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MODELS OF THE RELATIONSHIP BETWEEN ATTITUDES TOWARD POLITICAL PARTIES AND POLITICAL ISSUES IN AN ELECTION CAMPAIGN: A CROSS-NATIONAL COMPARISON USING PANEL DATA FROM THE UNITED STATES AND BRITAIN

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ABSTRACT

MODELS OF THE RELATIONSHIP BETWEEN ATTITUDES TOWARD POLITICAL PARTIES AND POLITICAL ISSUES IN AN ELECTION CAMPAIGN: A CROSS-NATIONAL COMPARISON USING PANEL DATA FROM THE UNITED STATES AND BRITAIN

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Borrowing from the psychological literature, it is argued that one can legitimately view the relationship between party attitudes and issue attitudes in an election campaign as a problem in the study of attitude change. Three deterministic mathematical models are then derived from congruity theory, information processing theory and reinforcement theory. A fourth model, not derived from psychological theory but current in the literature which we call the SRC model, is also included.

It is shown that the congruity model predicts that party attitudes influence issue attitudes, and vice versa. It is then shown that both the information processing and reinforcement models predict that party attitudes do not influence issue attitudes. The SRC model predicts that issue attitudes do not influence party attitudes.

The deterministic models are cast in the form of stochastic difference equations to be empirically tested in the 1956-58-60 American and the 1964-66-70 British panel data sets. The problems of

construct validity and reliability are discussed; and it is argued that given multiple indicators of the theoretical concepts "party attitudes" and "issue attitudes," one can apply a multivariate statistical technique called cluster analysis and assess the reliability and unidimensionality of those constructs. It is then derived that one can distinguish between the information processing and reinforcement models on the basis of the over time patterns of variances of the party and issue attitude clusters.

The models are then tested using a structural equation technique called path analysis. In the American data, those people who were well informed on politics produced data which was fit quite well by the information processing model. However, those who were not well informed showed an apparent better fit to the congruity model. But an alternative explanation for this is offered in the form of a "political awareness" model. According to this model, people who are well informed trust their own judgment in assessing political messages from the parties and hence listen critically to messages from both sides. Those with little preparation do not trust their ability to accurately assess the meaning and implications of political messages. Therefore they seek out an authority figure whose interpretations are used as a reference for the meaning of political dialogue. Logically, they would choose political figures whom they already trust; i.e., their own political party. This generates in the data a pattern of influence from party attitudes to issue attitudes, as well as from issue attitudes to party attitudes, which we call a special case of the information processing model.

The British data are fit very well by the information processing model throughout. Why did the politically less well informed not show the congruity-like pattern found in the American data? Our explanation of this finding assumes that as a result of the sharper differentiation between the two major parties on the issues, the higher level of party unity and the long term salience of the issues included in the British issue attitudes cluster, the entire British electorate feels better informed on the issues. Because they feel that they understand the basic issues, even the majority of the relatively less well informed British voters feel that they are competent to judge all political messages for themselves. At present, we know of no data which bear directly on this difference between the two countries, though studies of political efficacy should yield an answer to this question in the near future.

Finally, the fit of the information processing model to both the American and British electorates is offered as a possible explanation for the decline in partisan attachment which has been noted in both countries.

To my mother and the memory of my father

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Finally, I want to thank my mother, and dedicate this thesis to her and to the memory of my father. While they may never understand what I did here, they never doubted that I should be doing it.

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T. Daniel Coggin

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INTRODUCTION

The literature on the relationship between attitudes toward political parties and political issues is of a rather curious nature. This is so because the whole question of the relationship between party attitudes and issue attitudes has effectively been subordinated to the study of candidate choice and issue attitudes. This is not to say that the relationship between party attitudes and issue attitudes has been totally ignored. Our point is simply that the relationship has not received the systematic research emphasis it deserves. With regard to this point, we acknowledge the alternative suggested by Richard Boyd (1969: 510):

> Overall, issues may outweigh candidates in affecting the outcome of elections, for issues have the capacity to alter the greatest single determinant of a vote, party identification.

In their study of political attitudes in the 1940 presidential election in Erie County, Ohio, Lazarsfeld, Berelson and Gaudet (1944) gave no real attention to those who changed their party attitudes during the course of the campaign, as they concentrated on changes in vote intention. They did note that there were some differences between Republicans and Democrats on a few issues (e.g., Democrats preferred a president with governmental experience, while Republicans preferred a president with business experience). They also found that among those who changed their vote intention, Republican switchers were more likely to give a "rich man's argument," while Democratic switchers were more likely to give a "poor man's argument."

Berelson and Lazarsfeld later teamed with McPhee (1954) in a study of the 1948 presidential campaign in Elmira, New York. Just as with the Erie County study, the primary focus was on those who changed their vote intention. With respect to issue attitudes, however, they found that Republicans and Democrats were very similar in their attitudes toward the importance of major political issues; and very similar in their attitudes toward the specific issues of internationalism and civil rights. A clear cleavage was noted on the issue of the Taft-Hartley Act, with Republicans more in favor. This cleavage was seen to sharpen with increased political interest. Finally, they noted that the pattern seemed to be for party identification to influence issue positions, except for "cross-pressured" voters (i.e., those who were liberal on some issues and conservative on others), who appeared to choose a party to vote for on the basis of the weight they assigned to the issues.

Moving to perhaps the best of the early attempts at a national sample of respondents, we note that Campbell, Converse, Miller and Stokes (1960) found in their study of the 1956 presidential election that, in general, the relationship between party identification and issue attitudes was rather weak. More specifically, they found that liberalism-conservatism was not a crucial dimension upon which the electorate evaluated policy questions. They also noted, however, that this could have been the result of the dominant Eisenhower personality, which tended to overshadow policy questions for many. For those with high involvement in politics (which they define as those with high interest in the campaign and concern over the election outcome), the "flow of causality" was from issue attitudes to party identification; while for those with low involvement in politics, the party appeared to serve as ". . . one organizing dimension that seems accessible to persons of very impoverished political understanding." Education was found to be a moderator variable for political involvement which, in turn, appeared to be a critical factor in the determination of the "flow of causality" between issue attitudes and party identification.

Some support for the notion that issue attitudes may influence party identification is found in the work of the late V. O. Key, Jr. (1966), who examined presidential elections during the 1936-1960 era, and found that switchers (i.e., those who did not always vote their party identification) tended to vote for the party closer to their own opinion on important issues. We have noted that Campbell, et al. (1960) found that issue beliefs were weakly related to party identification for the 1956 presidential election. To this we add that Converse (1964) reported the same finding for the 1960 presidential election. Gerald Pomper (1972) supports this for the 1956 and 1960 presidential elections, but noted that a positive linear relationship obtains for strength of party identification and five domestic issues for the 1964 and 1968 presidential elections.

Ladd and Hadley (1973: 20) introduced the notion of the "behavioral identifier" (i.e., one who has voted for the same party in the two most recent presidential elections), and noted that:

> . . . with all the vagaries imposed by the character of the behavioral construction, . . . , the behavioral parties are decidedly more distinct in their issue commitments than are the bodies of Republican and Democratic identifiers.

Abramson (1975) has shown that young, white, college-educated Democrats are far more liberal on selected policy questions (e.g., attitudes towards policemen, the military, and black militants) than the white electorate taken as a whole.

In an updating of the findings reported in Campbell, et al. (1960), Nie, Verba and Petrocik (1976) state that their assumption is that changes in political attitudes are mainly the result of changes in party identification, as few citizens appear to change their party affiliation once it has been established. In support of this assumption, they note that in comparing Republican and Democratic identifiers in 1960 and 1964, the changes in the percentages who were on the far right and far left on the issues compare almost exactly to the corresponding percentages among those who reported not having changed their party identification for the two time periods. Following-up the work of McClosky (1960) and others who found significant differences between the attitude consistency of party leaders and party followers, the authors broke the data down on the activist/non-activist dimension ("activist" being defined as anyone who participated in two out of the six political activities on the SRC political activity scale); and noted that the same pattern emerges for activists as for those on the far right and far left in the 1960 and 1964 presidential elections. Philip Converse (1975) reveals that he too, in an effort to find a variable which discriminates better than education between those with stable and those with unstable political issue attitudes, found level of political activism to work much more satisfactorily.

Following the lead of Arthur Goldberg (1966), Schulman and Pomper (1975) constructed a causal model of the vote decision in which the "independent" variables were party identification, issue attitudes and candidate evaluations. For the 1956, 1964 and 1972 elections, the impact of party identification showed a steady decline, issue attitudes a steady increase, while candidate evaluations remained relatively stable in their influence on the vote decision. In addition, they found the impact of party identification on issue positions to be relatively constant for the three presidential elections. For the five presidential elections from 1956 to 1972, using correlations reported in Nie and Andersen (1974), we found the mean correlation (gamma) between party identification and vote decision was highest ($\bar{\gamma}$ = .82) excluding those who voted for Wallace; between issue positions and the vote decision was next ($\bar{\gamma}$ = .38); and between party identification and issue attitudes was lowest ($\bar{\gamma}$ = .20).

Another important body of scholarship on the question of the relationship between party attitudes and issue attitudes is found under the heading "spatial models of party competition." Building on the work of Hotelling (1929) and Smithies (1941), who were interested in the optimum location for firms in economic competition, Anthony Downs (1957) presented the first model of the optimum location for political parties with respect to voter issue positions on a liberal-conservative continuum in an election campaign. Extended by Davis, Hinich and Ordeshook (1970) and McKelvey (1972), these models are characterized by their formal, deductive nature and their mathematical elegance.

With respect to the nature of the relationship between party choice and issue positions in Britain, the earlier studies conducted during the 1950's and early 1960's [e.g., Benney, et al. (1956), Blondel (1966), and Pulzer (1967)] discussed findings quite similar to those reported in the United States for the same period; i.e., very little relationship between issue attitudes and party choice. In a book based on what is surely the best single source of information on voter attitudes in Britain compiled to date, Butler and Stokes (1969) found that a model which predicts the "flow of causality" is from party preference to issue attitudes mustered "astonishingly little support" in the British 1963-64-66 panel data. Moreover, they report, a model which predicts that the "flow of causality" is from issue attitudes to party preference fared little better, as there was seen no discernable pattern of voters choosing among parties on the basis of their own issue attitudes along a left-right continuum.

In the second edition of their book, Butler and Stokes (1974) do argue that opinions on economic and social welfare issues are related to electoral choice in Britain. In addition, they note that issues of "high potential," such as the colored immigration question, may have had an impact on voting behavior. In an attempt to further investigate the impact of this controversial issue, Studlar (forthcoming) agrees with Butler and Stokes that the immigration issue had little impact on electoral behavior in Britain in 1964 and 1966, as a result of little difference between expressed party positions. However, examining the data collected in the 1970 wave of the panel, Studlar reports that the Conservatives gained an estimated 6.7% in votes in 1970 due to an impression, created largely by MP Enoch Powell, that the Conservatives would be much more restrictive in immigration control.

We see, then, that there have been some investigations into the relationship between party attitudes and issue attitudes in the two countries of interest, the United States and Britain. However, this thesis takes the position, as noted by Fishbein and Coombs (1971), that the previous studies have been woefully deficient on two crucial dimensions: theory and methodology. It is our feeling that an alternate way of viewing the political campaign process is to view it as a problem in the study of the attitude change process. After all, it is well known that in the course of political campaigns voters change both their attitudes on the issues and their attitudes toward the parties, especially if the parties begin to modify their issue positions. The only work in the area to date which attempts to present a clearly defined theoretical argument is the work of those who espouse the spatial model of party competition. Unfortunately, a serious shortcoming of the spatial model is that it assumes voter issue attitudes are constant throughout the campaign, and that it is only their attitudes toward the parties that are variable. Thus, for the spatial model, it is only the political parties that are free to change their issue positions, in an effort to maximize their share of the vote. It is our feeling that this assumption is highly restrictive and that, despite its formal elegance, the spatial model as a general model of the campaign process is unacceptably constrained.

Viewing the relationship between party attitudes and issue attitudes as a problem in attitude change as noted earlier, it will be our strategy to develop models of the relationship based on the three major theories of the attitude change process in the psychological literature--congruity theory, information processing theory and reinforcement theory. It is our goal to thereby construct models of the relationship which combine the formal rigor of the spatial model with a more realistic treatment of the attitude change process.

With respect to the methodological deficiencies of the previous studies, we argue that the primary shortcoming of the work in the area to date is a lack of concern for the problem of measurement error, or unreliability. We will have much more to say concerning this problem in Chapter Two, but for now let us note that error of measurement is always a problem to be reckoned with in empirical research, and models tested in survey data are certainly no exception. It is well known in the econometric and psychometric literature that measurement error can have serious repercussions for parameter estimation in correlation and regression models. Consider the following example.

There is a well known theorem in psychometrics which states that the maximum correlation (Pearson's r) between any two variables is the product of the square-root of their respective reliabilities:

$$r_{xy}max = \sqrt{r_{xx}} \sqrt{r_{yy}}$$

This seemingly innocuous theorem can have a serious impact on the results of most of the published studies using survey research in general, and for those examining the relationship between party identification and issue attitudes in particular. Take, as a representative example, a table reported in Converse and Dupeux (1962), which shows the highest correlation (tau b) between issue attitudes and party preference for all non-South party identifiers in 1960 to be .21. This is then viewed as support for Converse's argument that party identification and issue attitudes are only weakly related. Now, consider the theorem from psychometrics we have just mentioned. If the reliability of party identification, taken as a single-item indicator, and each individual issue attitude were .9 and .5, respectively, the maximum correlation that could obtain is .67. All of a sudden, the reported tau b of .21 (which is admittedly not a Pearson's r, but the two are usually very close) doesn't look so small.

Since none of the previous studies in this area attempt to estimate the reliability of their measures, much less employ the correction procedures outlined in the psychometric literature, we can only view the previous work as initial estimates of the strength and direction of the relationship between party attitudes and issue attitudes, to be reestimated in a more methodologically sound analysis.

Following the lead of Campbell and Fiske (1959), Curtis and Jackson (1962), Costner (1969), Blalock (1969, 1970), Sullivan (1974) and others, we reject the single-item indicator approach employed in the previous studies. Instead, we adopt a strategy of building multiple indicators of our theoretical concepts, party attitudes and issue attitudes. From these multiple indicators, reliability estimates can be obtained and used in correction procedures applied through a multivariate technique known as cluster analysis [Tyron and Bailey (1970) and Hunter (1977)]. Once we have obtained reliable measures of our theoretical concepts, we can test the strength and direction of the relationships between those variables in a path analysis [Wright (1934)] of our theoretical models. Consequently, as Jacobson and Lalu (1974) have aptly demonstrated, the multiple indicators approach used in conjunction with path analysis (a "cross-marriage of psychometric and econometric theories of measurement") yields much better (unbiased) parameter estimates for structural equation models.

Finally, we have argued that the whole question of the relationship between issue attitudes and party attitudes is a question concerning the attitude change process. However, most of the previous studies have presented only static models. As Dreyer (1973) and Asher (1974) have correctly noted, questions of this nature can only be disentangled within the framework of a panel study. Hence, this thesis will consider the panel data of the 1956-58-60 American panel study, and the 1963-64-66-70 British panel study, in a cross-national comparson.

We will have much more to say concerning these theoretical and methodological points in later chapters. We now turn to our first task, a derivation of the deterministic models of attitude change in an election campaign.

CHAPTER ONE

ATTITUDES TOWARD POLITICAL PARTIES AND POLITICAL ISSUES: THREE MATHEMATICAL MODELS OF ATTITUDE CHANGE IN AN ELECTION CAMPAIGN

Introduction

In this chapter we will present three mathematical models of the relationship between attitudes toward political parties and attitudes toward political issues in an election campaign, based on the three most prominent theories of attitude change in the psychological literature. The three attitude change theories to be considered are congruity theory, information processing theory, and reinforcement theory.

Following the lead of Hunter and Cohen (1972), we shall consider the three theories of attitude change in an experimental context called the passive communication paradigm. According to this paradigm, there are five basic components to the attitude change process: a source (communicator), messages (communications), a receiver, an attitude object and a channel (medium). Figure 1.1 presents a schematic diagram of the passive communication paradigm for attitude change.

We note that these variables are dynamic and undergo change in value over time. As suggested by Hunter and Cohen (1972), we will

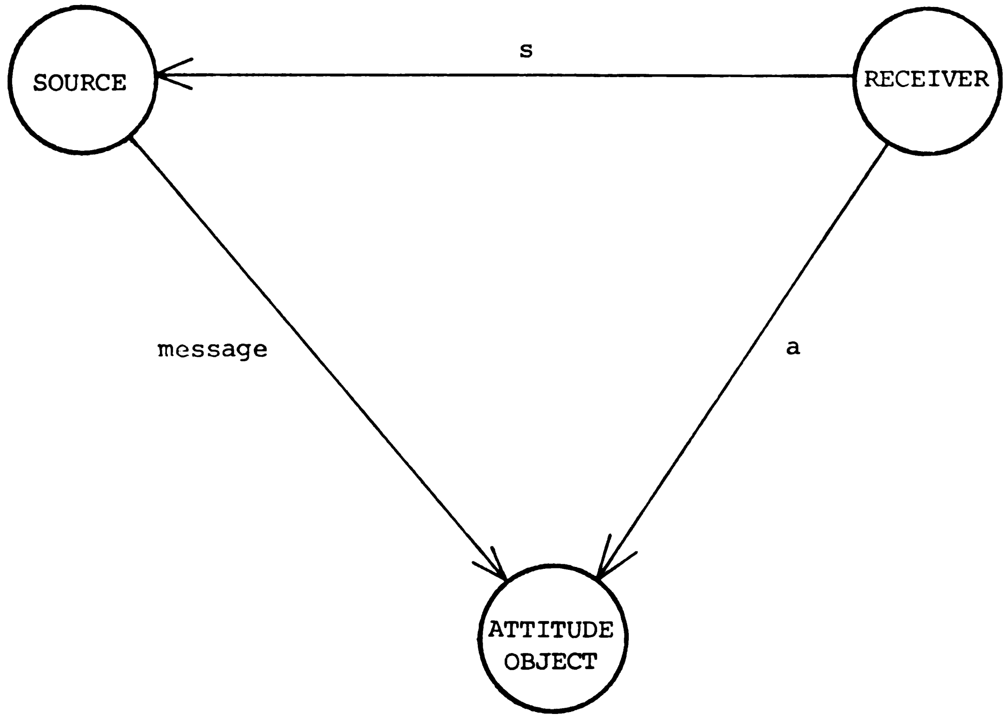


Figure 1.1

THE PASSIVE COMMUNICATION PARADIGM FOR ATTITUDE CHANGE

use the phrase "attitude change" to denote change in the receiver's attitude toward the object, and the phrase "source change" to denote the change in the receiver's attitude toward the source. Thus, attitude change and source change are given by:

$$\Delta a = a_{t+1} - a_t \qquad [1]$$

$$\Delta s = s_{t+1} - s_t \qquad [2]$$

where t stands for time. Throughout this chapter, attitude toward party means attitude toward the source of the messages and is denoted "s". The objects of these messages are issue attitudes and are denoted "a".

Our strategy in presenting each of the three models in turn will be to begin with a discussion of the origin of the psychological theory and its basic assumptions, including a presentation of the Hunter and Cohen (1972) prototype model. This will be followed by the derivation of a model of the relationship between attitudes toward a political party and attitudes toward political issues in a single-party election campaign, based on each psychological theory. From this a two-party model for each theory will be derived.

At this point, we would like to note that there is a fourth model which we shall not here attempt to formalize, but which has received a good deal of attention in the literature. We are speaking here of the reference group model of attitude change. The term "reference group" was coined by the sociologist Herbert Hyman (1942) in his work on social status. However, the basic idea of the importance of credible sources to attitude formation was noted by social psychologists before that time (e.g., Sherif, 1936); and has been extended to include the specific study of reference groups on attitude formation (e.g., Sherif, 1953). Shibutani (1955: 563) offers one definition of a reference group as: ". . . that group whose outlook is used by the actor as the frame of reference in the organization of his perceptual field."

We shall not here endeavor to list the many contributors to reference group theory. The interested reader can consult Shibutani (1955) for a brief summary. It is important for our purpose to note that the concept of reference groups has figured quite prominently in the literature on political attitude change, beginning with the work of Lazarsfeld, Berelson and Gaudet (1944); Berelson, Lazarsfeld and McPhee (1954) and Campbell, Converse, Miller and Stokes (1960). It is the book by Campbell, et al. (1960), based on a national study of political attitudes in the 1956 presidential election, that perhaps did more than any other work to underscore the importance of the political party as a major reference group in the formation of political attitudes (especially for those with low political involvement, which includes a large segment of the electorate). For this reason, we have termed the model derived from reference group theory which predicts that party attitudes influence issue attitudes, but not vice versa, the "SRC model." Even though the SRC model does not follow from any of the three psychological theories of attitude change we shall discuss, we shall include it in our empirical tests in Chapters Four and Five.

Congruity Theory

Congruity theory was formulated by Osgood and Tannenbaum (1955) and extended by Osgood, Suci and Tannenbaum (1957). They argue that if a source presents a positive message about an object, then that positive message evokes a positive association or bond between the source and object. If the source disparages the object, then that negative message evokes a dissociative or negative bond between source and object.

For a positive message, two affective responses are elicited by the message: the attitude toward the source and the attitude toward the object. These affective responses each generalize to the other, i.e., each response is conditioned in the direction of the other. Thus each attitude changes in the direction of the other.

If the source disparages the object, then two distinct processes take place. When the receiver thinks about the object, two affective responses are elicited: the receiver's affective response to the object and a response derived from his attitude toward the source. Because the source disparages the object, the receiver's affective response derived from the source is the exact opposite of his attitude toward the source. The receiver's affective response then conditions to the affective response generated by the negation of the affective response toward the source. That is, if the receiver dislikes the source which disparages the object, then the source generated affective response toward the object is positive. In similar fashion, when the receiver thinks about the source, then the generated affect from the object is the exact opposite of his feeling toward that object. Thus if the receiver dislikes the object which is disparaged by the source, then the generated response toward the source is positive. The affective response toward the source then conditions to the generated affective response derived from the object. Thus each attitude changes in the direction of the negative of the other.

The basic assumptions of the original Osgood-Tannenbaum model are:

1. The pressure of incongruity is exactly equal to the discrepancy between source and object: $P = |a - s|$

2. The pressure relieved by an affective change is equal to the size of the change; i.e., the total pressure relieved is: $|\Delta s + \Delta s|$

3. Attitude change and source change are symmetric and the relative change is inversely proportional to the intensity of the attitude (polarity).

Osgood and Tannenbaum eventually relaxed the "equality of pressure and discrepancy" assumption by defining "incredulity" as $\alpha|a - s|$. Thus, "pressure relieved" became:

$$\text{Pressure} - \text{Incredulity} = |a - s| - \alpha|a - s|$$

$$= (1 - \alpha)\ |a - s| \qquad [3]$$

They then relaxed symmetry with the "assertion correction." The problem of source-object asymmetry was thereby handled by adding a constant to attitude change if the message is positive, and subtracting it if the message is negative. Hunter and Cohen (1972) note some serious problems with this procedure (for instance, if the attitudes were congruent, or nearly so, the assertion constant would produce incongruity!), and they propose their own version of the congruity model in which they present an alternative to the polarity assumption ("Congruity Without Polarity," as they call it). Hunter and Cohen suggest that if the relative size of source change were independent of intensities, then:

$$\frac{|\Delta s|}{|\Delta a|} = \beta \qquad [4]$$

where $\beta = 1$ if source and object are symmetric, and less than one if source change is relatively smaller. After some development, the general model for the positive message is:

$$\Delta a = \frac{1}{1+\beta} \cdot (1 - \alpha) \cdot (s - a) \qquad [5]$$

$$\Delta s = \frac{\beta}{1+\beta} \cdot (1 - \alpha) \cdot (a - s) \qquad [6]$$

And we note that if $\beta = 1$ and $\alpha = 0$, this model reduces to a simple linear version of the original Osgood-Tannenbaum model.

