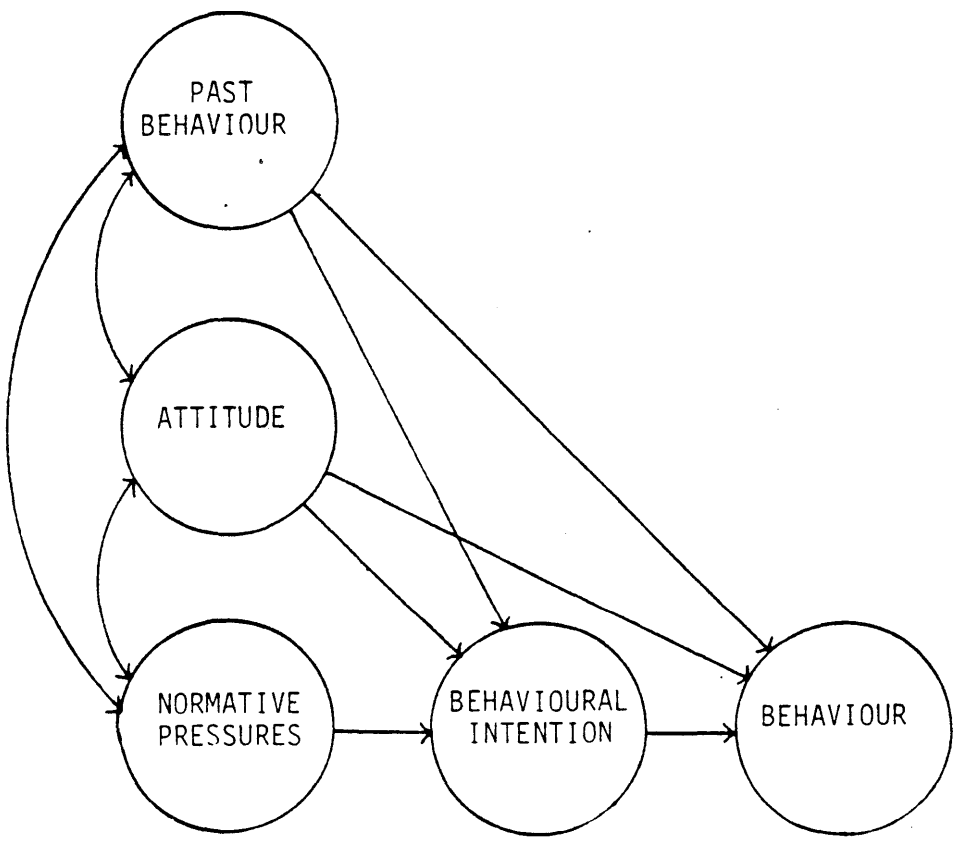


Figure 11. Bentler and Speckart's (1979) second model (Details omitted)

Bentler and Speckart's (1979) findings are at variance with those of Bagozzi (1981a) with regard to the channelling of causal effects

through the behavioural intention variable. Bagozzi (1981a) speculates that the amount of control which the respondents had over their behaviour might have affected the findings (drugs might not always have been readily available). Other explanations are no doubt possible. For a start, the normative pressure factor featured only in the Bentler and Speckart study.

In a study involving behavioural domains over which the respondents could exert greater control, Bentler and Speckart (1981) examined the structural relationships of the same set of latent variables as were involved in their 1979 study. The 1981 study has been reviewed in part in the previous subsection; a second phase of this study, however, involved a complete prediction model, with the inclusion of normative pressures and behavioural intention variables.

The content domains under study were dating, studying and exercise. The model proposed is similar to that used in the 1979 study in that both past behaviour and attitude were hypothesized to have a direct influence on behaviour: but the indirect causal links via behavioural intention were eliminated. Instead, attitude and past behaviour were allowed to covary with behavioural intention.

The model provided a satisfactory fit for dating and studying, but not exercise. Bentler and Speckart (1981) claim that the lack of fit in the exercise domain is probably due to problems with the measurement submodel rather than the structural submodel. The expectation that attitude would have a substantial direct impact on behaviour was not well supported in all content areas. Overall, β weights between latent variables tended to be low. As the attitude domains examined are somewhat trivial, it is possible that the respondents did not answer the questions in a committed way.