Attitudes Toward Political Issues and a Political Party Without Opposition

If we assume that in a given election campaign all issues are equally often mentioned and that there is only one political party speaking,

a_i = voter's attitude on issue i

s = voter's attitude toward the party

then congruity theory predicts that when issue i is endorsed by the party, the resulting change is:

$$\Delta s = \beta \ (a_i - s) \qquad [7]$$

$$\Delta a_i = \alpha \ (s - a_i) \qquad [8]$$

where the β in equation [7] represents the $\frac{\beta}{1+\beta} \cdot (1-\alpha)$ in equation [6], and the α in equation [8] represents the $\frac{1}{1+\beta} \cdot (1-\alpha)$ in equation [5]. If issue i is rejected by the party, then the change would be:

$$\Delta s = \beta \ (-a_i - s) \qquad [9]$$

$$\Delta a_i = \alpha\ (-s - a_i) \qquad [10]$$

In most campaigns, there are a number of salient issues. The model laid out above covers the impact of a party position on one such issue. What happens when many issues are considered? On each issue, the attitude change is specific to that issue, but source change is always change in the same attitude: attitude toward the party. In order to make attitude toward issues a variable consistent with the attitude toward party, we create an attitude index by summing across the relevant attitudes. Change on any attitude then results in change on the index. Thus, for any position taken by the party, there will be change on the specific attitude, hence the index. There will also be change on the source, which is change in the attitude toward the party.

If we sum across issues, both endorsed and rejected by the party, we have:

$$\Delta s = \beta_1 \sum_e (a_e - s) + \beta_2 \sum_r (-a_r - s)$$

$$= [\beta_1 \sum_e a_i + \beta_2 \sum_r (-a_i)] - [(n_e\beta_1 + n_r\beta_2)s] \qquad [11]$$

If we reverse-score attitudes toward issues which the party rejects, then we have:

$$\Delta s = [\beta_1 \sum_e a_i + \beta_2 \sum_r a_i] - [n_e\beta_1 + n_r\beta_2]s \qquad [12]$$

If we let $\beta_1 = \beta_2 = \beta$, we have:

$$\Delta s = \beta(\sum_e a_i + \sum_r a_i) - \beta(n_e + n_r)s \qquad [13]$$

The attitude index is $\sum_e a_i + \sum_r a_i$, which can be written as $\sum_i a_i$.

The total number of attitudes is $N = n_e + n_r$. Thus, the index as an average would be $\bar{a} = \frac{1}{n_e + n_r} \sum a_i$. Substituting the above expressions for N and $\bar{a}$ into equation [13],

$$\Delta s = N\ (\bar{a} - s) \qquad [14]$$

produces an expression for the change in attitude toward the party for the single-party campaign.

We can now derive an expression for the change in the issue index $\bar{a}$, for those issues which are endorsed, and for those which are rejected:

$$\Delta a = \alpha(n_e s + n_r s) - \alpha(\sum a_i) \qquad [15]$$

If we recognize that $a_e = \frac{\Sigma a_e}{n_e}$, we have:

$$\Delta\bar{a}_e = \alpha_1(n_e s - \sum a_e)$$

$$= n_e \alpha_1\ (s - \bar{a}_e) \qquad [16]$$

If we recognize that $\bar{a}_r = \frac{\Sigma a_r}{n_r}$, we have:

$$\Delta\bar{a}_r = \alpha_2(-n_r s - \Sigma\ \bar{a}_r)$$

$$= n_r \alpha_a(-s - \bar{a}_r) \qquad [17]$$

Again, if we reverse-score attitudes toward issues which the party rejects, then we have:

$$\Delta\bar{a}_r = -[n_r \alpha_2(-s + [-\bar{a}_r])]$$

$$= n_r \alpha_2(s - \bar{a}_r) \qquad [18]$$

Now, if we define $\bar{a} = \frac{\Sigma a_i}{N}$, and let $\alpha_1 = \alpha_2 = \alpha$, we can write:

$$\Delta a = N\alpha(s - \bar{a}) \qquad [19]$$

which describes the change in attitudes on the issue index for the single party.

The complete congruity model for change in attitudes toward political issues and a single political party is the pair of equations:

$$\Delta\bar{a} = N\alpha(s - \bar{a}) \qquad [20]$$

$$\Delta s = N\beta(\bar{a} - s) \qquad [21]$$

In Figures 1.2 and 1.3 we present graphs of multiple solutions to the two equation, single-party congruity model. For the models presented in this chapter, graphs of time functions are not a useful means of presenting the information in the solution of the model equations (although the interested reader can find the equations for the time functions for all models presented in Appendix A). Instead, we can use a technique called the "phase plane" method. The key to this technique is to think of the two model variables as the coordinates of a moving point. The succession of predicted values of these variables can then be plotted as a path in two-dimensional space. Each possible solution will then correspond to a different path. The interested reader can consult Appendix B (or the graphs) for the stream functions used to plot the phase planes presented in our models.

We see from Figure 1.2 that for equal attitude change parameters ($\alpha = \beta$), attitudes toward the party and the issue index converge to the mean values of the initial scores over time. For unequal attitude change parameters ($\alpha \neq \beta$), we see in Figure 1.3 that attitudes converge to a weighted average of the initial scores (weighted in the direction of the attitude with the lower parameter value). The locus of equilibrium points for $\alpha = \beta$ is represented by the line $s^* = \bar{a}^*$. The locus of equilibrium points for $\alpha \neq \beta$ is represented by the line $s^* = \beta/\alpha\ \bar{a}^*$.

Attitudes Toward Political Issues and Two Political Parties

If there are two parties taking stands on the issues, then there are two sources, s_1 and s_2, to be considered. For each source there will be an equation such as that derived above. However, there is one complication which must be overcome before both equations can

SINGLE-PARTY CONGRUITY MODEL

S=-(BETA/ALPHA)*A+C

ALPHA=BETA=0.01

A= -3 TO 3

C= -3,-2,...,2,3

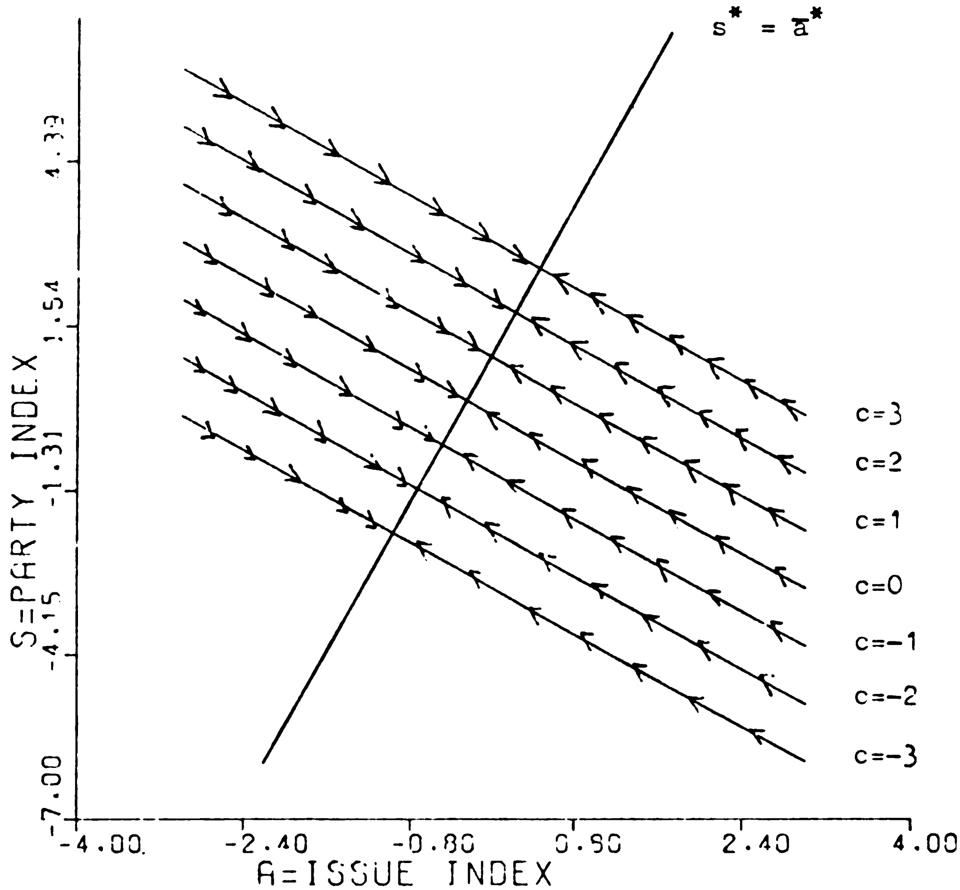


FIGURE 1.2

SINGLE-PARTY CONGRUITY MODEL

S=-(BETA/ALPHA)*A+C

ALPHA≠BETA ALPHA=0.01 BETA=0.02

A= -3 TO 3

C= -3,-2,...,2,3

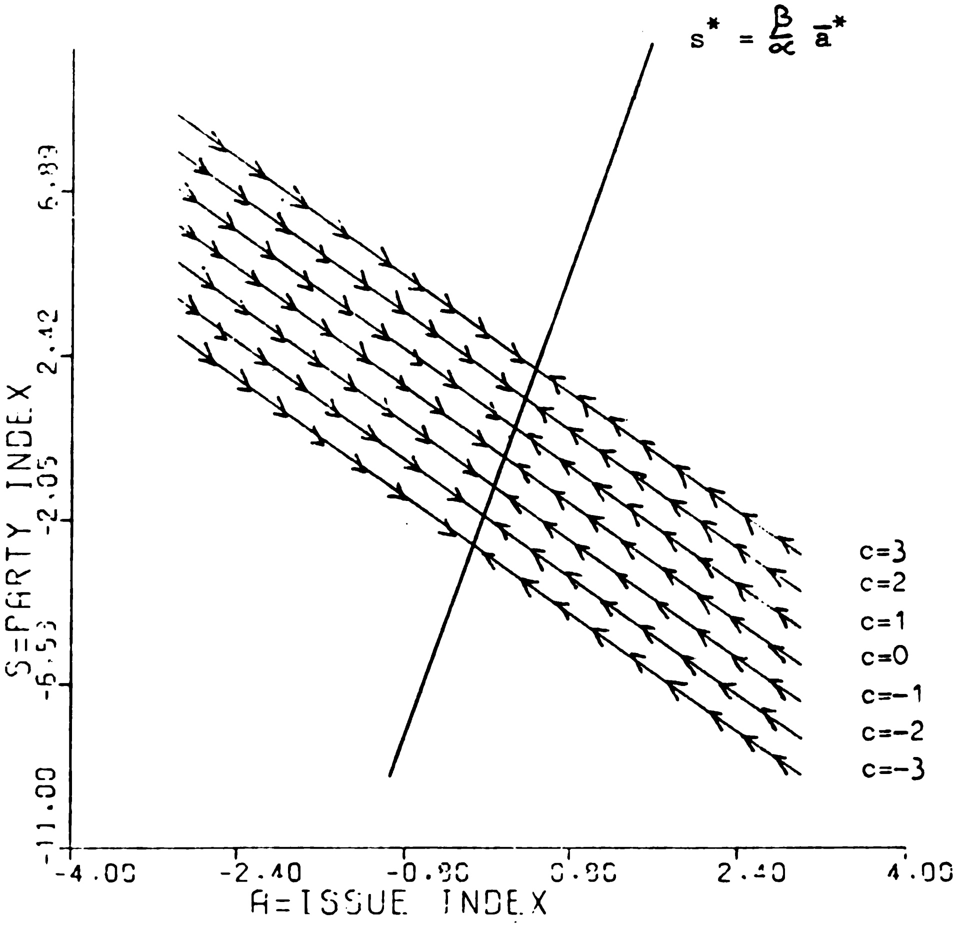


FIGURE 1.3

be written at the same time: the direction of scoring on each attitude issue must be determined in the same way for both parties. That is, the equation derived in the previous section assumed that issue attitudes were scored in the direction adopted by the party. But with two parties there would be two such conventions.

To break the deadlock, let us define the scoring of the issue attitudes so as to match one of the parties, say party 1. Then the change in attitude toward party 1 will follow equation [21] set out in the preceding section:

$$\Delta s_1 = N\beta \ (\bar{a} - s_1) \qquad [22]$$

However the corresponding equation for the second party, i.e.,

$$\Delta s_2 = N\beta \ (\bar{a} - s_2) \qquad [23]$$

would only be true if the issues were scored to match the second party's stands. Suppose, for example, that the two parties were directly opposed on every salient issue. Then the "$\bar{a}$" for the second party would be exactly the reverse of the "$\bar{a}$" for the first party. That is, if only issues on which the parties differ are considered, then the change equation for the second party would be:

$$\Delta s_2 = N\beta \ (-\bar{a} - s_2) \qquad [24]$$

when the issues are scored in the direction endorsed by party 1.

Can we ignore the issues on which the parties take a common stand? Not if you wish to consider the attitudes toward each party separately. However, if you wish to model only the party differential, $s_1 - s_2$, then congruity theory predicts that issues with a common stand are irrelevant. To see this we must derive a change equation for the party differential. Define the variable D to be the party differential, i.e., define D by:

$$D = s_1 - s_2 \qquad [25]$$

Then because of the linearity of the change operator, the change in D is the difference of the changes in the two party attitudes. That is:

$$\Delta D = \Delta s_1 - \Delta s_2 \qquad [26]$$

Now let us break up issue attitude index into two parts: the issues on which the parties differ and the issues on which they have a common stand:

$$\bar{a} = \frac{1}{N} \left(\sum_{opp} a_i + \sum_{com} a_i \right) \qquad [27]$$

If $\bar{a}_2$ is the issue index scored in the direction of party 2, then source change for party 2 would be:

$$\Delta s_2 = N\beta \; (a_2 - s_2) \qquad [28]$$

If the issues are scored in the direction of party 2, then the issue index for party 2 would have the equation that we wrote for party 1:

$$\bar{a}_2 = \frac{1}{N} \left(\sum_{opp} a_i + \sum_{com} a_i \right) \qquad [29]$$

But, the issues are scored in terms of party 1; therefore, the issue index for party 2 is:

$$\bar{a}_2 = \frac{1}{N} \left(- \sum_{opp} a_i + \sum_{com} a_i \right) \qquad [30]$$

From these we can calculate the change in the party differential:

$$\Delta D = \Delta s_1 - \Delta s_2$$

$$= N\beta(\bar{a} - s_1) - N\beta(\bar{a}_2 - s_2)$$

$$= N\beta[\bar{a} = (\bar{a}_2)] - N\beta(s_1 - s_2)$$

$$= \frac{\beta}{N} \{ \left(\sum_{opp} a_i + \sum_{com} a_i \right) - \left(- \sum_{opp} a_i + \sum_{com} a_i \right) \} - \beta(s_1 - s_2)$$

$$= \frac{\beta}{N} \{ 2 \sum_{opp} a_i + \sum_{com} a_i - \sum_{com} a_i \} - \beta(s_1 - s_2)$$

$$= 2 \frac{\beta}{N} \sum_{opp} a_i - \beta(s_1 - s_2) \qquad [31]$$

Thus we see that, according to congruity theory, the impact of common party stands cancels out in the determination of the party differential. Since this is true, we will adopt the convention considering the index to extend only over those issues on which the parties are opposed. Under this assumption the change equation for D becomes:

$$\Delta D = N\beta[\bar{a} - (-\bar{a})] - N\beta(s_1 - s_2)$$

$$= N\beta(2\bar{a}) - N\beta D$$

$$= N\beta(2\bar{a} - D) \qquad [32]$$

Moving to a derivation of the change in the issue index for the two-party situation, we note that if we score issues according to party 2, from equation [20], we have:

$$\Delta\bar{a}_2 = N\alpha(s_2 - \bar{a}) \qquad [33]$$

But for issues scored according to party 1, following the convention used in the calculation of D, we have to reverse-score party 2. Hence:

$$\Delta(-\bar{a}) = -\Delta\bar{a}$$

$$= -N\alpha(s_2 - a)$$

$$= -N\alpha(s_2 + [-\bar{a}]) \qquad [34]$$

Thus:

$$\Delta\bar{a}_2 = -N\alpha(s_2 + \bar{a}_2) \qquad [35]$$

And the total change is:

$$\Delta\bar{a} = \Delta a_1 + \Delta a_2$$

$$= N\alpha(s_1 - \bar{a}) - N\alpha(s_2 + \bar{a})$$

$$= N\alpha(s_1 - s_2) - 2N\alpha\bar{a}$$

$$= N\alpha(D - 2\bar{a}) \qquad [36]$$

The complete congruity model for change in attitudes toward the issue index and the party differential can now be represented by the pair of equations:

$$\Delta\bar{a} = N\alpha(D - 2\bar{a}) \qquad [37]$$

$$\Delta D = N\beta(2\bar{a} - D) \qquad [38]$$

Figures 1.4 and 1.5 present the phase plase planes for the two-party model of change in attitudes toward the issue index and the party differential.

To illustrate the nature of the predictions made by the two-party congruity model, we shall consider two special cases, for equal attitude change parameters $\alpha = \beta$. Also, we shall here adopt the convention of scoring $\bar{a}$ (the issue attitudes index) according to a liberalism-conservatism scale from -3 to +3. We note that by our previous scoring convention a positive score on the party differential, D, (also scored from -3 to +3) indicates a positive attitude toward party 1, which here endorses the conservative position. A negative score on the party differential indicates a positive attitude toward party 2, which here endorses the liberal position. It is

TWO-PARTY CONGRUITY MODEL

D=-(BETA/ALPHA)*2*A+C

ALPHA=BETA=0.01

A= -3 TO 3

C= -3,-2,...,2,3

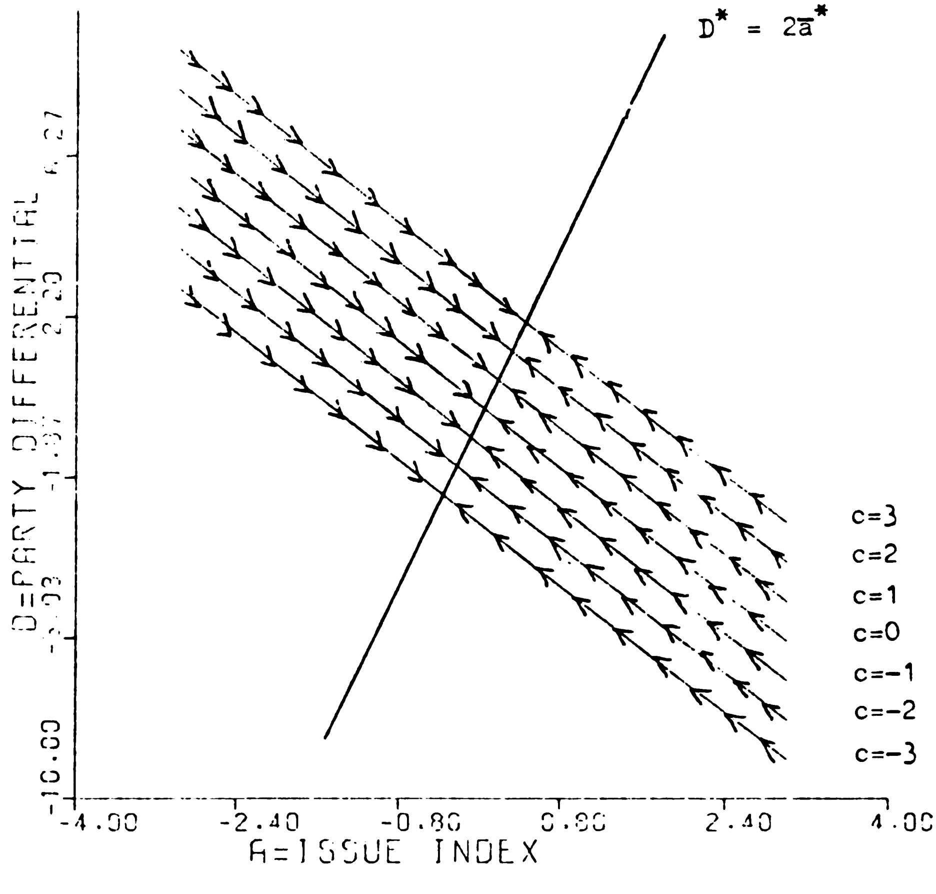


FIGURE 1.4

TWO-PARTY CONGRUITY MODEL

D=-(BETA/ALPHA)*2*A+C

ALPHA≠BETA   ALPHA=0.01   BETA=0.02

A= -3 TO 3

C= -3,-2,...,2,3

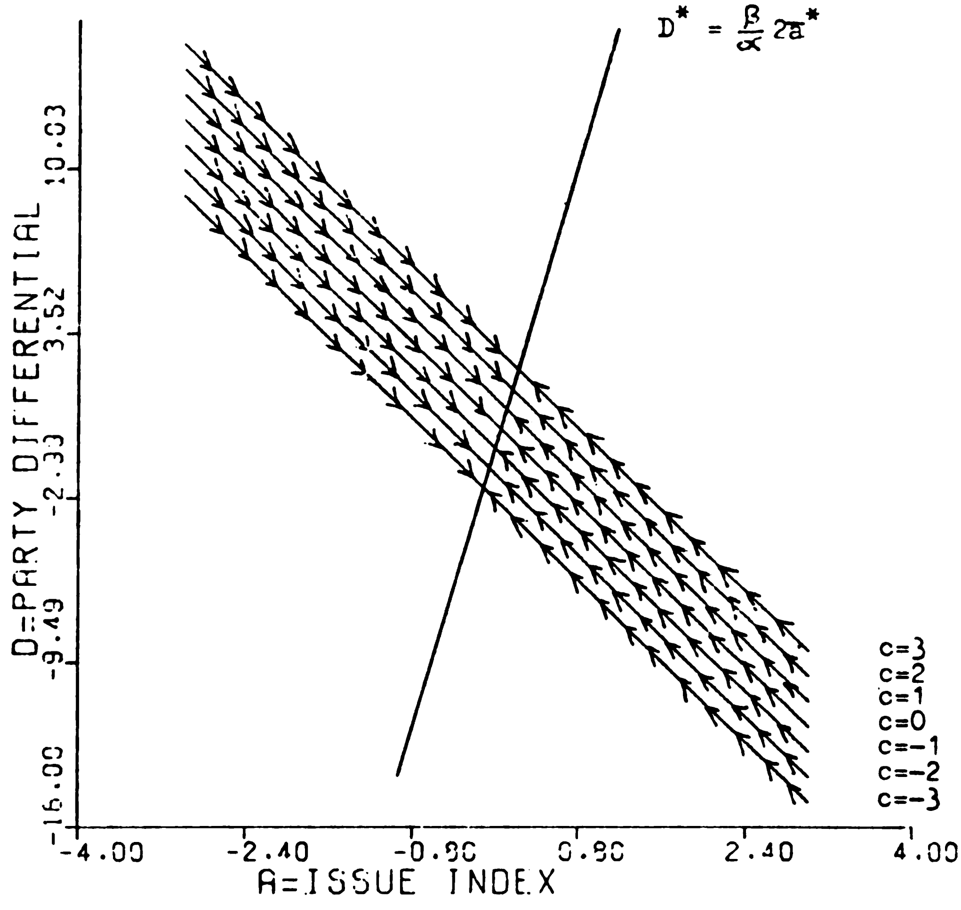


FIGURE 1.5

important to keep in mind that endorsement of a party does not <u>necessarily</u> mean endorsement of the party position, though this may ultimately be the case. That is, as a result of political socialization, one may be very much committed to a conservative party, despite the fact that one's own issue positions are liberal (e.g., $D_o = +3$, while $\bar{a}_o = -3$).

In the first case, we shall let $D_o = 0$, which implies neutrality on the party differential, and consider two groups--one with extremely conservative initial attitudes on the issue index ($\bar{a}_o = +3$), and one group with extremely liberal initial attitudes on the issue index ($\bar{a}_o = -3$). It can be shown that the equilibrium point for the issue attitudes equation [equation 37] is:

$$\bar{a}^* = \frac{\bar{a}_o + D_o}{3} \qquad [39]$$

and that the equilibrium point for the party differential equation [equation 38] is:

$$D^* = 2\bar{a}^* \qquad [40]$$

This implies that for the group witn $\bar{a}_o = +3$:

$$\bar{a}^* = +1 \qquad [41]$$

$$D^* = +2 \qquad [42]$$

and for the group with $\bar{a}_o = -3$:

$$\bar{a}^* = -1 \qquad [43]$$

$$D^* = -2 \qquad [44]$$

This means that the effect of the strong initial conservative issue attitudes ($\bar{a}_o = +3$) is to influence the party differential to move to a point closer to the party offering a more conservative position on the issues (i.e., D goes from 0 to +2). The effect of the initial neutral party differential attitude is to influence the issue index to move to a point closer to a liberal position on the issues (i.e., $\bar{a}$ goes from +3 to +2). A similar result obtains for the group with strong initial liberal attitudes on the issues ($\bar{a}_o = -3$), where we see that the party differential moves to a point closer to the liberal party (i.e., D goes from 0 to -2) and the issue index moves closer to the conservative position (i.e., $\bar{a}$ goes from -3 to -1).

For the second case, we shall let $\bar{a}_o = 0$, which implies neutrality on the issue index, and consider two groups--one group with an extremely conservative initial party differential attitude ($D_o = +3$) and one group with an extremely liberal initial party differential attitude ($D_o = -3$). This implies that for the group with $D_o = +3$:

$$\bar{a}^* = +1 \qquad [45]$$

$$D^* = +2 \qquad [46]$$

and for the group with $D_o = -3$:

$$\bar{a}^* = -1 \qquad [47]$$

$$D^* = -2 \qquad [48]$$

And we see that the effect of the strong initial conservative party differential attitude ($D_o = +3$) is to influence the issue index to a more conservative position (i.e., $\bar{a}$ goes from 0 to +1). The effect of the initial neutral attitudes on the issues ($\bar{a}_o = 0$) is to influence the party differential to a point closer to the liberal party (i.e., D goes from +3 to +2). Similarly, for the group with a strong initial liberal party differential attitude ($D_o = -3$), we note that the issue index moves closer to the liberal position (i.e., $\bar{a}$ goes from 0 to -1); and the party differential moves to a point closer to the conservative position (i.e., D goes from -3 to -2).

The patterns of influence for the congruity model thus become clear. Arrows of influence go both ways, with each attitude index exerting an influence on the other. The result or equilibrium point is a function of the initial distribution of party allegiance and issue attitudes among the electorate, the nature of the issue positions offered by the two parties and the strength of the attitude change parameters α and β.

Information Processing Theory

Hovland, Janis and Kelly (1953) described the key attitude change process as being the subject's internal comparison of his own position with that advocated by the message. The subject in effect quizzes himself concerning the object and compares his responses to those presented in the message. If the subject accepts the answers offered by the message in place of his own, then attitude change has occurred. Thus, as described by McGuire (1964, 1966), the process is one of three stages: the subject must attend to the message, comprehend the message and yield to the message. Hunter and Cohen (1972) classify the general information processing model as one of a class of models characterized by the linear discrepancy hypothesis. They note that the emotional content of a message can be scaled, hence each message has an affective value "m". That is, messages are representations of attitudinal positions. If we adopt the measurement model proposed by Thurstone (1929) and align messages on the same continuum as attitudes, we can then speak of discrepancy or distance between the message and the attitude:

$$\text{Discrepancy} = |a - m| \qquad [49]$$

Anderson and Hovland (1957), and Anderson (1959) proposed a "distance-proportional" model which incorporated two major conditions: (1) the magnitude of change is proportional to the discrepancy between the receiver's attitude and the position presented in the message, and (2) the change is always in the direction of the position advocated by the message. Anderson and Hovland (1957) formalized this to take the form:

$$\Delta a = \alpha(m - a) \qquad [50]$$

We remind the reader that the linear discrepancy model predicts that (1) the subject always shifts toward the position presented by the message, and (2) the greater the distance between the position presented in the message and the position held by the subject, the greater the change in attitude.

Attitudes Toward Political Issues and a Political Party Without Opposition

Continuing our election campaign analogy, we let:

$$a_i = \text{voter's attitude on issue } i$$

$$s = \text{voter's attitude toward the party}$$

and introduce:

$$m = \text{message from the party on issue } i$$

The crucial step in deriving a model of the political impact of a party position from information processing theory is to recognize the fact that a single message may contain several logically distinct propositions. For example, if the leader of the Democratic party in the House came out of a party caucus in September of 1957 and announced, "The Democratic party urges the President to send troops to Little Rock to settle the riots there;" then two messages could logically be derived from that statement. First, there is the message "Sending troops to Little Rock is a good thing to do." This is the message which is the basis of the influence which the party exerts over the receiver with regard to his attitude toward the issue of whether or not to use troops to stem the riots. We denote this message m_i. The value of this message with regard to the stated issue is determined entirely from the content of the message, and is strongly positive in this case. The value of this message with respect to the Democratic party cannot be immediately derived from the message content itself. Instead, the message value must be derived from the implied statement (the second logical proposition) "The Democratic party should have the same value as does the policy of sending troops into Little Rock;" i.e., the value of the message as it pertains to the party is the value the receiver places on the issue position adopted by the party; i.e., the issue attitude a. We denote this message m_s.

The standard (linear) information processing equation for change in attitude toward the source (party) is:

$$\Delta s = \beta (m_s - s)$$

where m_s is the message value which is usually denoted by m. The discussion in the previous paragraph has shown that the information processing model implies that the message value m_s would be given by:

$$m_s = a_i \qquad [51]$$

And it follows that:

$$\Delta s = \beta (a_i - s) \qquad [52]$$

Similarly, if the party rejects issue i, then it will reject such endeavors:

$$m_s = -a_i \qquad [53]$$

and:

$$\Delta s = \beta(-a_i - s) \qquad [54]$$

The reader should note that the information processing model equations for the change in attitude toward the single party (equations [52] and [54]) are the same as those derived for the single-party congruity model (equations [7] and [9]), though derived from entirely different assumptions. For the information processing model, the question is one of logical content; i.e., the value of the party implied by the message is the value placed on the issue position taken by the party in its message to the voter; i.e., $m_s = a_i$. This message value is then compared to the prior evaluation of the party, which is the attitude s. For the congruity model, change results from a conditioning process in which two evoked emotional responses condition each other. Thus, the change in s is in the direction of the simultaneously evoked affect a.

As we have noted, there are usually a number of important issues in an election campaign; therefore, if we sum across issues, both endorsed and rejected by the party, we have:

$$\Delta s = \beta \sum_e (a_e - s) + \beta \sum_r (-a_r - s) \qquad [55]$$

If we reverse-score those issues which the party rejects, then "$-a_i$" = a_i and:

$$\Delta s = \beta \sum(a_i - s) \qquad [56]$$

Recalling that $\overline{a} = \frac{1}{n_e + n_r} \sum_i a_i$, we can convert equation [56] to an equivalent statement for the mean of the attitude index, $\overline{a}$:

$$s = N\beta(\overline{a} - s) \quad [57]$$

and we have our change equation for the voter's attitude toward a single party in terms of the issue index $\overline{a}$.

Turning to the change in attitudes on the issues, if we let $\overline{a}$ be the value of the subject's attitudes on the issue index (where $\overline{a}$ equals the usual $\frac{\Sigma a_i}{N}$, and if all issues rejected by the party are reverse-scored so that "$-a_i$" = a_i; then, as derived from equation [50], information processing theory predicts:

$$\Delta\overline{a} = \alpha(\overline{m} - \overline{a}) \quad [58]$$

where $\overline{m} = \frac{\Sigma m_i}{N}$.

The complete information processing model for change in attitudes toward political issues and a single political party is the pair of equations:

$$\Delta\overline{a} = \alpha(\overline{m} - \overline{a}) \quad [59]$$

$$\Delta s = N\beta(\overline{a} - \overline{s}) \quad [60]$$

Figures 1.6 and 1.7 present the phase planes for the single-party information processing model. Figure 1.6 demonstrates that the attitudes for the single-party model converge to a weighted average of the messages sent from the party for $N\beta \neq \alpha$. Figure 1.7 demonstrates

SINGLE-PARTY INFORMATION PROCESSING MODEL

S=M+RHO*(A-M)+C*(ABS(A-M)**GAMMA)

N*BETA≠ALPHA   ALPHA=BETA=0.01   N=5   M=1.5

RHO=N*BETA/(N*BETA-ALPHA)   GAMMA=(N*BETA)/ALPHA

A= -3 TO 3

C= -2.0,-1.0,-0.5,-0.25,0.0,0.25,0.5,1.0,2.0

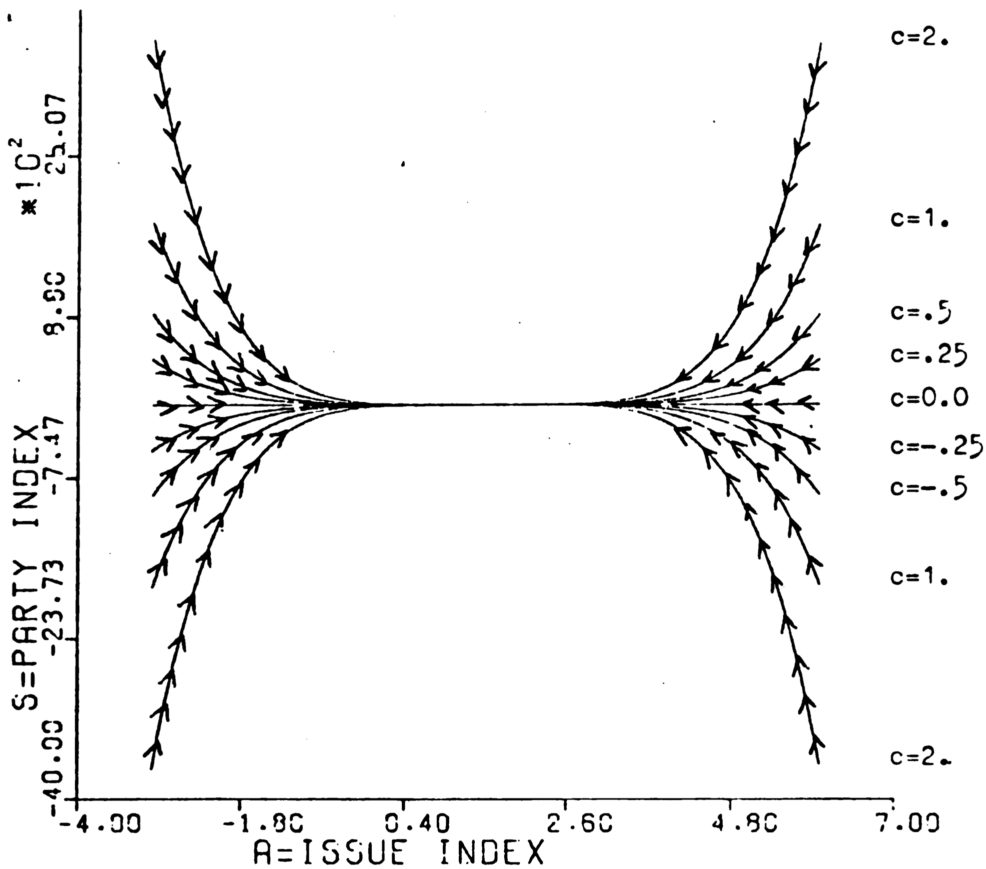


FIGURE 1.6

SINGLE-PARTY INFORMATION PROCESSING MODEL

S=M+(A-M)*LOG(ABS(A-M))+C*(A-M)

N*BETA=ALPHA   ALPHA=0.05   BETA=0.01

N=5   M=1.5

A= -3 TO 3

C= -2.0,-1.0,-0.5,-0.25,0.0,0.25,0.5,1.0,2.0

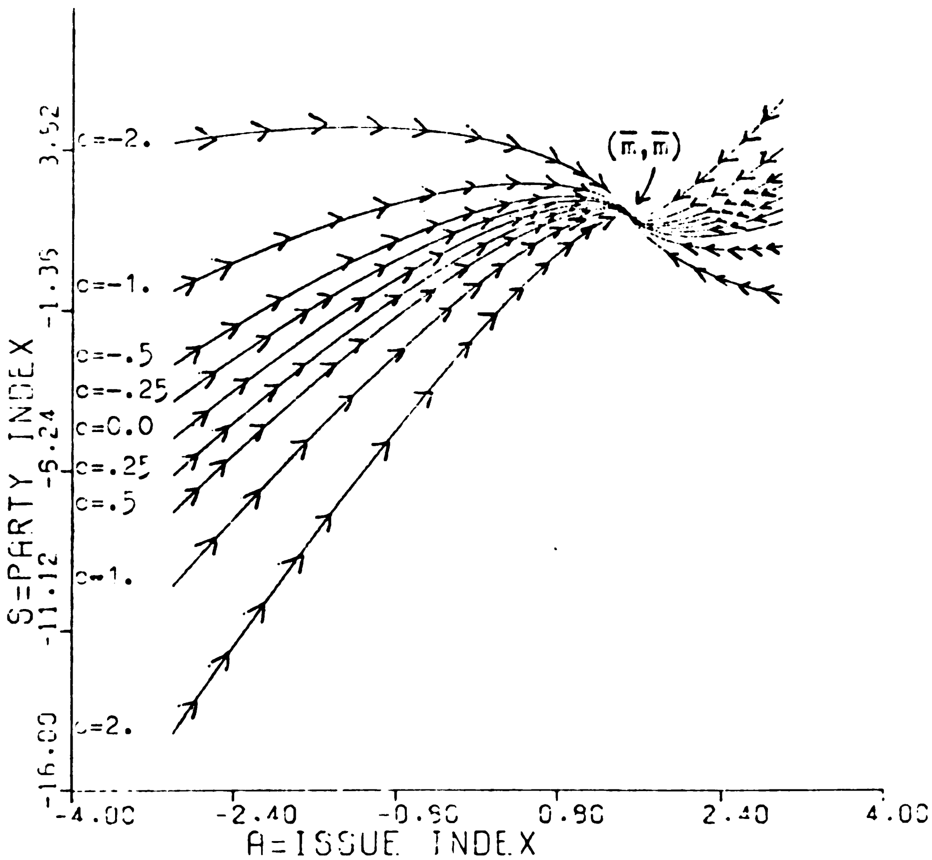


FIGURE 1.7

that the attitudes for the single-party model converge to the mean value of the messages sent from the party for $N\beta = \alpha$.

Attitudes Toward Political Issues and Two Political Parties

If there are two parties taking stands on the issues then, as we have noted, we must consider the equations for attitudes toward each party. But, also as we have noted, we cannot write each equation at the same time until we arrive at a similar scoring convention for each party. We shall here adopt the earlier strategy of scoring the issue attitudes so as to match party 1. Therefore, if the equation for attitudes toward party 1 is:

$$\Delta s_1 = N\beta(\bar{a} - s_1) \qquad [61]$$

and the equation for attitudes toward party 2 is:

$$\Delta s_2 = N\beta(\bar{a} - s_2) \qquad [62]$$

and if we assume that the parties are directly opposed on each important issue, and rescore in the direction of party 1, then we have:

$$\Delta s_1 = N\beta(a - s_1) \qquad [63]$$

$$\Delta s_2 = N\beta[(-a) - s_2] \qquad [64]$$

As in the case of the congruity model, we are faced with the question: "Can we ignore the issues upon which the parties take a common stand?" And, as in the case of the congruity model, information processing theory says: "Yes." To see this, we will again introduce the party differential, $s_1 - s_2$, as the relevant variable to be considered:

$$\Delta D = \Delta s_1 - \Delta s_2 \qquad [65]$$

If we break up the issue index into the issues upon which the parties differ and those upon which they agree, recall that we have:

$$\bar{a} = \frac{1}{N}\left(\sum_{opp} a_i + \sum_{com} a_i \right) \qquad [66]$$

Substituting the separate expressions for each party in equation [65], we have:

$$\Delta D = N\beta(\bar{a} - s_i) - N\beta[(-\bar{a}) - s_2]$$

$$= N\beta[\bar{a} - (-\bar{a})] - N\beta(s_1 - s_2)$$

$$= \frac{N\beta}{N}\{(\sum_{opp} a_i + \sum_{com} a_i) - \sum_{opp} a_i + \sum_{com} a_i)\} - N\beta(s_1 - s_2)$$

$$= \beta(2 \sum_{opp} a_i + \sum_{com} a_i - \sum_{com} a_i) - N\beta(s_1 - s_2)$$

$$= 2n_{opp}\beta(2\bar{a}) - N\beta(s_1 - s_2) \qquad [67]$$

And we see that, for information processing theory, the impact of common issue positions is reduced to zero in the calculation of the party differential, ΔD. If common stands are excluded from the issue index, then we can write the change equation for D as:

$$\Delta D = N\beta[\bar{a} - (-\bar{a})] - N\beta(s_1 - s_2)$$

$$= N\beta(2\bar{a} - D) \qquad [68]$$

We are now ready to proceed to a derivation of the change in the issue index, $\bar{a}$, for the two-party campaign. If we assume that both parties express issue positions equally often, and rewrite equation [59] for the two-party campaign, information processing theory predicts:

$$\Delta\bar{a} = \alpha(\bar{m}_1 - \bar{a}) + \alpha(\bar{m}_2 - \bar{a}) \qquad [69]$$

where,

$\bar{m}_1$ - mean value of messages from party 1

$\bar{m}_2$ = mean value of messages from party 2

Since we have just assumed that the index includes only with those issues upon which the parties differ, we can state:

$$\bar{m}_2 = -\bar{m}_1 \qquad [70]$$

and therefore rewrite equation [69]:

$$\Delta\bar{a} = 2\alpha(\frac{\bar{m}_1 + \bar{m}_2}{2} - \bar{a})$$

$$= 2\alpha(0 - \bar{a})$$

$$= -2\alpha\bar{a} \qquad [71]$$

We now have our change equation for attitudes on the issue index in a two-party campaign, as predicted by information processing theory.

It is important to note that equation [71] is not the equation of a cancellation process. It is not the case that the net impact of arguments both ways is to eliminate change, rather the net impact of arguments both ways is to produce a tendency to become neutral toward the object under discussion. Thus the information processing model treats the combination of positive and negative arguments as if they were arguments for a neutral stand toward the object. A closer examination of equation [71] will make this point more clear. Note that we have:

$$\Delta\bar{a} = 2\alpha(0 - \bar{a})$$

$$= 2\alpha(\bar{m} - \bar{a}) \qquad [72]$$

where $\bar{m} = 0$. This says the impact of the two parties' messages is like getting two messages with value zero. Thus the two parties will drive the voter to a neutral attitude on the issues.

The complete information processing model for change in attitudes toward political issues and attitudes toward the party differential can now be presented:

$$\Delta\bar{a} = -2\alpha\bar{a} \qquad [73]$$

$$\Delta D = N\beta(2\bar{a} - D) \qquad [74]$$

Figures 1.8 and 1.9 present the phase planes for attitudes toward the issue index and the party differential, as predicted by

TWO-PARTY INFORMATION PROCESSING MODEL

D=RHO*A+C*(ABS(A)**GAMMA)

N*BETA≠2*ALPHA ALPHA=BETA=0.01 N=5

RHO=2*N*BETA/(N*BETA-2*ALPHA)

GAMMA=(N*BETA)/(2*ALPHA) A= -3 TO 3

C= -2.0,-1.0,-0.5,-0.25,0.0,0.25,0.5,1.0,2.0

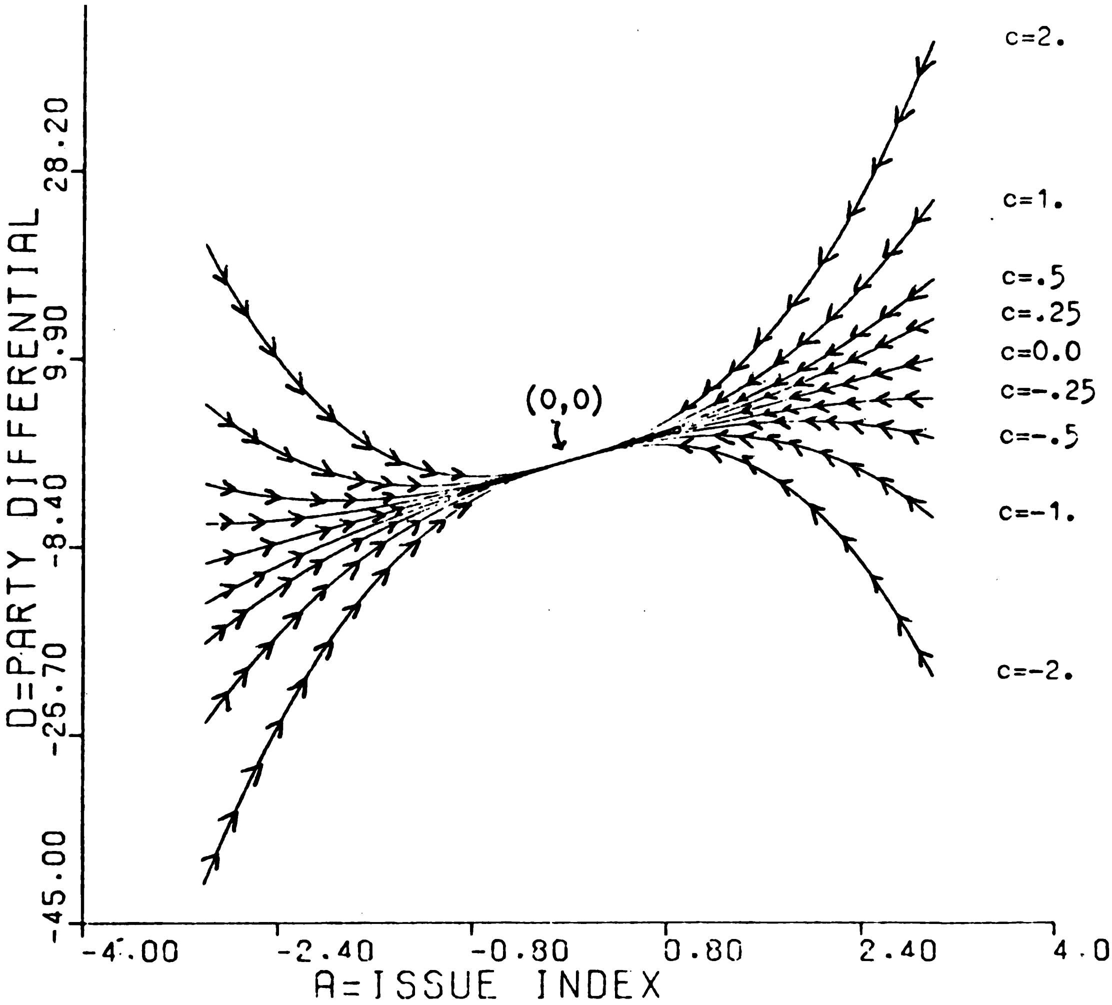


FIGURE 1.8

TWO-PARTY INFORMATION PROCESSING MODEL

D=C*A+2*A*LOG(ABS(A))

N*BETA=2*ALPHA   ALPHA=0.025   BETA=0.01   N=5

A= -3 TO 3

C= -2.0,-1.0,-0.5,-0.25,0.0,0.25,0.5,1.0,2.0

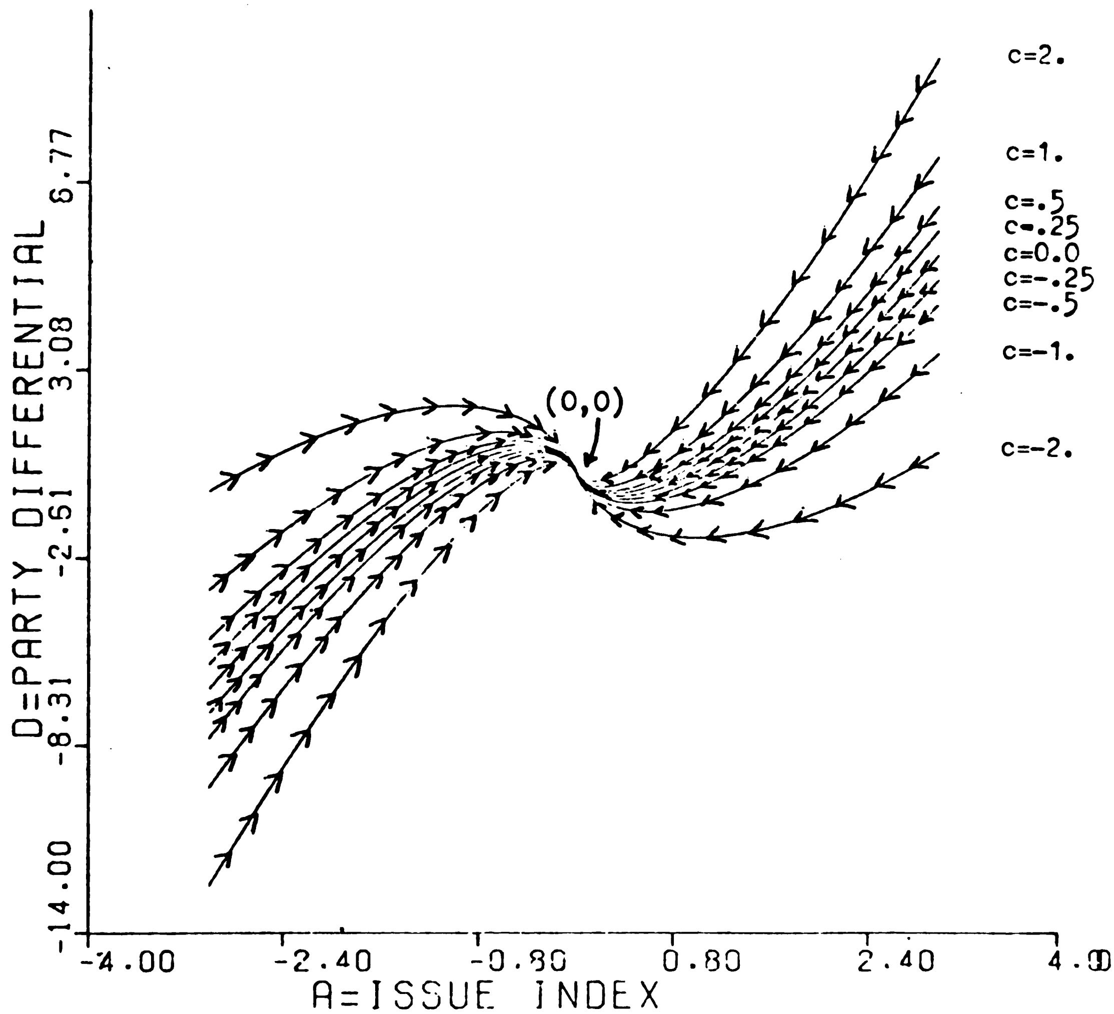


FIGURE 1.9

information processing theory. We see from Figures 1.8 and 1.9 that, for all $\bar{a}_o$ and D_o:

$$\bar{a}^* = 0 \qquad [75]$$

$$D^* = 0 \qquad [76]$$

Thus the information processing model makes the striking prediction that the end result of a sufficiently long campaign will be complete neutrality toward the issues, and complete indifference toward the two competing parties. This prediction follows from the basic scenario which is derived from the temporal equations. First, the two sets of opposing arguments drive the receiver to neutrality. At that point, the receiver agrees with neither party and hence becomes cool and ultimately indifferent to both.