One of the problems with many studies which examine the question of whether attitude and past behaviour have a direct impact on behaviour or only an indirect one through behavioural intention is that the behavioural intention construct is not clearly distinguished from the behavioural one. In general, behaviour is measured only as self reported behaviour; and intention is measured using a similar format. Hence, there is contamination due to the use of similar measurement

techniques. In addition, some respondents might falsify their reported behaviour in order to make it more consistent with stated intentions.

Bagozzi (1981b) used both Fishbein and Ajzen's (1975) expectancy-value measurement technique and the Semantic Differential methodology in a study involving the prediction of behavioural intention. Blood donation was the content area. Three groups of people were involved in the study: one group had never given blood, the second group had given blood before, but not for some time and the third had given blood in the immediate past (and might have given also in the more distant past). The groups will be referred to as the nondonor, past donor and current donor groups. Students and university staff were the subjects.

The Semantic Differential provides an overall affective evaluation of an attitude object. The expectancy-value technique, on the other hand, provides an indirect measure of attitude by requiring respondents to rate the likelihood of occurrence of a number of consequences and also to evaluate these consequences. In Bagozzi's (1981b) study, an empirical procedure was used to derive a set of seven salient consequences or beliefs concerning blood donation (e.g., "I would faint", "I would be weak and have to curtail strenuous activity for a few days"). The beliefs were modelled to be manifestations of three factors: immediate pain, immediate sickness, and delayed consequences. These factors were measured by three beliefs, two beliefs and two beliefs respectively. Five items were used in the Semantic Differential scale.

Bagozzi (1981b) hypothesized that the Semantic Differential items would all measure a single unidimensional attitude. Expectancy-value items, on the other hand were hypothesized to require the three factors mentioned above in order to obtain a satisfactory fit to the data: in other words, it was hypothesized that a model linking all seven items to a single latent trait would not provide an acceptable fit. Furthermore, it was predicted that the three-factor model would provide a fit only for data collected on current and past donors: for nondonors it was predicted that the seven expectancy-value items would fit neither a one-factor nor a three-factor model.

These hypotheses were posed because of the specificity of the elements which make up an expectancy-value index and because of the importance of past behaviour in creating beliefs. For individuals who have not engaged in relevant past behaviour, estimation of the probabilities of outcomes and the evaluation of such outcomes are difficult if not impossible. Even if the respondent has engaged in the behaviour in the past, the beliefs which he has to evaluate are so specific that a unidimensional scale is unlikely to emerge.

Bagozzi's (1981b) findings confirmed his hypotheses. For the nondonors the only model found to fit the data had six factors. As almost any seven-variable data can be fitted to six factors, it is inappropriate to speak of "structure" in connection with the nondonor expectancy value data. For current and past donors, correlations between the expectancy-value factors were substantially less than unity. The Semantic Differential technique fitted the one factor model. Hence it seems to produce more robust, interpretable and useful results.

In a second phase, Bagozzi (1981b) incorporated the attitude measures in behavioural intention prediction models which involved two normative variables: personal normative beliefs and social normative beliefs. Three behavioural intention variables were included. The Semantic Differential and expectancy-value scales were embedded in slightly different models. For the Semantic Differential, attitude, personal normative beliefs and social normative beliefs were modelled to have causal links with behavioural intention. In the case of the expectancy-value scales, a second order attitudinal factor was modelled; this factor had structural links with the three primary expectancy-value factors and played the same role as the single Semantic Differential factor.

The above models were applied only to the past and current donor samples. In all cases, satisfactory fits to the data were obtained. Past behaviour regularly emerged as the most powerful predictor. These findings support the view of Triandis (1977, 1979) that in cases where behaviour has been performed in the past, the frequency or intensity of this past behaviour (or "habit" as Triandis calls it) is an important predictor. When the behaviour has been performed very

frequently in the past, attitude becomes virtually irrelevant in behaviour prediction. All that is necessary in order to assess the probability of future behaviour is to ask the respondent to report on his past behaviour. It appears necessary to employ more elaborate behaviour prediction models only when attempting to predict behaviour which has not occurred in the past or which at least has not occurred regularly.

4.6 Conclusion on the Behaviour Prediction Research

The first section of this chapter reviewed literature which amply shows that attitude is often a poor predictor of behaviour but that there is no "typical" correlation between attitude and behaviour: correlations as high as 0,80 have been reported; so have correlations which are slightly negative.