There is, therefore, a clear distinction between the predictions of the congruity and information processing models. The congruity model predicts that in the long run, the equilibrium values of attitudes toward party and issues is a compromise between the initial values of both attitudes. The predicted attitudes ultimately come to stand in a linear relation to one another, and the end point depends on where the receiver started. The information processing model predicts that <u>all</u> receivers end up in the same state: neutral to both parties and toward the issues.

Reinforcement Theory

The fundamental assumption of reinforcement theory, as argued by Miller and Dollard (1941), and Doob (1947), and others is that agreement strengthens an attitude, while disagreement weakens it. The specific mathematical consequences of this assumption have been derived by Hunter and Cohen (1972), and are presented in the chart below:

a	m	Process	Δa
+	+	+ Response strengthened	+
+	-	+ Response weakened	-
-	-	- Response strengthened	-
-	+	- Response weakened	+

The key thing to note here is that strengthening a negative affect results in attitude change which is algebraically negative, while the weakening of a negative response is algebraically positive change. From this chart, we see that the algebraic sign of attitude change is always given by the algebraic sign of the message value m. The simplest equation for such a model is the Hunter and Cohen prototype model:

$$\Delta a = \alpha m \qquad [77]$$

There is always a second side to any reinforcement situation, the response to the reinforcing agent. If the source agrees with the receiver then he is administering reward, while disagreement is punishment. This will result in change in attitude toward the source as well as change in attitude toward the object of the message. The source change predicted by reinforcement theory is derived from the following chart:

a	m	Process	Δs
+	+	Reward	+
+	-	Punishment	-
-	-	Reward	+
-	+	Punishment	-

From this chart we see that the algebraic sign of the source change is given by the sign of the product of the attitude toward the object and the message value. The simplest such model is the Hunter and Cohen prototype model:

$$\Delta s = \beta ma \qquad [78]$$

Attitudes Toward Political Issues and a Political Party Without Opposition

Returning once more to our election campaign, if we let:

a_i = voter's attitude on issue i

s = voter's attitude toward party

m_i = message from party s on issue i

then, as derived directly from equation [78], reinforcement theory predicts:

$$\Delta s = \beta m_i a_i \qquad [79]$$

for a single issue i, and:

$$\Delta s = \beta \sum_i m_i a_i \qquad [80]$$

for all issues. Now, if we let:

$$m_i = \begin{cases} +\mu \text{ if the party endorses } a_e & [81] \\ -\mu \text{ if the party rejects } a_r & [82] \end{cases}$$

then

$$\Delta s = \beta\mu(\sum_e a_e - \sum_r a_r) \qquad [83]$$

And we note that, if we score the issue index according to the issue positions of the party, and we recall that $\bar{a} = \frac{1}{n_e + n_r} \sum_i a_i$, we have:

$$\Delta s = N\beta\mu\bar{a} \qquad [84]$$

which is the change equation for attitudes toward the party as predicted by reinforcement theory.

Moving to the voter's attitudes toward the issues in a single-party election, we have, as taken directly from equation [77]:

$$\Delta a = \alpha m \qquad [85]$$

Summing across all issues, both endorsed and rejected, we obtain:

$$\Delta a = \alpha(\sum_e n_e - \sum_r m_r) \qquad [86]$$

where each m_r is a negative number. If we recognize that $m = \frac{1}{n_e + n_r} \Sigma |m_i|$, where $N = n_e + n_r$, we can write:

$$\Delta\bar{a} = N\alpha\bar{m} \qquad [87]$$

And we have our equation for change in the issue index for the single party campaign.

We can now write the complete reinforcement model for change in attitudes toward the issue index and a single political party in an election campaign:

$$\Delta\bar{a} = N\alpha\bar{m} \qquad [88]$$

$$\Delta s = N\beta\mu\bar{a} \qquad [89]$$

Figures 1.10 and 1.11 summarize the relationships expressed in the change equations for the single-party campaign, for $\alpha = \beta$ and for $\alpha \neq \beta$, respectively.

We see from Figures 1.10 and 1.11 that if a voter begins the campaign with attitudes on the <u>issues</u> not in agreement with the party, then there is a <u>decrease</u> in disagreement; until issue attitudes reach the s-axis (neutrality). From then on, there is an increase in agreement with the party on the issues. Corresponding to this is a <u>decrease</u> in positive evaluation of the <u>party</u>, until the s-axis is reached. From then on, there is increasing positive evaluation of the party.

SINGLE-PARTY REINFORCEMENT MODEL

S=(BETA/(2*ALPHA))*A**2+C

ALPHA=BETA=0.01

A= -3 TO 3

C= -3,-2,...,2,3

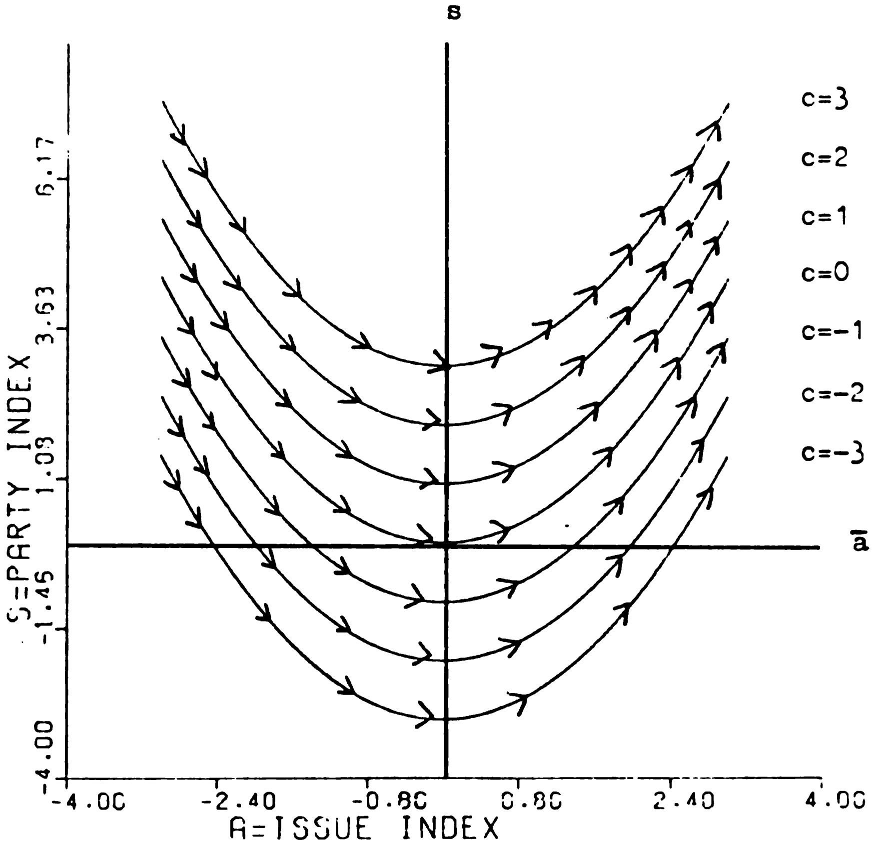


FIGURE 1.10

SINGLE-PARTY REINFORCEMENT MODEL

S=BETA/(2*ALPHA)*A**2 +C

ALPHA≠BETA ALPHA=0.01 BETA=0.02

A= -3 TO 3

C= -3,-2,...,2,3

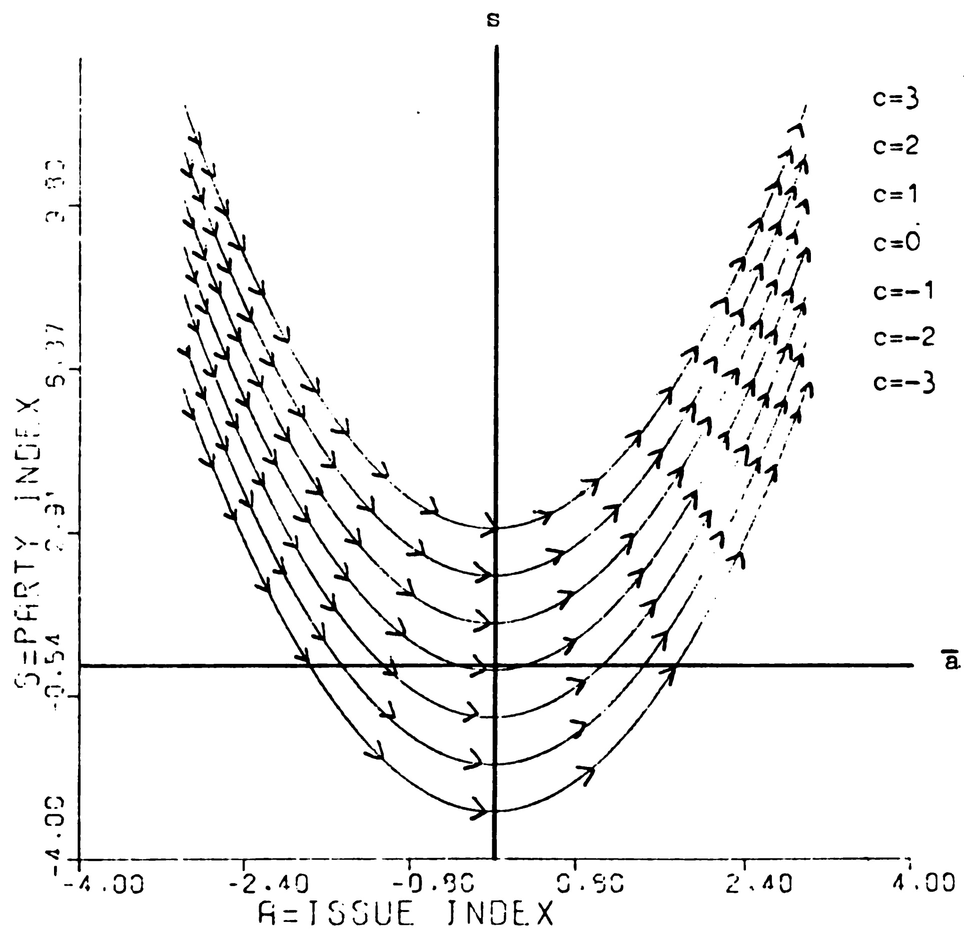


FIGURE 1.11

Attitudes Toward Political Issues
and Two Political Parties

As we have argued throughout, if there are two parties taking stands on the issues in a political campaign, then we must consider the equations for attitudes toward each party separately. In addition, we have also noted that in order to write both equations simultaneously, we must adopt a similar scoring convention for each party. We begin the derivation of the equations for the two-party reinforcement model by defining the messages from each party as the absolute value of each message:

$$|m_i| = \mu$$

Scoring issues endorsed and rejected in the usual manner, and recalling $\bar{a} = \frac{1}{N} a_i$, we can write from equation [89]:

$$\Delta s_1 = \beta\mu(\sum_e a_i - \sum_r a_i) \qquad [90]$$

If we rescore those that party 1 rejects, we have:

$$\Delta s_1 = \beta\mu[\sum a_i - \sum_r (-a_i)]$$

$$= \beta\mu(\sum_e a_i - \sum_r a_i)$$

$$= N\beta\mu\bar{a} \qquad [91]$$

If this is considered in relation to the second party, we can write:

$$\bar{a} = \frac{1}{N} (\sum_{opp} a_i + \sum_{com} a_i) \qquad [92]$$

where all issues are scored so that the position of party 1 is positive. The attitude index for party 2 will thus be:

$$\bar{a}_2 = \frac{1}{N} \left(\sum_{opp} a_i + \sum_{com} a_i \right) \qquad [93]$$

if the issues are scored in the direction of party 2; but becomes:

$$\bar{a}_2 = \frac{1}{N} \left(- \sum_{opp} a_i + \sum_{com} a_i \right) \qquad [94]$$

when the attitudes are scored in the direction of party 1. Thus the source change for party 2 is:

$$\Delta s_2 = N\beta\mu\bar{a}_2 \qquad [95]$$

The party differential is then:

$$\Delta D = \Delta s_1 - \Delta s_2$$

$$= \beta\mu \left(\sum_{opp} a_i + \sum_{com} a_i \right) - \beta\mu \left(- \sum_{opp} a_i + \sum_{com} a_i \right)$$

$$= 2\beta\mu \sum_{opp} a_i \qquad [96]$$

We have now shown that, as was the case with congruity theory and information processing theory, common stands taken by the parties are irrelevant to the party differential for reinforcement theory. Thus, if only opposing stands enter the issue index, then:

$$\Delta D = 2\beta\mu\Sigma\, a_i$$

$$= 2\beta\mu N\bar{a} \qquad [97]$$

And we have the equation for change in the party differential for the two-party campaign, as predicted by reinforcement theory.

Moving to a derivation of the change in attitudes on the issue index as predicted by reinforcement theory, we note that if we score messages according to party 2, from equation [88], we have:

$$\Delta\bar{a}_2 = N\alpha\bar{m}_2 \qquad [98]$$

However, if we follow the convention used in the calculation of ΔD, we must reverse-score messages from party 2. Hence, if we assume that the parties present opposing messages equally often to the voters, we have:

$$\bar{m}_2 = -\bar{m}_1 \qquad [99]$$

Therefore, we can rewrite $\Delta\bar{a}_2$ to read:

$$\Delta\bar{a}_2 = -N\alpha\bar{m}_1 \qquad [100]$$

The total change is:

$$\begin{aligned}\Delta\bar{a} &= \Delta\bar{a}_1 + \Delta\bar{a}_2 \\ &= N\alpha\bar{m}_1 - N\alpha\bar{m}_1 \\ &= 0 \qquad [101]\end{aligned}$$

And we have our change equation for attitudes toward the issue index in a two-party election campaign, as predicted by reinforcement theory. Thus, assuming $\bar{m}_2 = -\bar{m}_1$, we see that reinforcement theory predicts that the effect of opposing messages from the two parties will be to cancel each other out; i.e., result in no change in attitudes toward the issues.

The complete reinforcement model for change in attitudes toward the issue index and the party differential in a two-party election campaign can now be written as the pair of equations:

$$\Delta a = 0 \quad [102]$$

$$\Delta D = 2\alpha\mu N\bar{a} \quad [102]$$

Figure 1.12 presents the phase plane for the relationship between attitudes toward the issue index and the party differential as predicted by reinforcement theory. We see depicted in Figure 1.12 the fact that $\bar{a}$ (issue attitudes) never changes, and that D (party differential) ultimately follows issue attitudes. Recall that a positive score on the party differential denotes affinity toward party 1 and a negative score on the party differential denotes affinity toward party 2; and that a positive score on the issue index denotes a conservative attitude, while a negative score denotes a liberal attitude. We see then, from Figure 1.12, that if a voter begins the campaign with a positive (conservative) attitude on the issues, he will move more and more in favor of party 1; and if a voter begins the campaign with a negative (liberal) attitude on the issues, he will move more and more in favor of party 2. The unstable set of equilibrium values (the D-axis) implies that if a voter is neutral on the issues, his party attitude will remain constant throughout the campaign.

TWO-PARTY REINFORCEMENT MODEL

D*0.0=A-C

A= -3 TO 3

C= -3,-2,...,2,3

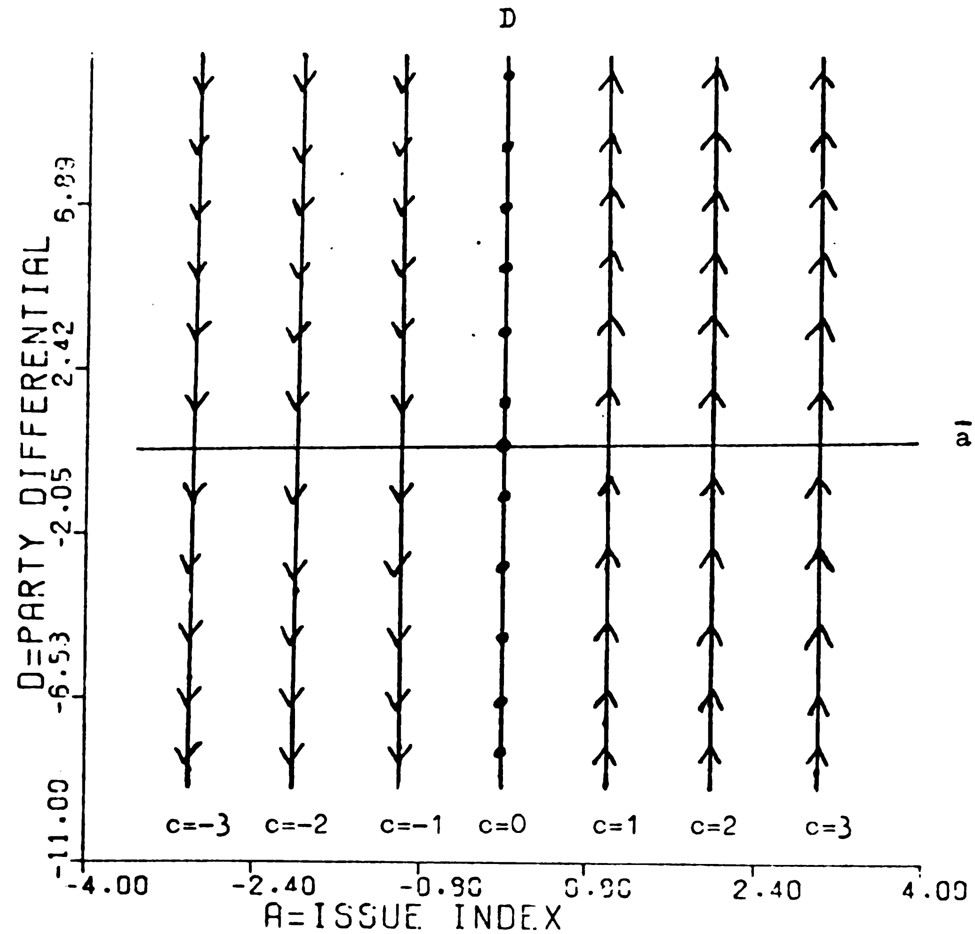


FIGURE 1.12

We thus have a striking contrast between the reinforcement model, which in effect predicts that the electorate will eventually be driven into two increasingly opposing camps corresponding to the two political parties; and the information processing model, which predicts that the electorate will eventually be driven to neutrality on both the parties and the issues.

Summary

The reader will recall that two important considerations underly the development of the specific model equations derived here. First of all, we derived that issues upon which the two parties take a common stand are irrelevant to the party differential for all three models. Second, we assumed that all of the electorate is exposed to the issue positions of the two parties equally often.

For the two-party congruity model, we were able to show that there are arrows of influence from attitudes toward the parties to attitudes toward the issues, and from attitudes toward the issues to attitudes toward the parties. This implies that over the course of the campaign (depending upon the initial distributions of party and issue attitudes, the issue positions taken by the two parties and the relative magnitudes of the attitude change parameters) the scores on the party and issue attitude indices for the electorate will move to a pair of equilibrium values that reflect the relative impact of party and issue attitudes upon each other.

The two-party information processing model, however, predicts an arrow of influence only from attitudes toward the issues to attitudes toward the parties. While the party itself does influence attitudes on the issues, through the messages it sends to the voters, attitudes toward the parties do not influence issue attitudes. The implication here is, therefore, that party attitudes will not effect a change in issue attitudes. Furthermore, the information processing model predicts that over a long enough campaign, the effect of opposing issue stands by the two parties will be to drive the voters to a neutral attitude in terms of their evaluation of the two parties and the issue index. This implies that at the end of a long enough campaign, if the total electorate were "information processers," there would be no votes cast, as everyone would have the same affective evaluation of both parties. More specifically, the voters would feel that there is no difference between the parties in terms of their own attitudes toward the issues, as their attitudes toward the parties and the issues would both be neutral.

The two-party reinforcement model, while having the same influence structure as the information processing model, makes a different prediction. The important distinction between the reinforcement model and the information processing model is that the reinforcement model predicts that opposing messages from the two parties will cancel each other out and result in no issue attitude change at all, while the information processing model predicts that the opposing arguments will ultimately produce neutral attitudes. The reinforcement model predicts that a voter will adopt the party which more closely corresponds to his own issue attitudes, and move more and more in favor of that party as the campaign goes on. Thus, the electorate will eventually become divided into two polar camps, with the party promoting the issue preferences of the most voters winning the election. In this respect, the reinforcement model is very similar to the spatial model discussed earlier.

CHAPTER TWO

STOCHASTIC MODELS AND THEIR IMPLICATIONS

Introduction

In the previous pages we derived three deterministic models of attitude change for attitudes toward political issues and two political parties in the context of an election campaign. By virtue of their strict deterministic character, these models assume perfect prediction. However, we cannot safely assume perfect prediction in the real world. Hence, we need stochastic models, or models which incorporate an error term, to account for errors in prediction. In this chapter we shall discuss in some detail our strategy for testing the stochastic versions of the deterministic models previously derived, plus the SRC model.

The Models

Table 2.1 presents a summary of the model equations for the three theories of attitude change we discussed in earlier sections. The reader will note that included in this table are the stochastic difference equations for each model, which represent the actual form of the models to be empirically tested. The logic behind the use of stochastic difference equations can be quite simply stated. Our models are models of attitude change; therefore, we are necessarily concerned with time series data. Carrying our argument one step

TABLE 2

SUMMARY TABLE FOR TWO-PARTY CAMPAIGN

	CONGRUITY MODEL	INFORMATION PROCESSING MODEL	REINFORCEMENT MODEL
CHANGE EQUATIONS	$\Delta\bar{a} = N\alpha(D - 2\bar{a})$ $\Delta D = N\beta(2\bar{a} - D)$	$\Delta\bar{a} = -2\alpha\bar{a}$ $\Delta D = N\beta(2\bar{a} - D)$	$\Delta\bar{a} = 0$ $\Delta D = 2\alpha\mu N\bar{a}$
RECURSIVE EQUATIONS	$\bar{a}_{n+1} = N\alpha D_n + (1 - 2N\alpha)\bar{a}_n$ $D_{n+1} = N\beta 2\bar{a}_n + (1 - N\beta)D_n$	$\bar{a}_{n+1} = (1 - 2\alpha)\bar{a}_n$ $D_{n+1} = N\beta 2\bar{a}_n + (1 - N\beta)D_n$	$\bar{a}_{n+1} = \bar{a}_n$ $D_{n+1} = 2\alpha\mu N\bar{a}_n + D_n$
REGRESSION EQUATIONS	$E(\bar{a}_{n+1}\|\bar{a}_n) = N\alpha D_n + (1 - 2N\alpha)\bar{a}_n$ $E(D_{n+1}\|D_n) = N\beta 2\bar{a}_n + (1 - N\beta)D_n$	$E(\bar{a}_{n+1}\|\bar{a}_n) = (1 - 2\alpha)\bar{a}_n$ $E(D_{n+1}\|D_n) = N\beta 2\bar{a}_n + (1 - N\beta)D_n$	$E(\bar{a}_{n+1}\|\bar{a}_n) = \bar{a}_n$ $E(D_{n+1}\|D_n) = 2\alpha\mu N\bar{a}_n + D_n$
STOCHASTIC DIFFERENCE EQUATIONS	$\bar{a}_{n+1} = N\alpha D_n + (1 - 2N\alpha)\bar{a}_n + u_n$ $D_{n+1} = N\beta 2\bar{a}_n + (1 - N\beta)D_n + v_n$	$\bar{a}_{n+1} = (1 - 2\alpha)\bar{a}_n + u_n$ $D_{n+1} = N\beta 2\bar{a}_n + (1 - N\beta)D_n + v_n$	$\bar{a}_{n+1} = \bar{a}_n + u_n$ $D_{n+1} = 2\alpha\mu N\bar{a}_n + D_n + v_n$
DIRECTION OF INFLUENCE	ISSUE ATTITUDES ↑↓ PARTY ATTITUDES	ISSUE ATTITUDES ↓ PARTY ATTITUDES	ISSUE ATTITUDES ↓ PARTY ATTITUDES

further, we are primarily interested in being able to predict party and issue positions at time n+1 from party and issue positions at time n. While the process can be viewed as one of continuous time, our data is in the form of discrete-time observations. Hence we need difference equation, as opposed to differential equation, models. Completing our explanation, we note that we have already acknowledged that deterministic models rarely fit real world data perfectly; therefore we must include an error term. The stage is thus set for stochastic difference equation models.

Another aspect of our models bears explaining in a little more detail. As our models are primarily concerned with change in attitudes over time, we have argued that we need time series data. However, not just any type of time series data will do. More specifically, as stated in the introduction to this thesis, we desire a special type of time series data known as panel data, or data collected on the same subjects over time. In this context, an examination of change in individual subject's attitudes over time can be conducted. An alternative would be to look at cross-sectional data over time; but, in that case, we would have a confounding of changing individuals as well as changing attitudes. Consequently, we could not sort out two interacting effects in order to look at real change in individual attitudes over time.

We will have more to say concerning our data sets in later sections, but it is appropriate now to remind the reader that our two data sets (American and British) are panel data sets, with rather large sample sizes (i.e., N = 752 for the American panel and N = 546

for the British panel). These large N's will permit us to make reasonably accurate analysis of small changes in attitudes over time. This point is well illustrated by noting that the sampling error of the Pearson product-moment correlation coefficient is .04 for both sample sizes.

The Problem of Measurement Error

In the introduction to this chapter, we noted that we have to add an error term to our deterministic models, thus making them stochastic models, in order to test the fit of the models to data. This will enable us to accommodate one type of error, error of prediction. There is, however, another completely separate type of error we must contend with, and that is error of measurement. Measurement error, or unreliability, is that error which results from an inability to perfectly measure theoretical variables in the real world. We have noted, as is well known in psychometrics and econometrics, measurement error can be a very serious problem for correlation and regression models.

As we have argued throughout, the variables for party attitudes and issue attitudes are operationalized as indices, formed from multiple indicators of the underlying theoretical concepts. The fact that we have multiple indicators of our theoretical concepts allows us to employ a multivariate technique known as cluster analysis to our data. An excellent, detailed discussion of cluster analysis as a multiple indicators approach to the problem of measurement error in multivariate analysis is contained in Hunter (1977). In general, cluster analysis can be viewed as an oblique multiple groups factor analysis in which the researcher a priori defines a "cluster" of variables to be included in each factor, ostensibly based upon his theory or model. This is contrary to the usual factor-analytic strategy of letting the machine "discover" one's factors for him.

As noted by Hunter (1977), a perfect cluster is a set of variables which measure exactly the same underlying trait. Thus, a perfect cluster is said to be unidimensional. The tests for unidimensionality are discussed in detail in Hunter (1977), and will be only briefly mentioned here. The main test is not a statistical one; rather, it is a test of homogeneity of content, based upon the researcher's substantive evaluation of how well the variables hang together. A second test is internal consistency, or a check for Spearman's (1904) criterion of unit rank for the cluster correlation matrix. Hunter (1977) has shown that one special case of a rank-one correlation matrix is one in which the inter-cluster correlations are "flat," i.e.:

$$r_{x_i x_j} = r_{xx} \qquad [104]$$

to within sampling error, where the single number r_{xx} is the correlation between any two variables in the cluster. The third test is parallelism, or a check for a similar pattern of correlation between the variables in a cluster and any variable outside the substantive domain of the cluster. Specifically, if $x_1, x_2, x_3, \ldots$ are all measures of the same underlying factor F, and they all have equal quality of measurement of that factor, i.e.:

$$r_{x_1F} = r_{x_2F} = r_{x_3F} = \ldots \qquad [105]$$

then one should observe:

$$r_{x_1Y} = r_{x_2Y} = r_{x_3Y} = \ldots \qquad [106]$$

to within sampling error, for any variable Y outside the domain of the cluster. Therefore, for any cluster with a flat correlation matrix, the test for parallelism is equivalence among the correlations of the items in the cluster with any item or cluster outside the domain of that cluster, to within sampling error. We should note that Hunter (1977) gives statistical tests for the equivalances of correlation discussed above. We can thus view these three tests for unidimensionality as a means of eliminating "weak" items from theoretical clusters.

Once one is satisfied that he has a set of unidimensional clusters, Cronbach's (1951) coefficient alpha can be calculated for each cluster, and is equivalent to the cluster reliability. The intracluster correlations can then be corrected for attenuation due to random measurement error. For a full discussion of the relationship between communalities, reliability theory and factor analysis; and correction for attenuation, the reader is referred to Hunter (1977) and Gorsuch (1974); and Nunnaly (1967).

Unfortunately, random measurement error is not the only type of measurement error about which we must be concerned. As we have noted, the logic of cluster analysis assumes that there is but <u>one</u> underlying theoretical construct being measured by each of the variables. However, as is well known in the theory of factor analysis there may be, along with each "general" factor underlying the variables in a cluster, a "specific" factor for each variable representing the existence of a causal (nonrandom) agent not related to any other factors effecting that variable. For a discussion of the notion of specific factors (specificities) in the context of psychological test theory, the reader can consult Guilford (1954). In cross-sectional data, specific factors are inextricably confounded with random measurement error, and are therefore accounted for by the usual correction for attenuation, as noted by Tosi, Hunter, Chesser, Tarter, and Carroll (1976). In the context of time series data, however, the two types of measurement error (random and specific) are separable. We can observe the effect of specific factors on item test-retest correlations and correct for them. A simple mathematical digression will illustrate this point.

Consider that we have a cluster of variables, x_i, measured at time m which we consider to be alternate indicators of the same underlying trait; and that we have the same cluster of variables, this time called x_j, measured at time n. Recalling what we have already mentioned about the theory of factor analysis, we know that each of the variables in the cluster can be expressed as a function of a general factor G, a specific factor S, and a random error term e. We can thus write:

$$X_{mi} = \beta_{mi} G_m + S_{mi} + e_{mi} \qquad [107]$$

$$X_{nj} = \beta_{nj} G_n + S_{nj} + e_{nj} \qquad [108]$$

where m and n represent different time periods.

We can then write the covariance of the indicators as:

$$\sigma_{X_{mi} X_{nj}} = \beta_{mi} \beta_{nj} \sigma_{G_m G_n} + \delta_{ij} \sigma_{S_{mi} S_{nj}} + \delta_{ij} \delta_{mn} \sigma_{e_{mi} e_{nj}} \qquad [109]$$

where δ (the Kronecker delta) is 1, if $i = j$ and 0, if $i \neq j$. The reader should notice that within a given time period (i.e., $m = n$), S makes a contribution to each variable which is, as we have noted, removed by the correction for attenuation. The reader should also notice that for $i \neq j$, the last two terms of equation [109] vanish, as we assume that the correlation between S_{mi} and S_{nj}, and between e_{mi} and e_{nj} is zero. What all this means is that the effect of the specific factors on the variables shows up in the test-retest correlations in each matrix of correlations between clusters of items measured at <u>different</u> time periods, and appears in the main diagonal of such a block. The result is artifactually large test-retest correlations for each item in the cluster, which can be seen as a spuriosly inflated main diagonal in each matrix of cross-lag correlations for each item cluster. This inflated main diagonal must be removed before the intracluster (cross-lag) correlations can be calculated. The interested reader is invited to consult Appendix C for a derivation of the method of calculating cross-lag cluster correlations from matrices if interitem correlations. The result of deleting the inflated main diagonal described above and calculating the intra-cluster correlations from matrices of inter-item correlations is that we have removed two sources of measurement error--random and specific--from the over time cluster correlations.

We have noted that our sample sizes for both data sets are large enough to permit us to make meaningful analyses of small changes in attitudes over time. Noting the Heise formula (1969) for the reliability of a single item measured at three points in time:

$$r_{xx} = \frac{r_{12}\, r_{23}}{r_{13}} \qquad [110]$$

Hunter and Coggin (1975) were able to derive that this expression also tests the fit of an item measured at three points in time to a univariate Markov process of real change over time. Hence, if we treat our cluster scores as single items and examine the pattern of test-retest correlations, we can estimate the stability coefficient for the pattern of correlations previously corrected for attenuation and specific factors:

$$\rho^2 = \frac{r_{12}\, r_{23}}{r_{13}} \qquad [111]$$

i.e., the presence of instability due to minor, transient effects, in true scores. Hence, a ρ^2 of 1.0 for correlations previously corrected for attenuation and specific factors indicates a univariate Markov process of real change and no transient effects. A ρ^2 of less than 1.0 indicates the presence of transient effects and/or no univariate Markov process of real change.

Information Processing Theory vs. Reinforcement Theory

Another problem we face in evaluating the fit of these three models to data is that two of the models, information processing and reinforcement, make the same qualitative prediction; i.e., that attitudes toward the parties do not influence attitudes toward the issues. We are faced, therefore, with the task of finding some way to discriminate between these two models.

One method of attempting to decide between the two models is to examine the variances of the two attitude clusters for each model, and see if they make different predictions for those variances over time. We will begin with information processing theory.

From Table 2.1, we note that the two-party stochastic difference equations for the information processing model are:

$$\bar{a}_{n+1} = (1 - 2\alpha)\bar{a}_n + u_n \qquad [112]$$

$$D_{n+1} = N\beta 2\bar{a}_n + (1 - N\beta)D_n + v_n \qquad [113]$$

From these equations, we can derive difference equations for the variances of the attitude clusters. We will derive the equation for the variance of the issue attitudes cluster first. From equation [112] above, we can write:

$$\sigma^2_{\bar{a}_{n+1}} = (1 - 2\alpha)^2\sigma^2_{\bar{a}_n} + \sigma^2_{u_n} \qquad [114]$$

It can further be shown that, in general, the variance of the issue attitudes cluster, $\sigma^2_{\bar{a}_n}$, will converge to the quantity $\frac{\sigma^2_{u_n}}{1 - (1-2\alpha)^2}$ over time.

Turning to the variance in the party attitudes cluster (the party differential), from equation [113], we can write:

$$\sigma^2_{D_{n+1}} = (1 - N\beta)^2\sigma^2_{D_n} + 4\,(N\beta)^2\sigma^2_{\bar{a}_n} + 4N\beta(1 - N\beta)\sigma_{\bar{a}_n D_n} + \sigma^2_{v_n} \qquad [115]$$

If we note that $\sigma_{\bar{a}D} = r_{\bar{a}D}\sigma_{\bar{a}}\sigma_D$, we can substitute in equation [115] and write:

$$\sigma^2_{D_{n+1}} = (1 - N\beta)^2\sigma^2_{D_n} + 4(N\beta)^2\sigma^2_{\bar{a}_n} + 4N\beta r_{\bar{a}_n D_n}\sigma_{\bar{a}_n}\sigma_{D_n}(1-N\beta) + \sigma^2_{v_n} \qquad [116]$$

Now if we let $r_{\bar{a}D} = .25$, as the American data suggests, we can substitute in equation [116] and write:

$$\sigma^2_{D_{n+1}} = [1 + 2N\beta + (N\beta)^2]\sigma^2_{D_n} + 4(N\beta)^2\sigma^2_{\bar{a}_n} + N\beta(1 - N\beta)\sigma_{\bar{a}_n}\sigma_{D_n} + \sigma^2_{v_n}$$

$$= \sigma^2_{D_n} - [2N\beta - (N\beta)^2]\sigma^2_{D_n} + 4(N\beta)^2\sigma^2_{\bar{a}_n} + N\beta(1 - N\beta)\sigma_{\bar{a}_n}\sigma_{D_n} + \sigma^2_{v_n}$$

$$= \sigma^2_{D_n} + \sigma^2_{D_n}[-2N\beta + (N\beta)^2 + 4(N\beta)^2\frac{\sigma^2_{\bar{a}_n}}{\sigma^2_{D_n}} + N\beta(1 - N\beta)\frac{\sigma_{\bar{a}}}{\sigma_D}] + \sigma^2_{v_n}$$

[117]

If we let $\frac{\sigma_{\overline{a}}}{\sigma_D} = .86$, as the American data suggests, we can substitute in equation [117] and write:

$$\sigma^2_{D_{n+1}} = \sigma^2_{D_n} + \sigma^2_{D_n} [-2N\beta + (N\beta)^2 + 2.93(N\beta)^2 + .5N\beta - .86(N\beta)^2] + \sigma^2_{v_n}$$

$$= \sigma^2_{D_n} + \sigma^2_{D_n} [-1.5N\beta + 3.07(N\beta)^2] + \sigma^2_{v_n}$$

$$= \sigma^2_{D_n} - [1.5N\beta - 3.07(N\beta)^2]\sigma^2_{D_n} + \sigma^2_{v_n} \qquad [118]$$

And, it can be shown that the variance of the party differential, $\sigma^2_{D_n}$, will converge to the quantity $\frac{\sigma^2_{v_n}}{1 - (1 - 1.5N\beta + 3.07N^2\beta^2)}$ over time.

Combining this with our prediction for the variance in the issue attitudes cluster leaves us with a general prediction from the information processing model that the variance in both the party attitudes cluster and the issue attitudes cluster will ultimately converge to a pair of equilibrium values.

Moving to a discussion of the variances in the attitude cluster as predicted by reinforcement theory, from Table 2.1 we note that the two-party difference equations for the reinforcement model are:

$$\bar{a}_{n+1} = \bar{a}_n + u_n \qquad [119]$$

$$D_{n+1} = 2\alpha\mu N\bar{a}_n + D_n + v_n \qquad [120]$$

From equation [119] above, we can write:

$$\sigma^2_{\bar{a}_{n+1}} = \sigma^2_{\bar{a}_n} + \sigma^2_{u_n} \qquad [121]$$

and we see that, assuming $\sigma^2_{u_n} \neq 0$, the variance of the issue attitudes cluster as predicted by reinforcement theory will tend to continually increase over time.

Directing our attention to the variance in the party differential, from equation [120] we can write:

$$\sigma^2_{D_{n+1}} = \sigma^2_{D_n} + 4(\alpha\mu N)^2\sigma^2_{\bar{a}_n} + 4\alpha\mu N\sigma_{\bar{a}D} + \sigma^2_{v_n}$$

$$= \sigma^2_{D_n} + 4(\alpha\mu N)^2\sigma^2_{\bar{a}_n} + 4\alpha\mu N r_{\bar{a}_n D_n}\sigma_{\bar{a}_n}\sigma_{D_n} + \sigma^2_{v_n} \qquad [122]$$

and we see that, assuming $r_{\bar{a}_n D_n} > 0$, which is true for both our data sets, the variance of the party differential as predicted by reinforcement theory will tend to continually increase over time as well.

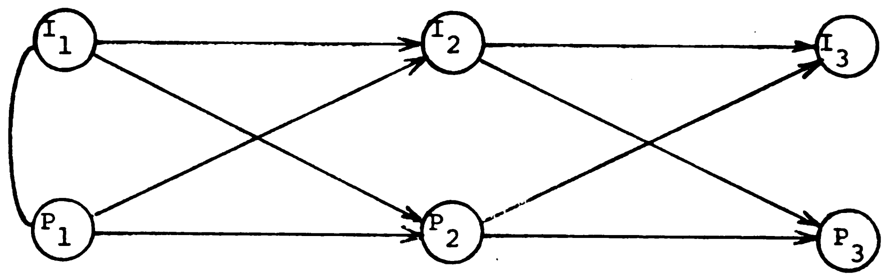
Thus, in our effort to distinguish between the information processing and reinforcement models, we derived that the information processing model mathematically predicts that the variances of the attitude clusters will ultimately converge to a pair of equilibrium values; and the reinforcement model mathematically predicts that the variances will continually increase over time. We have therefore arrived at a solution to our problem of deciding between two models which make the same qualitative prediction.

Path Analysis

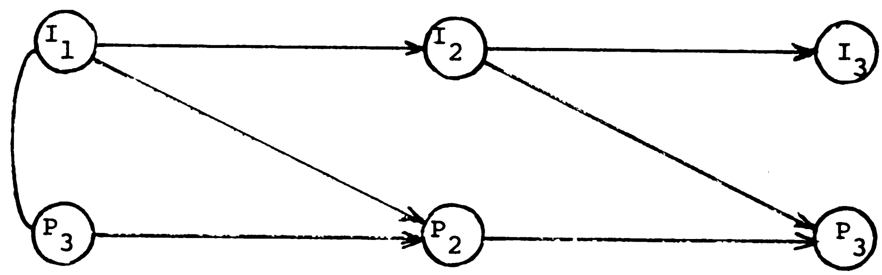
A graphic representation of the models to be tested is presented in Figure 2.1. The diagrams in Figure 2.1 are the path diagrams for the models of attitude change in a political campaign we have derived, plus the SRC model. The technique we have chosen to test the fit of our models of the relationship between issue attitudes and party attitudes to the data is path analysis. Path analysis is a statistical method due to the late biometrician Sewell Wright in his work in genetics. For a full development of the methodology of path analysis, we refer the reader to the original works of Wright (Wright, 1921, 1934, 1954), and to two more recent discussions and extensions by Land (1969), and Duncan (1975).

As a general statistical technique, path analysis is a structural equation method of estimating the strength and direction of relationships between variables in a temporal ordering. One specifies the links between variables which are included in the path model and those links which are to be left out of the path model on the basis of theory. That is to say, the theory specifies the temporal ordering of the variables in the model. Once the model is theoretically specified with unspecified links omitted, multiple-regression techniques are employed to estimate the magnitude of the

Congruity Model



Information Processing-Reinforcement Model



SRC Model

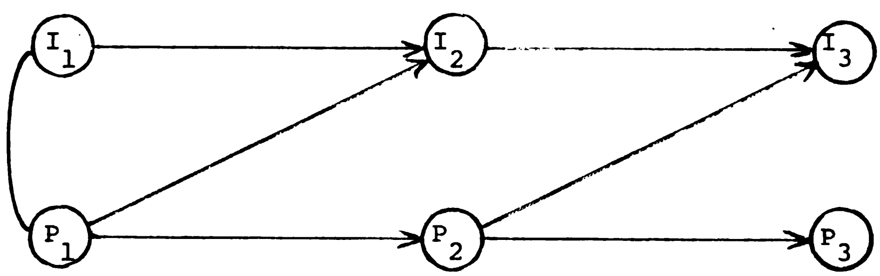


FIGURE 2.1*

PATH DIAGRAMS

*I_1, I_2, and I_3 represent issue attitudes at times 1, 2 and 3.
P_1, P_2, and P_3 represent party attitudes at times 1, 2 and 3.

links or paths, called path coefficients. Our models are time series (panel)models, hence simultaneous influence is ruled out by the over time nature of our models and data. The models we have developed are therefore fully recursive models, and ordinary least squares (OLS) parameter estimation is appropriate. Once one has specified the system of structural equations for a path model and estimated the standardized regression coefficients (i.e., the path coefficients), he can then test the fit of the model to the data by attempting to reproduce the observed correlations among the variables in the model, using the standardized regression coefficients. For a detailed discussion of the method of predicting correlations among the variables in a path model using the path coefficients estimated for the model, we refer the reader to Wright (1934).

If a path model reproduces the observed correlations between all the variables in the model, then the researcher can say that his model is supported by the data. If a number of models are tested, then the one which most closely reproduces the observed correlations is said to be the one which best fits the data. The usual procedure is to square each deviation between the observed and the predicted correlations and sum them, for each model. The model with the smallest "sum of squared deviations" is said to be the model best supported by the data.

Random measurement error, or unreliability, can have a negative impact on the fit of a path model to the observed data. Correlations attenuated by random measurement error pose serious problems for the reproduction of observed correlations from path coefficients, since attenuated correlations can yield "false positive" (non-zero) partial correlation coefficients. A brief example will illustrate this point.

Consider the following simple path model:

Consider further the following hypothetical correlation matrix for "true scores" (i.e., scores for perfectly measured versions of the variables) for the model:

	X	Y	Z
X	1.00		
Y	.70	1.00	
Z	.56	.80	1.00

Using the standard formula for calculating a partial-correlation coefficient, we have:

$$r_{XZ.Y} = \frac{.56 - .70(.80)}{1-(.70)^2 \quad 1-(.80)^2} = 0.0 \qquad [123]$$

However, if each of the three variables has a reliability of .50, we can derive from the attenuation formula:

$$r_{XY(OBSERVED)} = r_{XY(TRUE)} \sqrt{r_{XX}} \sqrt{r_{YY}} \qquad [124]$$

that the "uncorrected" (i.e., uncorrected for attenuation) matrix of observed correlations between the variables would be:

	X	Y	Z
X	1.00		
Y	.35	1.00	
Z	.28	.40	1.00

Thus, the partial-correlation, $r_{XZ.Y}$, becomes:

$$r_{XZ.Y} = \frac{.28 - .35(.40)}{1-(.35)^2 \quad 1-(.40)^2} = .16 \qquad [125]$$

And we see that the effect of random measurement error is to give us a "false positive" partial-correlation coefficient; and would lead us to incorrectly conclude that X influences Z, apart from its influence through Y, in the above path model.

We are fortunate in having access to a computer program, PACKAGE (Hunter and Cohen, 1969), which will perform the cluster analysis described earlier and correct the observed cluster correlations for attenuation. We can then correct for the effects of specific factors upon the cluster cross-lag correlations, and we will have removed two major sources of measurement error. This same program has now been modified so as to be able to be used to test the fit of path models to data, using the procedure outlined by Wright (1934).

Summary

In this chapter, we have tried to set the stage for tests of the models we have previously derived, in the context of panel data collected in the United States and Britain.

We discussed the need for a transition from deterministic models to stochastic models, when moving to empirical tests of our models. We noted that since our models are concerned with change in attitudes over time and since our data is in the form of discrete-time observations, we must cast our models in the form of stochastic difference equations in order to test them. With respect to the nature of the data needed to test our models, we argued that in the context of panel data, our models can be meaningfully evaluated.

We found ourselves confronted with two models, information processing and reinforcement, which yield the same qualitative prediction--that party attitudes do not influence issue attitudes. We were able to resolve this problem of model discrimination by deriving the predictions for the variances of the attitude clusters for each model over time. We discovered that the two models give distinguishing predictions. The information processing model predicts that the variances should converge to a pair of equilibrium values, while the reinforcement model predicts that the variances should continually increase over time. A substantive interpretation of these mathematical predictions for an election campaign may now be helpful.

For the two-party information processing model, we know from an earlier discussion that as long as we consider only those issues on which the parties are opposed, everyone is driven to neutrality on the issues. As everyone is driven to neutrality, everyone becomes more alike. Hence, we see that the variance in the issue attitudes will, in general, tend to decrease for those who start out above the equilibrium value for the variance of the issue attitudes cluster;

and increase for those who start out below the equilibrium value. Once the equilibrium value is reached, the variance of the issue attitudes cluster will remain constant. As for the variance of the party differential, as people move toward neutrality on the issues, the variance of the party differential will tend to decrease. But this increase is counterbalanced by the unsystematic increases in the error variance for the party differential. The net effect will be to cause the variance of the party differential to move to an equilibrium value also.

Moving to the two-party reinforcement model, we have shown that there is no change in the issue attitudes index predicted by the reinforcement model over time. But, our stochastic difference equation for $\bar{a}$ has an error term whose variance, due to unsystematic changes in that error term, will increase over time. The situation is much like a "random walk" model, in which the average true score for $\bar{a}$ remains the same over time but the spread (variance) in observed scores increases, due to random fluctuations in the error term. Hence, the observed variance in issue attitudes will increase over time. The variance of the party differential, D, will also tend to increase over time (as long as we consider only those issues on which the parties differ, and observe that issue attitudes don't change and $r_{\bar{a}_1 D_1} > 0$) because individual voters will tend to become more and more in favor of one party and more and more opposed to the other party. Thus, for the reinforcement model, the electorate will get increasingly spread out with, say, the Republicans becoming more pro-Republican and the Democrats becoming more pro-Democratic.