Part of this variation is probably due to the specificities of different experimental designs. In many studies, self-reported behaviour is used as the criterion; shared predictor and criterion measurement methodology and the incursion of a falsification factor in the self-report data creates a spuriously inflated attitude-"behaviour" relationship. Attitude scales vary in their reliability; often reliabilities are not reported. In many cases the "scale" consists of only one item. Most research workers in the field do not even think of their behavioural measures as psychometric instruments. Low reliabilities depress intercorrelations. But, even more seriously, predictor and criterion measures are often not valid. The behavioural measure is particularly prone to this defect. Frequently, a behavioural index is chosen not because it seems to tap the content area well but rather because it is available. If predictor, criterion, or both variables are not valid, the correlation between the variables is bound to be low.

These are doubtless important factors influencing observed attitude-behaviour correlations, but they are not the only ones. People do not exist in a social vacuum; they belong to one or more cultural groups which have prescriptions and proscriptions regarding acceptable public behaviour. Depending on the degree of authority which a reference

group has over an individual, a greater or lesser amount of deviance from the norm is tolerated. But manipulation of the individual by the group is only one side of the coin; on the other is the manipulation of the group by the individual, and here Tedeschi et al.'s (1971) impression management concept is of relevance. Public facades are useful in creating the "right" impression and improving the chances of social success. Many people appear to be prepared to tolerate a degree of dissonance between their public behaviour and their private attitudes in order to secure that success.

Fishbein and Ajzen (1975) have made an important theoretical advance by explicitly incorporating social pressure factors into behaviour prediction. In so doing they make the acknowledgement that behaviour is a function of both internal and external factors. The Fishbein-Ajzen theory has not been without its critics, however. Several authors, especially Triandis (1979), take exception to the interpretation of attitude as a cognitively based phenomenon. Triandis makes provision for separate cognitive and affective influences in his prediction model, whereas Fishbein and Ajzen merge the cognitive and affective in their interpretation of attitude as a sum of products of beliefs and evaluations of those beliefs. Fishbein and Ajzen also make no provision for habit or past behaviour in their model. In the Fishbein-Ajzen model, social pressures and attitude are held to be the only necessary predictors: the model is claimed to be complete. Any other factors which have an impact on behaviour must therefore channel themselves through one or other of the two basic causative factors. At least as far as past behaviour is concerned, research has not supported the Fishbein-Ajzen position, but favours rather Triandis's (1977, 1979) view that habit is a separate predictor which becomes increasingly important as the frequency and regularity of the behaviour in question increases.

The Fishbein-Ajzen model has the advantage of simplicity and clarity, the Triandis model that of greater comprehensiveness but at the cost of complexity. What seems to be needed is a restructuring, in the light of attitude and behaviour prediction theory, of variables which empirically have shown themselves to be important, into a new model of behaviour prediction.

Most major developments in attitude theory and behaviour prediction theory were made before generalized latent variable confirmatory techniques became readily available. Theorists like Fishbein and Triandis, who are still active, have chosen not to avail themselves of the benefits of these techniques and have continued to use older, less satisfactory methods like regression analysis. As a result of this, models are often not stated with sufficient precision to allow investigators to translate them into a unique set of causal relations. The Fishbein-Ajzen model, for instance, permits the use of more than one normative pressure variable, but it is not clear whether these variables can influence one another.

Any current or future causal model building must be done with sufficient rigour to allow the exact expression of the model in terms of a set of structural equations.

One of the great flaws of the research done in the area of attitude and behaviour prediction is that students are almost invariably used as subjects. It is unfortunately close to the truth to say that psychology is actually the psychology of the psychology undergraduate. No theory can claim to have any generality if it has not been applied to other groups, particularly working groups. All three of the behaviour prediction models reviewed in this chapter incorporate social pressure as a predictor variable. Numerous studies have confirmed the importance of this predictor, but in almost all studies the social pressure variable was the same: peer group approval or disapproval on campus. Essentially no rigorously quantitative research has been done on the effects of normative pressure in more formal human groups.

Both the theoretical and empirical work reviewed in this chapter indicate the inadvisability of claiming that any prediction model is complete or perfect, as Fishbein and Ajzen (1975) have done. Apart from the difficulties, discussed in Section 4.3, of identifying the "true" causative factors, some variables are so transient or so situation-specific that, even if they are known to be causative, they cannot be used in practice to help predict behaviour. Triandis (1977) includes some of these in his model, but cannot measure most of them. In addition, one cannot exclude the possibility of a "free will" element which by its nature is unpredictable.

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