While longitudinal data eliminates the problem of simultaneous influence on our path models, we noted that measurement error poses a serious problem to be dealt with. We discussed how two major forms of measurement error, random and specific, can be handled within the context of a multiple indicators approach called cluster analysis. We also noted that we could calculate a stability coefficient, ρ^2, which would give us a test of the fit to a univariate Markov process of real change in the attitude clusters over time, and an indication of the presence of instability in true scores.

Finally, we argued that once we have removed the effects of the two forms of measurement error we have discussed from our issue and party attitude clusters, we can use path analysis to assess the strength and direction of the linkages predicted by our models, and test the fit of the models to the data.

CHAPTER THREE

A TEST OF THE MODELS IN THE 1956-58-60 AMERICAN PANEL DATA

Introduction

In this chapter, our primary goal is to test the models we have derived and discussed in the context of the 1956-58-60 SRC American panel study.

We will begin with a brief description of the data. We will then present a discussion of the attitude clusters which are the operationalization of the two theoretical variables--attitudes toward two political parties and attitudes on political issues--described by our models. Our next task will be to discuss the breakdown of our sample into six subgroups, based upon previous research in the area. We will then note some problems we discovered with respect to the 1958 wave of the panel, and our decision to exclude that data from our reported analyses. Finally, we will describe and discuss the fit of the models to the data.

The American Panel Data

The 1956-58-60 SRC American panel data represents the first attempt at a panel study of political attitudes in the United States using a national sample. However, we inform the reader that there is a 1972-74-76 American panel study sponsored by the Center for

Political Studies at the University of Michigan (the old SRC) which is not available at the time of this writing. Principle investigators Angus Campbell, Philip Converse, Warren Miller and Donald Stokes began with a representative cross-section of persons of voting age living in private households in the United States before and after the 1956 presidential election. They then reinterviewed respondents after the 1958 congressional election, and before and after the 1960 presidential election. The total, unweighted number of respondents in the three waves is 1514. Our sample contains 752 unweighted panel respondents in the three waves.

In general, the survey attempted to tap information about political attitudes through a series of open- and closed-ended questions relating to attitudes toward political parties, candidates, and specific issues. Also included were questions on the personal attributes and the political history of the respondent.

The Attitude Clusters

The Issue Attitudes Cluster

The American issue attitudes cluster was formed from a total of eight political issue questions asked in all three waves of the panel. The eight questions were scored according to a five-point Likert scale, with a response range from "Agree strongly," to "Disagree strongly." The eight issues can be broken down into two groups, domestic issues and foreign-policy issues. The five domestic issues concerned:

Government involvement in: electric power and housing
guaranteeing jobs
school building aid
Negro housing and employment
school desegregation.

The three foreign-policy issues concerned:

United States: isolationist policy
aid to underdeveloped nations
keep soldiers overseas.

Our initial cluster analyses revealed that the foreign policy issues were very weakly correlated with party attitudes over time. For this period foreign policy issues were generally devoid of partisan content (Campbell, et al., 1960). Thus the American data is consistent with our prediction that it is only those issues upon which the parties differ that are relevant to party identification. Therefore, we performed our primary analyses using an issue attitudes cluster composed of the five domestic issues.

The Party Attitudes Cluster

The American party attitudes cluster was formed from four items measured in all three waves of the panel. The first item is the standard party identification question, in which the respondent locates himself on a seven-point Likert scale from "Strong Democrat" to "Strong Republican." The second and third items are the respondent's party choice for the U.S. Senate and House elections, respectively. These two items were included in the party attitudes index based on the finding (Stokes and Miller, 1962, and Miller and Stokes, 1963) that Congressional elections are good indicators of true party affiliation, as these vote choices are relatively free of the "candidate personality" and issue effects found in presidential elections. The fourth item is the respondent's score on a normalized index of party affinity described by the following equation:

```
PAFFS = + What good about Democrats      (up to five responses)
        - What bad about Democrats       (up to five responses)
        - What good about Republicans    (up to five responses)
        + What bad about Republicans     (up to five responses)
        + 10                                                  [126]
```

calculated for each respondent in each of the three waves of the panel. Thus, the "party affinity score" (PAFFS) will be a positive integer from 0 to 20, with a score of 0 representing a pattern of all pro-Republican responses, and a score of 20 representing a pattern of all pro-Democrat responses.

We emphasize here that both of our attitude clusters meet the requirements for unidimensionality given in our earlier discussion of cluster analysis.

Relevant Subgroups of the Population

In addition to testing our models in the context of the entire subsample of 752 panel respondents, we broke the data down into six subgroups on the basis of previous research on political attitudes and behavior.

Our first breakdown is on the basis of education. The work of Campbell, et al. (1960), Converse (1964), and others supports the notion that political attitudes are much more constrained and stable over time among those with higher levels of education. We therefore divided our sample into two groups--those with more than a high school education in 1960 (N = 216), and those with a high school education or less in 1960 (N = 535).

Our next breakdown is on the basis of level of political activity. As noted by Campbell, et al. (1960), Converse (1975), Nie, et al. (1976) and others, level of political activity may be a better predictor of stable party identification and attitudes than level of education. We therefore broke the data down on a "political activity score" (PAS) described by the following equation:

```
PAS = (  R try to influence naother's vote?   (two responses)
       + R contribute money to a campaign?    (two responses)
       + R go to political meetings?          (two responses)
       + R do work for a party or candidate?  (two responses)
       + R display a button or slogan?        (two responses)
       + R vote?)/12.                         (two responses)  [127]
```

All questions were asked twice, in 1956 and 1960, and coded so that 1 = "Yes," and 5 = "No."

We found the mean value on this score for our sample of 752 panel respondents for the combined 1956 and 1960 presidential elections (the only times the questions were asked) to be 4.0 on a scale from 1 to 5. We then divided the sample into two groups--those with scores at or above 4.0 (N = 315 - "Low Political Activity"), and those with scores below 4.0 (N = 355 - "High Political Activity").

Finally, we broke the data down on the level of media exposure experienced by the respondent. Converse (1962) has argued that, except for those with no media exposure at all, those with low levels of media exposure (political information) are more likely to exhibit short-term fluxuations in partisan attitudes and voting behavior than those with high levels of media exposure. Therefore, we constructed a "media exposure score" (MES) described by the following equation:

```
MES = (  R read about the campaign in the paper?     (two responses)
       + R hear about the campaign on the radio?     (two responses)
       + R see the campaign on television?           (two responses)
       + R read about the campaign in a magazine?)   (two responses)
       /8                                                      [128]
```

All questions were asked twice, in 1956 and 1960, and coded so that 1 = "Yes," and 5 = "No."

As with the political activity score, we computed the mean value for our sample of 752 panel respondents for the combined 1956 and 1960 presidential elections, and found it to be 2.8 on a scale from 1 to 5. We then divided the sample into two groups--those with scores at or above 2.8 (N = 319 - "Low Media Exposure"), and those with scores below 2.8 (N = 359 - "High Media Exposure").

For the reader who may be concerned about the possibility that these three measures may be too highly intercorrelated to be worthwhile distinguishing between them, we note that the correlations (Pearson's r) are .30 between education and the political activity score, .40 between education and the media exposure score, and .41 between the political activity score and the media exposure score, for our entire sample.

Problems with the 1958 Data

As we noted in the introduction to this chapter, we decided not to include the 1958 wave of the panel in our reported analyses. The primary reason for this decision is the fact that the correlations between the attitude clusters over time exhibit a pattern that does not fit any theoretical model we can imagine. An examination of Table 3.1 will illustrate our point.

Table 3.1 presents the corrected intercorrelation matrices for the American issue and party attitude clusters. The interested reader can consult Appendix D for a presentation of the uncorrected correlation matrices for the American attitude clusters. A close look at the corrected correlations between the attitude clusters reveals that the correlation between the 1958 issue attitudes cluster and the party attitudes cluster for 1958 is uniformly lower than the correlation between the 1956 issue attitudes cluster and the 1958 party attitudes cluster, and the correlation between the 1960 issue attitudes cluster and the 1960 party attitudes cluster. Take, for example, the correlation matrix for the total sample. We see that $r_{issues_{1956}, party_{1958}} = .32$, $r_{issues_{1958}, party_{1958}} = .21$ and $r_{issues_{1960}, party_{1960}} = .33$. What this implies is that one could predict party attitudes in 1958 better from a knowledge of issue attitudes in 1956 and 1960, than from a knowledge of issue attitudes in 1958! Now some models may predict that the pattern of correlations ($r_{issues, party}$) should go up from 1956 to 1960, and some models may predict that it should go down. But, we know of no model that predicts this non-monotonicity of "down-then-up." In addition, these cluster correlations are corrected for attenuation, therefore we cannot attribute this bizarre pattern of correlations to the effect of random measurement error. We can only conclude that there

Table 3.1

CORRECTED INTERCORRELATION MATRICES FOR THE AMERICAN ISSUE AND PARTY ATTITUDE CLUSTERS*

ALL (N = 752)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	88	86	26	32	35
58		100	90	14	21	24
60			100	26	33	24
56				100	92	93
58					100	93
60						100

r_{XX}(ISSUES) = .52, .52, .52

r_{XX}(PARTY) = .90, .91, .88

ALL ISSUES

ALL (N = 752)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	82	77	20	27	30
58		100	83	12	19	20
60			100	20	25	29
56				100	92	93
58					100	93
60						100

r_{XX}(ISSUES) = .47, .47, .46

r_{XX}(PARTY) = .90, .91, .88

> HS (N = 216)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	77	74	32	32	36
58		100	84	08	08	11
60			100	20	30	30
56				100	96	93
58					100	96
60						100

r_{XX}(ISSUES) = .55, .57, .57

r_{XX}(PARTY) = .92, .91, .88

≤ HS (N = 535)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	93	89	17	27	27
58		100	89	14	24	25
60			100	26	30	31
56				100	90	93
58					100	91
60						100

r_{XX}(ISSUES) = .50, .50, .50

r_{XX}(PARTY) = .89, .90, .87

HIGH POLITICAL ACTIVITY
(N = 355)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	89	87	35	34	36
58		100	88	21	20	22
60			100	29	36	32
56				100	96	95
58					100	96
60						100

r_{XX}(ISSUES) = .51, .51, .52

r_{XX}(PARTY) = .92, .91, .89

LOW POLITICAL ACTIVITY
(N = 315)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	77	83	07	28	32
58		100	92	-01	20	21
60			100	18	34	34
56				100	83	88
58					100	85
60						100

r_{XX}(ISSUES) = .53, .56, .51

r_{XX}(PARTY) = .87, .88, .86

HIGH MEDIA EXPOSURE (N = 359)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	87	95	27	30	34
58		100	88	07	13	20
60			100	23	29	38
56				100	96	95
58					100	97
60						100

r_{XX}(ISSUES) = .51, .53, .55

r_{XX}(PARTY) = .91, .91, .88

LOW MEDIA EXPOSURE (N = 319)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	85	74	20	32	27
58		100	85	15	26	16
60			100	24	39	22
56				100	84	88
58					100	90
60						100

r_{XX}(ISSUES) = .50, .53, .51

r_{XX}(PARTY) = .90, .91, .88

*All correlations are Pearson's r. The inter-issue and inter-party attitude cross-lag cluster correlations have been corrected for attenuation and specific factors. The intra-attitude cluster correlations have been corrected for attenuation. The symbol r_{XX} is the reliability as measured by Cronbach's coefficient alpha for each attitude cluster for the three time periods; i.e., the reliabilities used to correct the intra-attitude cluster correlations for attenuation.

is very possibly something seriously wrong with the coding for the 1958 data.

We would like to take this opportunity to point out two other disturbing facts concerning the American panel data. First of all, as has been pointed out by Herbert Asher (1974), a significant number of respondents (13.4% between 1956 and 1958, and 12.5% between 1956 and 1960) went down in level of education for the period! As Asher notes, education may increase over time, but it cannot decrease. Secondly, this data set is listed by the SRC as a Class II data set which means, among other things, that all non-numeric punches have been removed. However, the tape we received from the CPS contained several non-numeric punches, which made it more difficult for us to set up our own machine-readable subfile of the data. We feel that these two findings are worth noting concerning the quality of this data set in general, and concerning our decision to delete the problematic 1958 wave of the panel from our analyses in particular.

We should note, however, that one positive feature of dropping the 1958 wave of the panel and going to a 1956-60 path model is that the small amount of change seen in party and issue attitudes in Table 3.1 for three waves will have a better chance to cumulate in a two-wave model; thus making our analyses of change over time more meaningful.

The Fit of the Models to the American Data

The Congruity Model

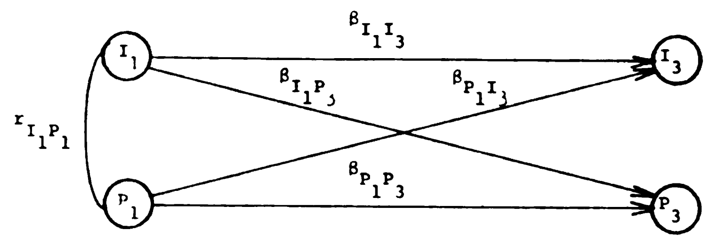
The congruity model predicts arrows of influence from party attitudes to issue attitudes, and from issue attitudes to party attitudes. Table 3.2 presents a summary of the path analyses carried out on the corrected correlations in Table 3.1 for the entire sample and the six subgroups.

We see that the fit of the congruity model to the data is quite good for the six subgroups, and perfect for the entire sample. The negative path coefficients from party attitudes in 1956 to issue attitudes in 1960 ($\beta_{P_1I_3}$) for three groups (greater than high school in 1960, high political activity and high media exposure) present a problem for interpretation. We can, however, legitimately view these negative coefficients as sampling error, as they are not statistically significant at the .05 level (although, we acknowledge that tests of significance are not completely straightforward for corrected coefficients such as ours). Tipping our hand just a bit, we reveal that these three groups provide a better fit to the information processing model (which, the reader will recall, predicts no arrow of influence from party to issues). For all groups except the low media exposure group, the source change parameter β from our deterministic models ($\beta_{I_1P_3}$) is larger than the attitude change parameter α ($\beta_{P_1I_3}$) which means that, in general, issue attitudes are more important to change in party attitudes than vice versa.

The reader will note that we have chosen to report "Average Squared Deviation" in Table 3.2 (even though the congruity model has,

Table 3.2

CONGRUITY MODEL FOR TWO WAVES*



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$\beta_{P_1I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 752)	.92	.92	.85	.90	.12	.04	.26	.000
> HS 1960 (N = 216)	.82	.99	.81	.91	.07	-.06	.32	.005
≤ HS 1960 (N = 535)	.93	.88	.87	.91	.12	.11	.17	.001
HIGH POLITICAL ACTIVITY (N = 355)	.90	.97	.87	.94	.03[a]	-.02[a]	.35	.001
LOW POLITICAL ACTIVITY (N = 315)	.85	.80	.83	.87	.26	.12	.07	.002
HIGH MEDIA EXPOSURE (N = 359)	.80	.98	.95	.91	.14	-.03[a]	.27	.002
LOW MEDIA EXPOSURE (N = 319)	.98	.87	.72	.86	.10	.10	.20	.004

*The β's are standardized regression coefficients.

I_1 and I_3 are issue attitudes in 1956 and 1960.

P_1 and P_3 are party attitudes in 1956 and 1960.

This is the convention we shall follow for all path model summaries in this chapter.

(a) denotes betas that are not significant at the .05 level.

in effect, only one correlation to reproduce, $\beta_{I_3P_3}$), which we define as:

$$\Sigma \text{ squared deviations/ \# non-zero deviations} \qquad [129]$$

This will be done in all path model summaries in this thesis, as it allows us to compare the ability of each model to reproduce the observed correlations when there is an unequal number of arrows of influence in the models.

The Information Processing-
Reinforcement Model

The information processing and reinforcement models yield the same qualitative prediction, that there is no arrow of influence from party attitudes to issue attitudes. The two models do, however, yield distinctive predictions with respect to the variances of the attitude clusters over time. Table 3.3 presents the variances for the American attitude clusters over time, as calculated by the method noted in Appendix C.

We see that the issue attitudes cluster exhibits a pattern of fairly stable pattern of variance over time. We do note a slight increase from 1956 to 1958, and from 1958 to 1960; hwoever, we emphasize that this increase is slight and we now offer a possible explanation for that increase. We interpret the pattern of variance for the issue attitudes cluster in Table 3.3 as supporting the information processing model which, the reader will recall, predicts that the variance of the issue attitudes cluster will ultimately converge to an equilibrium value. This essentially is what we see

Table 3.3

VARIANCES FOR THE AMERICAN ATTITUDE CLUSTERS*

SUBJECTS INCLUDED	ISSUE CLUSTER			PARTY CLUSTER		
	1956	1958	1960	1956	1958	1960
ALL (N = 752)	8.56	8.90	8.99	12.34	12.17	11.15
> HS (1960) (N = 216)	9.33	10.11	10.26	14.03	12.95	13.67
≤ HS (1960) (N = 535)	7.67	7.84	8.07	11.56	11.46	11.06
HIGH POLITICAL ACTIVITY (N = 355)	8.78	9.12	9.37	13.69	13.39	13.58
LOW POLITICAL ACTIVITY (N = 315)	8.05	8.28	8.14	10.20	9.95	10.14
HIGH MEDIA EXPOSURE (N = 359)	8.94	9.44	9.76	13.47	12.99	13.55
LOW MEDIA EXPOSURE (N = 319)	7.86	8.13	8.16	11.25	11.25	10.63
ALL (ALL ISSUES) (N = 752)	13.56	13.81	13.63	12.34	12.17	11.40

*In order to make these variances comparable across groups, all subgroup variances were calculated using the standard deviations for the total sample in 1956 as a baseline.

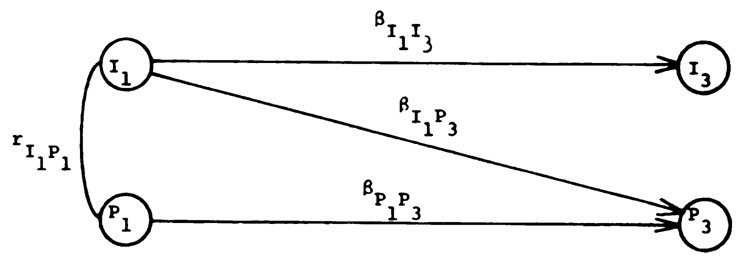
in Table 3.3. We posit that the slight increase over time may well be due to the effect of a new issue--we suggest the civil rights issue, manifesting itself in the two questions relating to Negro housing and employment, and school desegregation in the domestic issue attitudes cluster--which serve to further polarize the two parties (increase the spread between them), and move the electorate to a new, higher equilibrium value for the variance in issue attitudes. It is this move to a new equilibrium value that can account for the slight increase over time in the variance of the issue attitudes cluster.

The information processing model predicts that the variance of the party attitudes cluster will ultimately converge to an equilibrium value also. It is our contention that the pattern of variances for the party attitudes cluster as depicted in Table 3.3 can be interpreted as minor oscillations about such an equilibrium value. Hence, we argue that the pattern of variances for the American attitude clusters supports the information processing model as opposed to the reinforcement model.

Table 3.4 presents the results of the path analyses for the information processing-reinforcement model. We notice that in comparing the fit of the information processing model to the fit of the congruity model in the American data, the information processing model fits better to those high on education, activity and media exposure (as we hinted earlier); while the congruity model fits better to those who are low on education, activity and media exposure.

Table 3.4

INFORMATION PROCESSING - REINFORCEMENT MODEL FOR TWO WAVES



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 752)	.92	.92	.86	.90	.12	.26	.002
> HS (1960) (N = 216)	.82	.99	.79	.91	.07	.32	.002
≤ HS (1960) (N = 535)	.93	.88	.89	.91	.12	.17	.008
HIGH POLITICAL ACTIVITY (N = 355)	.90	.97	.87	.94	.03[a]	.35	.000
LOW POLITICAL ACTIVITY (N = 315)	.85	.80	.83	.87	.26	.07	.009
HIGH MEDIA EXPOSURE (N = 359)	.80	.98	.95	.91	.14	.27	.001
LOW MEDIA EXPOSURE (N = 319)	.98	.87	.74	.86	.10	.20	.005

(a) denotes beta that is not significant at the .05 level.

The SRC Model

As we stated in the introduction to this thesis, we decided to include the SRC model in our analysis, even though its prediction that issue attitudes do not influence party attitudes does not follow from any of the attitude change theories we have discussed. Table 3.5 presents the results of the path analyses for this model.

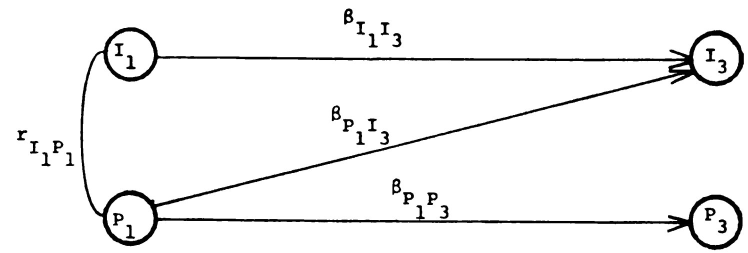
We see from Table 3.5 that the fit of the SRC model to the American data is poorest, compared to the other two models. Indeed, it does not provide the best fit to a single group. Moreover, it is instructive to note that the SRC model does not even fit well to those low on education, political activity or media exposure--precisely the three groups to which one would expect the model to fit best! One example of the poor fit of the SRC model to the American data is the fact that, for those high on education, activity and media exposure, the attitude change parameter ($\beta_{P_1 I_3}$) can be interpreted as equal to zero.

Models Including All Issues

For the sake of completeness, we tested the fit of our models to the American data, including all eight issues in our issue attitudes cluster. Table 3.6 presents the results of the path analyses for the models. We see from Table 3.6 that the congruity model yields the best fit here, as well as in the case of the five-item domestic issue attitudes cluster.

Table 3.5

SRC MODEL FOR TWO WAVES*



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{P_1I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 752)	.92	.92	.85	.93	.04	.26	.011
> HS (1960) (N = 216)	.82	.99	.81	.93	-.06	.32	.008
≤ HS (1960) (N = 535)	.93	.88	.87	.93	.11	.17	.008
HIGH POLITICAL ACTIVITY (N = 355)	.90	.97	.87	.95	-.02[a]	.35	.002
LOW POLITICAL ACTIVITY (N = 315)	.85	.83	.83	.88	.12	.07	.050
HIGH MEDIA EXPOSURE (N = 359)	.80	.95	.95	.95	-.03[a]	.27	.022
LOW MEDIA EXPOSURE (N = 319)	.98	.74	.72	.88	.10	.20	.005

(a) denotes betas that are <u>not</u> significant at the .05 level.

Table 3.6

TEST OF MODELS INCLUDING ALL ISSUES*

MODEL	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$\beta_{P_1I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
CONGRUITY FOR TWO WAVES	.89	.92	.76	.91	.12	.05	.20	.0004
INFORMATION PROCESSING - REINFORCEMENT FOR TWO WAVES	.89	.92	.77	.91	.12	†	.20	.0030
SRC FOR TWO WAVES	.89	.92	.76	.93	†	.05	.20	.0110

*The N for each of these models is 752.

(†) denotes a parameter not estimated in the model.

All betas are significant at the .05 level.

Discussion

In the previous sections we briefly presented the fit of the models to the American panel data. In this section we shall expand that treatment and discuss those results. Table 3.7 summarizes the results of the tests of our models in the American panel data.

We see from Table 3.7 that three groups (greater than high school, high political activity and high media exposure) are best described by the information processing model, and that three groups (less than or equal to high school, low political activity and low media exposure) are apparently best described by the congruity model. The entire sample, which should reflect the average of the parameter values for the path models over the six subgroups, is best described by the congruity model. It remains for us now to try and explain why, in terms of a substantive model, these results obtain. To this end, we were able to suggest two models that can account for these results.

The first model we call the "political cynicism" model. According to this model, the "highs" (those high on education, activity and information) are of the opinion that politicians are basically out to win elections and are therefore liable to promise anything in order to get elected. Consequently, the "highs," by virtue of their greater education, activity and information, know better than to pay any real attention to the messages from the parties on the issues and basically reject them as sources of information. The "high's thus tend to pick a party on the basis of their <u>own</u> pre-determined issue attitudes and their <u>own</u> assessment of the capabilities

Table 3.7

SUMMARY OF THE FIT OF THE MODELS TO THE AMERICAN PANEL DATA

Subgroup		Best Fitting Model
All	(N = 752)	Congruity
All Issues	(N = 752)	Congruity
> High School	(N = 216)	Information Processing
≤ High School	(N = 535)	Congruity
High Political Activity	(N = 355)	Information Processing
Low Political Activity	(N = 315)	Congruity
High Media Exposure	(N = 359)	Information Processing
Low Media Exposure	(N = 319)	Congruity

of the two parties in the campaign. This model would then account for the fit of the information processing model (with no arrow of influence from party attitudes to issue attitudes) for the "highs." Before we go any further, however, we must point out that there is at least one serious problem with the fit of this model to political reality. There exists a mountain of research on the relationship of level of political cynicism to level of education, political activity and political information which directly contradicts the above model (see, for example, Stokes, 1962; Almond and Verba, 1963; Sniderman, 1975; and an excellent summary of the findings in Abramson, 1977). In short, based on the previous research, one would expect to observe just the opposite result; i.e., that the "highs" would tend to be less cynical than the "lows." We therefore decided to reject the political cynicism model.

We call our second model the "political awareness" model. According to this model, people do listen to politicians (political parties); the real question is "How much do politicians say that people don't already know?" For the "highs," the political awareness model says that this group already knows the basic arguments on the issues (again, by virtue of their greater education, activity and information), and are not much effected by party pronouncements in the formation of their own issue attitudes. They choose which party to believe based on the fit of the message content from the parties to their own beliefs; i.e., a question of logical content. Consequently, we observe the fit of the information processing model to the "highs." The political awareness hypothesis assumes that a sizable portion of the "lows," by virtue of their lower education, activity and information, don't really feel competent to judge the issues for themselves. Instead, they choose an "authority figure" to interpret the political situation for them. Logically, the choice of such an authority figure is determined by their attitudes toward the two parties. Hence, they will choose the party they identify with to interpret the issues for them. This situation is best described as a "special case" of the general information processing model. It is a special case because even though the equations for the model resemble the congruity equations, with arrows of influence going both ways, it is really an information processing model. This is so because the decision as to which party to allow to interpret the issues for one is logical, rather than emotional.

In support of the political awareness model, we note that there is a wealth of research findings to document the notion that the "highs" have much more structured issue attitudes and are much less dependent on political parties for political information and guidance than the "lows." As Natchez (1970: 576) has so aptly summarized the findings with respect to the American electorate:

> Those people informed about the issues, and aware of the implications of their decisions, are already strongly committed to a political party, and hence are unlikely to have their political behavior deflected by the campaign process. Election appeals seem to influence those who are most poorly informed and lacking in political allegiances.

We offer, then, the political awareness model as a substantive model which can explain the fit of the information processing model to both those high on education, political activity and information, and those low on education, political activity and information.

Having described and discussed our findings for the American data, it is now fitting that we try to explain why those findings run counter to a time-honored model in the literature, the SRC model. Perhaps the most obvious source of the discrepancy between our findings and the prediction of the SRC model (that party attitudes influence issue attitudes but not vice versa) is the type of variables we used. We built multiple indicators of our theoretical concepts, so that we could correct for the effect of random measurement error (unreliability), the effect of specific factors, and assess the unidimensionality of those constructs. This has not been done frequently with respect to issue attitudes, and has never been done with respect to party attitudes, to our knowledge. Even those studies that have employed multiple indicators of issue attitudes have failed to capitalize on the advantage this offers with regard to dealing with the problem of measurement error.

Secondly, as V. O. Key, Jr. (1966) has so perceptively argued, there is just not a lot of change in the party attitudes of the American electorate over time. Hence, if one is interested in predicting the vote (as the SRC modelers are), and if all one has is cross-sectional data (which is true of the vast majority of the reported studies), then party identification is the best predictor. However, as Key demonstrated, once one moves to a dynamic model, the "little" change in party vote choice is almost always associated with issue attitudes. Hence, the fit of the SRC model may have been, in large part, an artifact of the static nature of the data used to test the models. Again, we note that our tests of the models in panel data show that the SRC model is clearly the model least supported by the American data.

Finally, and perhaps most importantly, our models were derived from existing theories of attitude change. That is, in constructing our models, we have attempted to capitalize upon the most appropriate theoretical work in the area, and derive implications for the relationship between issue attitudes and party attitudes in an election campaign. What we are suggesting is that perhaps the SRC "model" is not really a model at all. Rather, we argue that it is better described as a set of empirical generalizations which were generated by the inductive mode of inquiry its proponents pursue. We readily acknowledge that we are not alone in this criticism of the SRC model. In addition to the work of Fishbein and Coombs (1971) and Abrams (1973) previously cited, we note the insightful critique offered by Peter Natchez (1970), in support of our contention.

Another interesting result of our analyses of the American panel data is that, using our multiple indicators approach to the operationalization of our theoretical concepts, we observed a general increase, for the 1956 and 1960 presidential campaigns, in the correlation between issue and party attitudes (see Table 3.1). This is contrary to the results reported by Gerald Pomper (1972) who, using single-item indicators of party and issue attitudes, noted a general decrease in this correlation from 1956 to 1960, while observing a general increase in the correlation for the 1964 and 1968 campaigns.

Furthermore, we suggest that had Pomper used multiple indicators, and taken advantage of the advantages that follow with respect to construct validity and reliability, he would have noted an increase in the correlation between issue and party attitudes throughout the whole period.

CHAPTER FOUR

A TEST OF THE MODELS IN THE 1964-66-70 BRITISH PANEL DATA

The British Panel Data

In this chapter, we shall continue the empirical tests of our models of the relationship between party attitudes and issue attitudes in the context of the 1964-66-70 British panel data. The 1963-64-66-70 British panel data represents the first attempt at a national panel study of political attitudes in Britain. The principle investigators for the British study were David Butler of Nuffield College, Oxford and Donald Stokes, then of the University of Michigan. Butler and Stokes began with a representative cross-section of persons twenty years of age or older, living in private households or institutions in England, Wales and Scotland in 1963, when no general election was held. Three more waves of interviewing followed the general elections of 1964, 1966 and 1970. The total, unweighted number of subjects in the four waves of the panel is 2922. Since many of the questions relevant to our research design were not asked in 1963, our sample contains panel subjects in the 1964-66-70 waves of the panel only. The total, unweighted number of panel respondents in the 1964-66-70 waves is 831. Our sample contains 546 unweighted panel respondents in these three waves. The discrepancy between our sample total of 546 out of a possible 831 respondents in the three waves bears explanation.

We decided to drop from our analyses anyone who either identified with or voted for a party other than the Conservative or Labour party. This decision is the result of the fact that it is not clear where one would place the minor parties (i.e., the Liberals, the Welsh Nationalists, the Communists and the Scottish Nationals) on a continuum of liberal to conservative, or any other type of continuum for that matter. As Samuel Beer (1973: 318) has noted:

> As Liberals themselves insisted, they were not merely a third party poised between Conservatives and Socialists, but rather, as the representatives of the individualist position, the sole alternative at an opposite pole from the two great adherents of collectivism.

Thus, we have a theoretical dilemma of where to place the Liberal party with respect to an ordering. This results in a statistical dilemma which relates to a basic assumption of correlation analysis. In order to calculate a meaningful correlation between two variables, the two variables must both be scored according to a linear order or ranking; e.g., low to high, or liberal to conservative. Since we cannot unambiguously do this with respect to the Liberal party and the Conservative and Labour parties in Britain, we decided to drop the Liberal party and the other minor parties from our analyses. We remark that this is essentially the same strategy pursued by Butler and Stokes (1969, 1974) both in their research design (many questions relating to party attitudes list only Conservative and Labour as possible responses), and consequently in their reported findings, which concentrate almost exclusively on Conservative versus Labour distinctions. For a more detailed discussion of the problem of "party distance" in models such as ours, we refer the reader to Converse (1966).

We add here that we did perform some preliminary analyses with the Liberal party scored midway between the Conservative and Labour parties, and found essentially the same results as those reported below. The interested reader can consult Appendix E for a summary of the fit of the models to our entire sample, with the Liberals included.

The Attitude Clusters

The Issue Attitudes Cluster

The British issue attitudes cluster was formed from a total of twelve political issue questions asked in the 1964-66-70 waves of the panel. The twelve questions were scored according to scales of lengths varying from two to four responses, in what amounts to a variation on the Likert notion of the "agree-disagree" scale type. As with the American panel, the twelve issues can be broken down into two groups, domestic issues and foreign-policy issues. The nine domestic issues concerned:

R's opinion on:
- nationalizing industry
- death penalty
- power of trade unions
- social services spending
- reduce taxes or increase social services
- power of big business
- trade union ties to the Labour party
- importance of the royal family
- immigration

The three foreign-policy issues concerned:

R's opinion on: nuclear weapons policy
ties to America
joining the Common Market.

Our initial cluster analyses revealed that a unidimensional cluster could be formed from five of the domestic issues. The five issues were those concerning nationalizing industry, the power of trade unions, social services spending, reduce taxes or increase social services spending and the power of big business. We see that, in general, the five domestic issues appear to be tapping the respondent's attitudes on matters of economic policy. The three foreign-policy issues correlated very weakly with party attitudes over time and were, therefore, not good predictors of change in party attitudes. Hence, when we speak of the domestic issue cluster, we are referring to the five issues listed above, unless otherwise indicated.

The Party Attitudes Cluster

The British party attitudes cluster was formed from four items measured in the 1964-66-70 waves of the panel. The first item is the party self-image question (as Butler and Stokes call it), in which the respondent classifies himself as either Conservative, Labour, Liberal, other or none. As we discussed earlier, we deleted anyone who classified himself as other than Conservative or Labour. The second item is the respondent's vote choice in the general elections for the three waves--the possible choices being Conservative, Labour, Liberal, Welsh Nationalist, Communist or Scottish National. Again, as we noted earlier, we were interested only in those who chose the

Conservative or Labour party. The third and fourth items are the respondent's choice on two questions dealing with the best party for foreign and domestic affairs, respectively. The possible choices for these two questions were recoded to read Conservative, No difference and Labour, in that order. These four items were also found to be unidimensional.

Relevant Subgroups of the Population

In addition to testing our models in the context of the entire sample of 546 panel respondents, we broke the data down into four subgroups of theoretical interest.

Our first breakdown is on the basis of socio-economic status. In Britain, it is the consensus of the sociological work to date that class is clearly the most salient dimension of British party politics (e.g., Alford, 1963; and Pulzer, 1967). Furthermore, it is just as widely agreed that occupation is the major dimension of social stratification in Britain. For these reasons, we decided to divide our sample into two groups--based upon head of household's occupation. We chose head of household's rather than respondent's occupation as individuals tend to be stratified according to the family setting, which is structured by the head. Butler and Stokes (1969, 1974) also argue that head of household's occupation is the best predictor of the class location of a respondent.

The question relating to the occupation of the head of household used by Butler and Stokes is a seven-point scale they developed, which we recoded to read:

1. Residual state pensioner
2. Unskilled manual
3. Skilled manual
4. Lower non-manual
5. Skilled or supervisory non-manual
6. Lower managerial or administrative
7. Higher managerial or professional

For a discussion of the reliability and validity of this scale, see Kahan, et al. (1966). We remark that this scale has been cross-validated in several subsequent studies. The respondent's score on occupation (OCCS) is described by the following equation:

$$OCCS = [HHOCC\ (in\ 1964) + HHOCC\ (in\ 1966) + HHOCC\ (in\ 1970)]/3 \qquad [120]$$

Where HHOCC denotes head of household's occupation. We found the mean value on this score for our sample of 546 panel respondents to be 3.6, on a scale from 1 to 7. We then divided the sample into two groups--those with scores above 3.6 (N = 195 - "High SES"), and those with scores at or below 3.6 (N = 323 - "Low SES"). This breaking point corresponds to the basic division between the manually and the non-manually employed, which has traditionally been viewed by British sociologists as the major class dividing point.

Our next breakdown is on the basis of media exposure. In addition to the work of Converse (1962) on the relationship between level of media exposure and political attitudes in the American setting we have cited, we add that Butler and Stokes (1969, 1974) also found level of media exposure ("exposure to political communication," as they called it) to be related to stability of partisan preference and issue attitudes in Britain. As with the American data, we constructed a media exposure score (MES) based upon a question asked in all three waves of the panel, which we recoded to read:

0. R employs no channels of communication
1. R employs one channel of communication
2. R employs two channels of communication
3. R employs three channels of communication
4. R employs four channels of communication
5. R employs five channels of communication

This variable was formed by Butler and Stokes from questions relating to exposure to newspapers, conversations with other people, and exposure to television and radio. Our media exposure score is described by the following equation:

$$\begin{aligned} MES = (\ & \#\text{ channels of communication in 1964} \\ & + \#\text{ channels of communication in 1966} \\ & + \#\text{ channels of communication in 1970})/3. \end{aligned} \qquad [131]$$

As with the occupation score, we computed the mean value for our sample of 546 panel respondents and found it to be 2.29, on a scale from 1 to 5. We then divided the sample into two groups--those with scores above 2.29 (N = 3.5 - "High Media Exposure"), and those with scores at or below 2.29 (N = 231 - "Low Media Exposure").

For the reader who may be concerned that these two measures are too highly correlated to allow a meaningful discrimination between them among our sample, we note that the correlation (Pearson's r) between the occupation score and the media exposure score for the entire sample of 546 panel respondents is .13.

The Fit of the Models to the British Data

Table 4.1 presents the corrected intercorrelation matrices for the British issue and party attitude clusters. The interested reader may consult Appendix F for a presentation of the uncorrected

Table 4.1

CORRECTED INTERCORRELATION MATRICES FOR THE BRITISH ISSUE AND PARTY ATTITUDE CLUSTERS*

ALL (N = 546)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	91	86	95	91	88
66		100	95	88	84	88
70			100	83	79	86
64				100	75	90
66					100	90
70						100

r_{XX}(ISSUES) = .53, .55, .54

r_{XX}(PARTY) = .92, .93, .93

ALL ISSUES
ALL (N = 546)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	91	93	88	84	80
66		100	97	81	74	78
70			100	75	74	77
64				100	95	90
66					100	90
70						100

r_{XX}(ISSUES) = .53, .53, .54

r_{XX}(PARTY) = .92, .93, .93

HIGH SES (N = 195)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	83	75	92	88	88
66		100	85	88	92	89
70			100	80	81	85
64				100	96	96
66					100	93
70						100

r_{XX}(ISSUES) = .51, .51, .58

r_{XX}(PARTY) = .91., .91, .91

LOW SES (N = 323)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	89	81	91	86	83
66		100	82	78	76	78
70			100	75	66	81
64				100	90	90
66					100	100
70						100

r_{XX}(ISSUES) = .42, .47, .40

r_{XX}(PARTY) = .90, .92, .91

HIGH MEDIA EXPOSURE (N = 315)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	93	88	95	92	89
66		100	92	91	89	90
70			100	86	82	88
64				100	95	91
66					100	91
70						100

r_{XX}(ISSUES) = .58, .58, .57

r_{XX}(PARTY) = .93, .95, .93

LOW MEDIA EXPOSURE (N = 231)

	ISSUES			PARTY		
	64	66	70	64	66	70
64	100	88	79	95	87	86
66		100	95	84	86	84
70			100	76	79	81
64				100	92	88
66					100	87
70						100

r_{XX}(ISSUES) = .41, .50, .50

r_{XX}(PARTY) = .91, .91, .91

*All correlations are Pearson's r. The inter-issue and inter-party attitude cross-lag cluster correlations have been corrected for attenuation and specific factors. The intra-attitude cluster correlations have been corrected for attenuation. The symbol r_{XX} is the reliability as measured by Cronbach's coefficient alpha for each attitude cluster for the three time periods; i.e., the reliabilities used to correct the intra-attitude cluster correlations for attentuation.

correlation matrices for the British attitude clusters. The corrected correlations between issue attitudes and party attitudes over time in the British data are much greater (roughly four times greater) than the correlations between issue attitudes and party attitudes over time in the American data. Furthermore, this cannot be viewed as a result of lower reliability of the British clusters, as the reliabilities of the attitude clusters for both data sets are approximately equal.

The Congruity Model

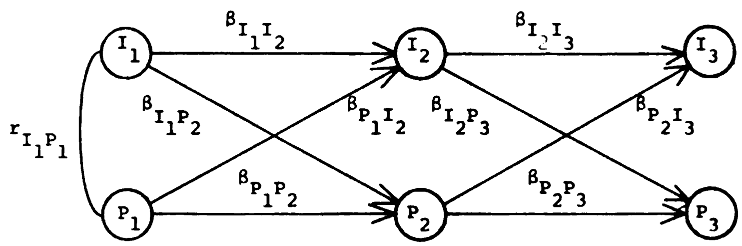
Tables 4.2 and 4.3 present a summary of the path analyses carried out on the corrected correlations in Table 4.1, for the entire sample plus the four subgroups. Table 4.2 presents the three-wave (1964-66-70) congruity model, and Table 4.3 presents the two-wave (1964-70) congruity model.

We see from Table 4.1 that we have a high degree of correlation (multicollinearity) between the predictors I_1 and P_1, and I_2 and P_2. With predictors correlated in the high .80's and .90's, we can expect a good deal of instability in our path coefficients. This instability can help account for the several negative path coefficients, all but one of which are not significant at the .05 level.

A bit of explanation is in order concerning the path coefficients for the high SES group. We inform the reader that the calculated $\beta_{I_1 I_2}$ and $\beta_{P_1 I_2}$ were .14 and .78, respectively--which is just the reverse of what is reported in Table 4.2. We feel that we are justified in exchanging the values of these coefficients for four reasons. First of all, with predictors correlated as highly as

Table 4.2

CONGRUITY MODEL*



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_2}$	$\beta_{I_2I_3}$	$\beta_{P_1P_2}$	$\beta_{P_2P_3}$	$\beta_{I_1P_2}$	$\beta_{P_1I_2}$	$\beta_{I_2P_3}$	$\beta_{P_2I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.76	.99	.88	.55	.08	.16	.43	-.03[a]	.95	.0003
HIGH SES (N = 195)	.94	.93	.78	.70	1.00	.74	.00[a]	.14	.23	.19	.92	.002
LOW SES (N = 323)	.90	1.00	1.00	.76	.69	.97	.24	-.18	.05[a]	.09	.91	.005
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.66	.91	.76	.52	.18	.27	.43	.01[a]	.95	.002
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.84	1.00	.95	.57	-.04[a]	.04[a]	.35	-.01[a]	.95	.003

*The β's are standardized regression coefficients.

I_1, I_2 and I_3 are issue attitudes in 1964, 1966, and 1970.

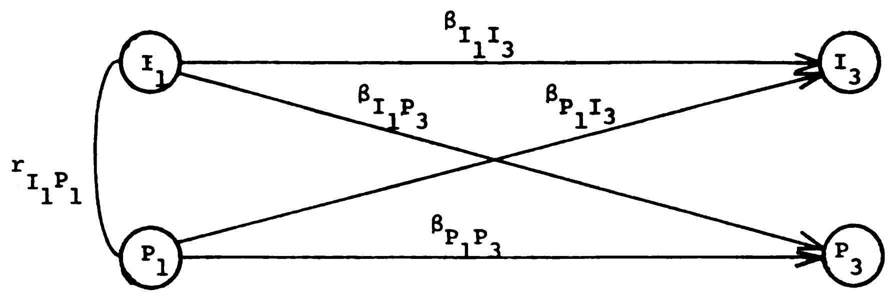
P_1, P_2 and P_3 are party attitudes in 1964, 1966 and 1970.

This is the convention we shall follow for all path model summaries in this chapter.

(a) denotes betas <u>not</u> significant at the .05 level.

Table 4.3

CONGRUITY MODEL FOR TWO WAVES



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$\beta_{P_1I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.73	.66	.26	.13	.95	.010
HIGH SES (N = 195)	.94	.93	.72	.98	-.02[a]	.09[a]	.92	.010
LOW SES (N = 323)	.90	1.00	.81	.86	-.05[a]	.01[a]	.95	.010
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.65	.66	.26	.25	.95	.006
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.70	.65	.25	.10	.95	.014

(a) denotes betas not significnat at the .05 level.

we have in this case ($r_{I_1P_1}$ = .92), multiple regression (OLS) parameter estimation becomes very much like "spinning a roulette wheel." That is to say, the coefficients have such a wide standard error in which to "wander," that it is very difficult to obtain a decent point estimate. While it can be shown that the average of ($\beta_{I_1I_2}$ + $\beta_{P_1I_2}$) is well estimated, the individual betas are not. Second, we are dealing here with corrected regression coefficients (i.e., standardized coefficients calculated from correlations that have been corrected for attenuation). The sampling error in corrected regression coefficients is greater than that predicted by formulas based on uncorrected correlations, because to synthetically increase a correlation (which is what correction for attenuation does) also increases the sampling error of the correlation by a proportional amount. Thus, the instability in standardized regression coefficients for highly correlated predictors using correction for attenuation is even worse than the well known case of extreme multicollinearity. Third, we find it hard to believe, on substantive grounds, that $\beta_{I_1I_2}$ is really .14 and $\beta_{P_1I_2}$ is really .78, given that such a finding runs counter to our findings for the other groups and to our beliefs about the stability of issue attitudes over time.

Finally, we remark that OLS parameter estimation is equivalent to maximizing R^2, the coefficient of determination. In the case of highly correlated predictors, this maximization takes place with respect to a very flat regression surface. Hence, large changes in estimated regression parameters result in only negligible decreases in predictive ability (i.e., R^2). Moreover, trivial fluxuations in sample correlations produce large variations in the estimated regression parameters which yield exactly the maximum point (i.e., the maximum R^2), especially in a three variable regression as we are discussing here. Moreover, with a sample size of only 195, the high SES group offers the best opportunity of all for such "trivial fluxuations in sample correlations." To illustrate our point with respect to the situation for the high SES group, we first calculated the R^2 for the regression equation predicting I_2 from I_1 and P_1, using $\beta_{I_1I_2} = .78$ and $\beta_{P_1I_2} = .14$ (the OLS estimates), and got $R^2 = .90$. We then calculated R^2 for the regression equation predicting I_2 from I_1 and P_1, using $\beta_{I_1I_2} = .14$ and $\beta_{P_1I_2} = .78$, and got $R^2 = .85$. We see that there is only a five per cent drop in predictive ability in moving from the OLS parameter estimates (based on high multicollinearity), to our substantive motivated parameter interchange. Thus, for these four reasons, feel justified in exchanging the regression parameters noted for the high SES group, as presented in Table 4.2. For further discussion of the notion of using prior information to constrain parameter estimates in the face of high multicollinearity, we refer the reader to Johnston (1972).

However, the reader need not rely solely on our statistical argument. There are two additional sources of data which buttress our conclusion. First of all, there is the data for the same high SES group between the second and third observations. The beta weights estimate exactly the same substantive processes as those measured between the first two observations. These beta weights were $\beta_{I_2I_3} = .70$ and $\beta_{P_2I_3} = .19$, which are much closer to our substituted

.78 and .14 than to the reversed numbers which emerged from OLS calculations. A second analysis which bears us out is the two-wave analysis. In predicting time 3 from time 1, the OLS estimates were $\beta_{I_1 I_3} = .72$ and $\beta_{P_1 I_3} = .09$, which again confirms the falsity of the OLS estimates for this group.

<u>The Information Processing-Reinforcement Model</u>

Table 4.4 presents the variances for the British attitude clusters over time. An inspection of Table 4.4 reveals that the variances of both attitude clusters appear stable over time, with minor oscillations about an equilibrium value. This pattern is predicted by the information processing model, which predicts that the variances for both attitude clusters will ultimately converge to an equilibrium value. Tables 4.5 and 4.6 present summaries of the path analyses for the information processing-reinforcement model.

We see from Tables 4.5 and 4.6 that the fit of the information processing model is quite good. It fits the data a bit better than the congruity model.

We note also that, in general, the magnitude of the source change parameter from issues in 1966 to parties in 1970 ($\beta_{I_2 P_3}$) is a good deal larger than the source change parameter from issues in 1964 to parties in 1966 ($\beta_{I_1 P_2}$). This could very well be the result of an increase in the number of messages received by the British electorate concerning the parties and the candidates in 1966 as, for the information processing model, the strength of the attitude change parameters is largely the result of the number of such messages

Table 4.4

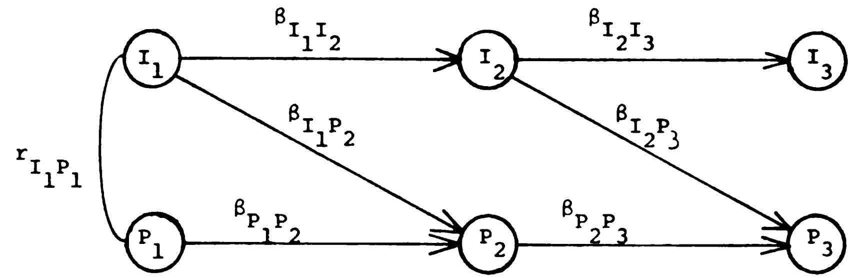
VARIANCES FOR THE BRITISH ATTITUDE CLUSTERS*

SUBJECTS INCLUDED	ISSUE CLUSTER			PARTY CLUSTER		
	1964	1966	1970	1964	1966	1970
ALL (N = 546)	8.62	9.70	9.50	12.98	13.55	12.97
HIGH SES (N = 195)	7.98	7.69	8.06	8.52	9.54	7.13
LOW SES (N = 323)	7.31	8.71	8.29	10.93	10.88	11.41
HIGH MEDIA EXPOSURE (N = 315)	9.47	10.18	10.11	13.41	14.17	13.40
LOW MEDIA EXPOSURE (N = 231)	7.27	9.04	8.46	12.27	12.49	12.07
ALL (ALL ISSUES) (N = 546)	19.16	19.48	18.48	12.98	13.55	12.97

*In order to make these variances comparable across groups, all subgroup variances were calculated using the standard deviations for the total sample in 1964 as a baseline.

Table 4.5

INFORMATION PROCESSING - REINFORCEMENT MODEL

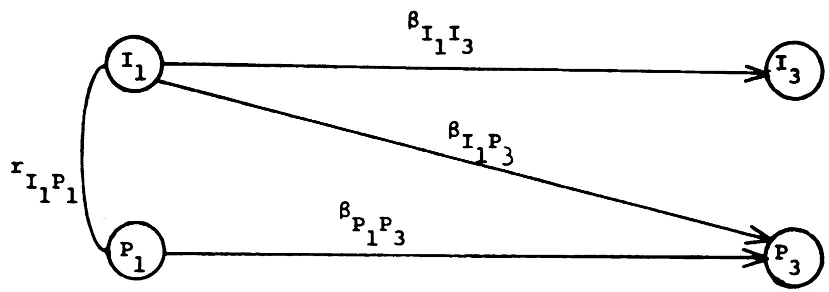


SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_2}$	$\beta_{I_2I_3}$	$\beta_{P_1P_2}$	$\beta_{P_2P_3}$	$\beta_{I_1P_2}$	$\beta_{I_2P_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.91	.95	.88	.55	.09	.43	.95	.0002
HIGH SES (N = 195)	.94	.93	.83	.85	1.00	.74	.00[a]	.23	.92	.011
LOW SES (N = 323)	.90	1.00	.89	.82	.69	.97	.24	.05[a]	.91	.004
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.93	.92	.76	.52	.18	.43	.95	.001
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.88	.95	.95	.57	-.04[a]	.35	.95	.002

(a) denotes betas not significant at the .05 level.

Table 4.6

INFORMATION PROCESSING - REINFORCEMENT MODEL FOR TWO WAVES



SUBJECTS INCLUDES	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.86	.66	.26	.95	.005
HIGH SES (N = 195)	.94	.93	.75	.98	-.02[a]	.92	.024
LOW SES (N = 323)	.90	1.00	.81	.86	.05[a]	.95	.006
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.65	.66	.26	.95	.005
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.79	.65	.25	.95	.008

(a) denotes betas <u>not</u> significant at the .05 level.

reaching the electorate. Moreover, this is a plausible explanation, as Harrison (1966) has noted that for the first time, in 1966, the number of households with television in Britain rose above 90 per cent. Also, Harrison points out that by 1966, the role of broadcasting in the campaign was more generally accepted than in 1964, when a large controversy ensued. Finally, Harrison adds that for the 1966 campaign, the BBC devoted a full 10 per cent of its evening programming to politics. We feel that it is, therefore, not unreasonable to conclude that the British electorate could have received more messages concerning the parties and the candidates in 1966, which could help explain the increase in the source change parameter from issues in 1966 to parties in 1970.

The SRC Model

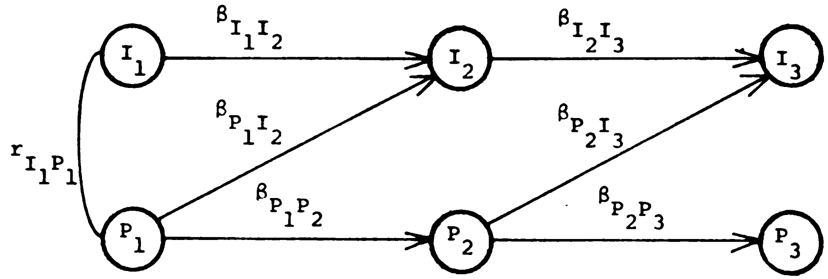
Tables 4.7 and 4.8 present the path model summaries for the SRC model. An examination of Tables 4.7 and 4.8 shows that the fit of the SRC model is, in general, not as good as the fit for the other two models. We do note that the fit of the two-wave SRC model to the high SES group is better than the fit for the other two-wave models. However, as we have pointed out, an interpretation of the fit of any of the models to the high SES group is not unproblematic.

Models Including All Issues

We have included a test of the fit of our models to date including all twelve issues in our issue attitudes cluster. Table 4.9 demonstrates that for the three-wave case, the information processing model clearly provides the best fit. This agrees with

Table 4.7

SRC MODEL

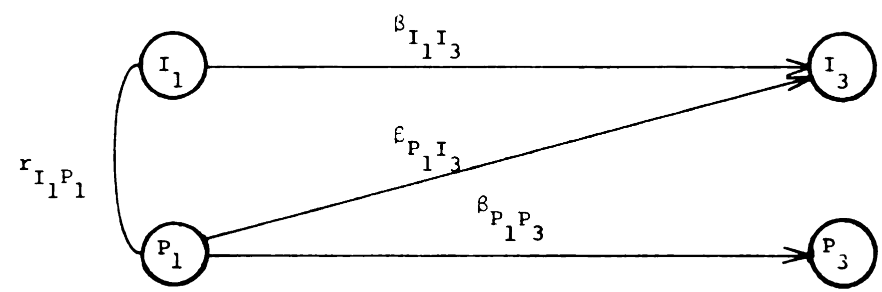


SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_2}$	$\beta_{I_2I_3}$	$\beta_{P_1P_2}$	$\beta_{P_2P_3}$	$\beta_{P_1I_2}$	$\beta_{P_2I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.76	.99	.95	.90	.16	-.03[a]	.95	.004
HIGH SES (N = 195)	.94	.93	.78	.70	.96	.93	.14	.19	.92	.005
LOW SES (N = 323)	.90	1.00	1.00	.76	.90	1.00	-.18	.09	.91	.001
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.66	.91	.95	.91	.27	.01[a]	.95	.005
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.84	1.00	.92	.87	.04[a]	-.01[a]	.95	.010

(a) denotes betas <u>not</u> significant at the .05 level.

Table 4.8

SRC MODEL FOR TWO WAVES



SUBJECTS INCLUDED	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1 I_3}$	$\beta_{P_1 P_3}$	$\beta_{P_1 I_3}$	$r_{I_1 P_1}$	AVERAGE SQUARED DEVIATION
ALL (N = 546)	1.00	.95	.73	.90	.13	.95	.006
HIGH SES (N = 195)	.94	.93	.72	.96	.09[a]	.92	.003
LOW SES (N = 323)	.90	1.00	.81	.90	.01[a]	.95	.007
HIGH MEDIA EXPOSURE (N = 315)	.93	.79	.65	.91	.25	.95	.006
LOW MEDIA EXPOSURE (N = 231)	1.00	.91	.70	.88	.10	.95	.010

(a) denotes betas <u>not</u> significant at the .05 level.

Table 4.9

TEST OF THREE-WAVE MODELS INCLUDING ALL ISSUES*

MODEL	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_2}$	$\beta_{I_2I_3}$	$\beta_{P_1P_2}$	$\beta_{P_2P_3}$	$\beta_{I_1P_2}$	$\beta_{P_1I_2}$	$\beta_{I_2P_3}$	$\beta_{P_2I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
CONGRUITY	.95	.95	.88	.93	.94	.72	.02[a]	.04	.25	.05[a]	.88	.0011
INFORMATION PROCESSING-REINFORCEMENT	.95	.95	.91	.97	.94	.72	.02[a]	†	.25	†	.88	.0006
SRC	.95	.95	.88	.93	.95	.90	†	.04[a]	†	.05[a]	.88	.0022

*The N for each of these models is 546.

(†) denotes a parameter not estimated in the model.

(a) denotes betas <u>not</u> significant at the .05 level.

Table 4.10

TEST OF MODELS FOR TWO WAVES INCLUDING ALL ISSUES*

MODEL	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_3}$	$\beta_{P_1P_3}$	$\beta_{I_1P_3}$	$\beta_{P_1I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
CONGRUITY FOR TWO WAVES	.95	.95	.90	.96	.02[a]	.04[a]	.88	.0004
INFORMATION PROCESSING - REINFORCEMENT FOR TWO WAVES	.95	.95	.93	.96	.02[a]	†	.88	.0030
SRC IN TWO WAVES	.95	.95	.90	.90	†	.04[a]	.88	.0040

*The N for each of these models is 546.

(†) denotes a parameter not estimated in the model.

(a) denotes betas <u>not</u> significant at the .05 level.

our findings with respect to the results using the five-item issue cluster. Moving to Table 4.10 and the two-wave case, we see that the congruity model provides the best fit, even though neither of the attitude change parameters are significant at the .05 level.

Discussion

Having briefly stated the fit of the models to the British panel data, it remains for us to discuss those results in more detail. Table 4.11 summarizes the results of the tests of our models in the British panel data.

We see from Table 4.11 that the information processing model is clearly the best fitting model to the British data. The only exception to this pattern is the high SES group, which we have already noted poses problems for OLS parameter estimation and interpretation. We have noted also that, in almost every case, the source change parameter from issues in 1966 to parties in 1970 is greater than the source change parameter from issues in 1964 to parties in 1966--a result we have attributed to the impact of more messages reaching the electorate in 1966, as a result of an increased number of households with televisions and more extensive coverage of the campaign by the BBC. It remains for us now to try and explain, in substantive terms, why the information processing model fits the British data.

The information processing model, as we have pointed out several times, predicts arrows of influence from issue attitudes to party attitudes only. This implies that, in general, issue attitudes

Table 4.11

SUMMARY OF THE FIT OF THE MODELS TO THE BRITISH PANEL DATA

Subgroup		Best Fitting Three-Wave Model	Best Fitting Two-Wave Model
All	(N = 546)	Information Processing	Information Processing
All Issues	(N = 546)	Information Processing	Congruity
High SES	(N = 195)	Congruity	SRC
Low SES	(N = 323)	Information Processing	Information Processing
High Media Exposure	(N = 315)	Information Processing	Information Processing
Low Media Exposure	(N = 231)	Information Processing	Information Processing

effect party attitudes in Britain, but not vice versa. As a substantive model to explain this result, we offer the political awareness model set forth for the American data. This model argues that those who already know the issues of the campaign do not find the parties to be sources of new information in the formation of their own issue attitudes. Hence, the information processing model, with no arrow of influence from party attitudes to issue attitudes, should fit this group best. We argue that, for reasons we shall now detail, the political awareness model, which can explain the fit of the information processing model, is applicable to the entire British electorate for the period under study.

First of all, we see from Table 4.1 that, in general, the correlation between issue attitudes and party attitudes is about .9 in Britain, for all groups. This can be interpreted as supporting an argument that the issues which were included in our domestic issue attitudes cluster are issues which are basically familiar to everyone. We further argue that not only has the British electorate heard most of the arguments on the issues before, but that they have also been exposed to rather distinctive stands on the issues taken by the two major parties, at least since 1945. With regard to this point, we refer the reader to Craig (1970) for a presentation of party manifestos from 1918 to 1966, and to Furniss (1975) for a discussion specific to the welfare issue. Hence the attitudes of the electorate in Britain toward the parties and the issues appear to have moved to an equilibrium point for the period here under study, reflected by the consistently high over time correlation between the party and issue attitude clusters.

Second, we note that the nature of party competition in Britain contributes to the fit of the political awareness model to the British electorate. Indeed, as noted by Butler and Stokes (1974: 315):

> Politics in Britain, to a remarkable degree, are based on the competition between cohesive parties which act together in the national legislatures and offer unified appeals for the support of the mass electorate. . . . The familiar American phenomenon of the candidate who plays down his party affiliation and emphasizes local rather than national issues is much less common in Britain.

We can see then how the political awareness model can be applied to the British electorate. It is the consensus of those who study British and American politics that the concept of party competition is much stronger in Britain; and has led to the development of an electorate which recognizes the parties, in general, as offering clear alternatives on the issues. Hence, we suggest an electorate in Britain which feels competent to judge for themselves the political issues of the day and the party more likely to promote their preferences. Therefore, their attitudes toward the parties are largely influenced by their own attitudes on the political issues of the day. This is especially important to the information processing model which posits, the reader will recall, that the party is logically equivalent to the messages is sends to the voters. Thus the more opposing messages the parties get through to the voters, the more likely it is that their own issue attitudes will influence their party attitudes, and the stronger that influence will be.

SUMMARY

The study of the relationship between party attitudes and issue attitudes in political campaigns has taken a back seat to the study of the relationship between issue attitudes and vote choice. Yet this is a key relationship, as issue attitudes seem to be a prime determinant of party attitudes, which seem to be the prime determinant of vote choice. Although the work of the spatial modelers is an important exception, the spatial model is not a satisfactory _general_ model of the relationship; since it ignores the _development_ of issue attitudes and the impact of political socialization on party identification.

Three models of this relationship were derived from the three most prominent theories of attitude change in the psychological literature--congruity theory, information processing theory and reinforcement theory. To these three derived models, we added the time honored "SRC" model, which predicts arrows of influence from party attitudes to issue attitudes only. We saw that while the two-party congruity model predicts that issue attitudes will influence party attitudes and vice versa, the two-party information processing model and the two-party reinforcement model both yield the same qualitative prediction--that issue attitudes influence party attitudes, but not vice versa. At the end of a long enough campaign, the congruity model predicts that issue attitudes and party attitudes will

move to a pair of equilibrium values for each voter, that reflect the relative impact of his issue and party attitudes upon each other. According to the information processing model, the effect of opposing stands on the issues taken by the parties would be to move the electorate first to a neutral attitude toward the issues, and then the parties. The logical conclusion is, then, that no votes would be cast! For the reinforcement model, opposing messages from the parties cancel each other out and leave issue attitudes unchanged. Issue attitudes don't change, and party attitudes adapt to those initial issue attitudes. Thus, the reinforcement model predicts that the voter will ultimately adopt the party which most closely adheres to his initial issue attitudes. This prediction is very similar to the one made by the spatial model of party competition. The end result of the campaign predicted by reinforcement model would be an electorate divided into two opposing camps, with the party representing the issue attitudes of the most voters winning the election.

Although no formal model was derived from the SRC model, it seems clear from the one-way logic of the model that it too would predict that the end result of a long campaign would be a perfect correspondence between issue attitudes and party attitudes. However, according to the SRC model, this would come about because issue attitudes would be slowly changed to fit the prescriptions of the voter's favored party.

The information processing and reinforcement models make distinctive predictions with respect to the variances of the attitude clusters over time. The information processing model predicts that the variance of the issue and party attitude clusters will converge to a pair of equilibrium values over time, while the reinforcement model predicts that the variances of the issue and party attitude clusters will continually increase over time.

To test our models in real world data, we moved to stochastic versions of our deterministic models, since we not only had to contend with error of prediction, but also with measurement error. A multiple indicators approach called cluster analysis allowed us to identify and remove two sources of measurement error--random and specific--from the observed cluster correlations. Path analysis was then used to measure the fit of the data to the structural equation models derived from our models of attitude change in a political campaign.

We performed the first test of our models on the 1956-58-60 American panel data set. We discovered some serious problems with the 1958 wave of the data, and subsequently dropped it from our reported analyses. In testing the two-wave models, we found that the information processing model fit best to those high on education, political activity and media exposure; and a special case of the information processing model fit best to those low on education, political activity and media exposure. To try and explain these results, we posited a political awareness model, in which we assumed that those high on education, activity and media exposure would rely on their own judgment to assess the worth of the arguments presented by the parties on either side. Thus, they would be well described by the information processing model, which ascribes effects to messages rather than to sources of messages. However, the political awareness model also assumes that people low on political information would be hesitant to trust their own judgment and hence seek out authority figures to use as reference figures. Logically then, they would take the word of their trusted party leaders and reject the arguments of the opposition. That is, people with little preparation for political argument will deliberately and logically reject certain information on the basis of source. This special case of the information processing model actually generates the same equations for issue attitude change as does the congruity model; but for a different reason, as the choice of which party to believe is logical rather than emotional.

The use of multiple indicators of our theoretical concepts, party and issue attitudes, revealed a general increase in the correlation between issue and party attitudes for the 1956 and 1960 presidential campaigns. This conflicts with the results obtained by Gerald Pomper (1972) who, using single-item indicators of party and issue attitudes, found a general decrease in this correlation for the 1956 and 1960 campaigns.

The SRC model was clearly the poorest fitting model to the American data. The long time survival of the SRC model, we argued, stems from the static or cross-sectional nature of most of the data used to test it. At any given time, party attitudes (party identification, as commonly substituted) are the best predictor of issue attitudes and vote choice; hence it is natural to speak of causation in this direction. But, as Key (1966) pointed out and as our research shows, once one constructs a dynamic model of the process, change in party attitudes is associated with issue attitudes. The other major difference in our research is the use of multiple indicators of our theoretical concepts, from which assessments of construct validity and reliability could be made.

The test of the models in the British 1964-66-70 panel data had much more straightforward results: the information processing model fit the data for the entire British electorate. In the British data, there is also a much higher correlation between issue and party attitudes. This was interpreted as consistent with the political awareness model, under the assumption that the gross social class differences in Britain have led to a much wider knowledge of the fundamental policy differences between the two major parties. That is, the clearer political polemics between the British parties over the years have led to a situation in which a far greater number of British voters believe that they understand the basic issues well enough to trust their own judgment in listening to messages from either side.

A final point bears mentioning. Our contention that the information processing model can be applied to both the American and the British electorates has an intriguing logical extension. It has been shown (Abramson, 1975, and Crewe, et al., 1977), that there has been an overall decline in the strength of partisan attachment in the United States and Britain. Whether or not one attributes this decline to "generational replacement" or "period effects," the information processing model makes the same prediction--that party (and issue) attitudes will move to neutrality over time. Hence, we offer a possible explanation for the general decline in party identification in the United States and Britain.

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APPENDICES

APPENDIX A

TIME FUNCTIONS

	SINGLE-PARTY	TWO-PARTY
CONGRUITY MODEL	$\bar{a} = \frac{\alpha s_o + \beta \bar{a}_o}{\alpha + \beta} + (\bar{a}_o - \frac{\alpha s_o + \beta \bar{a}_o}{\alpha + \beta})e^{-N(\alpha + \beta)t}$	$\bar{a} = \frac{\alpha D_o + \beta \bar{a}_o}{\beta + 2\alpha} + (\bar{a}_o - \frac{\alpha D_o + \beta \bar{a}_o}{\beta + 2\alpha})e^{-(N\beta - 2N\alpha)t}$
	$s = \frac{\alpha s_o + \beta \bar{a}_o}{\alpha + \beta} + (s_o - \frac{\alpha s_o + \beta \bar{a}_o}{\alpha + \beta})e^{-N(\alpha + \beta)t}$	$D = 2(\frac{\alpha D_o + \beta \bar{a}_o}{\beta + 2\alpha}) + (D_o - 2\frac{\alpha D_o + \beta \bar{a}_o}{\beta + 2\alpha})e^{-(N\beta - 2N\alpha)t}$
INFORMATION PROCESSING MODEL	$\bar{a} = \bar{m} + (\bar{a}_o - \bar{m})e^{-\alpha t}$	$\bar{a} = \bar{a}_o e^{-2\alpha t}$
	$s = m + \frac{N\beta}{N\beta - \alpha} (\bar{a}_o - m)e^{-\alpha t}$	$D = \frac{2N\beta}{N\beta - 2\alpha} \bar{a}_o e^{-2\alpha t}$
	$+ [s_o - \bar{m} + \frac{N\beta}{N\beta - \alpha} (\bar{a}_o - \bar{m})]e^{-N\alpha t}$ for $N\beta \neq \alpha$	$(D_o - \frac{2N\beta}{N\beta - 2\alpha} \bar{a}_o)e^{-N\alpha t}$ for $N\beta \neq 2\alpha$
	$\bar{a} = \bar{m} + (\bar{a}_o - \bar{m})e^{-\alpha t}$	$\bar{a} = \bar{a}_o e^{-2\alpha t}$
	$s = \bar{m} + (s_o - \bar{m})e^{-\alpha t} + (\bar{a}_o - \bar{m})te^{-\alpha t}$ for $N\beta = \alpha$	$D = D_o e^{-2\alpha t} + 4\bar{a}_o te^{-2\alpha t}$ for $N\beta = 2\alpha$
REINFORCEMENT MODEL	$\bar{a} = \bar{a}_o + N\alpha\mu t$	$\bar{a} = \bar{a}_o$
	$s = s_o + \bar{a}_o t + N\alpha\mu(t^2/2)$	$D = D_o + 2N\beta\mu\bar{a}_o t$

APPENDIX B

STREAM FUNCTIONS DERIVED FOR PLOTTING PHASE PLANES FOR THE THREE MODELS*

	SINGLE-PARTY	TWO-PARTY
CONGRUITY MODEL	$s = -\frac{\beta}{\alpha}\bar{a} + C$	$D = \frac{-\beta}{\alpha} 2\bar{a} + C$
INFORMATION PROCESSING MODEL	$s = \bar{m} + \frac{N\beta}{N\beta-\alpha}(\bar{a} - \bar{m}) + C(\bar{a} - \bar{m})^{N\beta/\alpha}, \ N\beta \neq \alpha$ $s = \bar{m} + (\bar{a} - \bar{m})(C + \log\lvert\bar{a} - \bar{m}\rvert), \ N\beta = \alpha$	$D = \frac{2N}{N-2}\bar{a} + C\bar{a}^{N\beta/2\alpha}, \ N\beta \neq 2\alpha$ $D = C\bar{a} + 2\bar{a}\log\lvert\bar{a}\rvert, \ N\beta = 2\alpha$
REINFORCEMENT MODEL	$s = \frac{\beta}{2\alpha}\bar{a}^{2} + C$	$\bar{a} = C$

*C is the constant of integration throughout.

APPENDIX C

A METHOD OF CALCULATING CROSS-LAG CLUSTER CORRELATIONS FROM INTER-ITEM CORRELATION MATRICES, CORRECTING FOR THE EFFECTS OF RANDOM MEASUREMENT ERROR AND SPECIFIC FACTORS

Estimation formulas for the correlations between clusters can be easily obtained following the lead of Tosi, et al. (1976). Consider the block of correlations between indicators at the same time. Then if we avoid the diagonal $r_{x_{in}x_{jn}} = 1.0$, we have:

$$r_{x_{in}x_{jn}} = \sigma_{x_{in}x_{jn}} = \beta_{in}\beta_{jn}\sigma^2_{G_n} = \beta_{in}\beta_{jn} \qquad [1]$$

hence the sum of the correlations for that block satisfies:

$$\text{Sum}_{nn} = \sum_{i \neq j} r_{x_{in}x_{jn}} = \sigma^2_{G_n} \sum_{i \neq j} \beta_{in}\beta_{jn} = \sum_{i \neq j} \beta_{in}\beta_{jn} \qquad [2]$$

If we consider the block of correlations between indicators at two different points in time, and we avoid the diagonal $r_{x_{in}x_{im}}$ (i.e., the test-retest correlations), we have:

$$r_{x_{in}x_{jm}} = \beta_{in}\beta_{jm} r_{G_n G_m} \qquad [3]$$

If we sum, we have:

$$\text{Sum}_{nm} = \sum_{i \neq j} r_{x_{in}x_{jm}} = r_{G_n G_m} \sum_{i \neq j} \beta_{injm} \qquad [4]$$

Why is the diagonal left out? Because, for the test-retest correlations, we have:

$$r_{x_{in}x_{jm}} = \beta_{in}\beta_{jm}r_{G_nG_m} + \sigma_{S_{in}S_{jm}} \qquad [5]$$

which has an extra term for the test-retest covariation in the specific factor for that indicator.

If these equations are put together, we have:

$$r_{G_nG_m} = \frac{r_{G_nG_m} \sum_{i\neq j} \beta_{injm}}{\sum_{i\neq j} \beta_{in}\beta_{jm}} = \frac{\text{Sum}_{nm}}{\sum_{i\neq j} \beta_{in}\beta_{jm}} \qquad [6]$$

The denominator is a mixture of β_n's and β_m's and would therefore be expected to lie between Sum_{nn} and Sum_{mm}. An excellent estimate of the denominator of equation [6] is given by:

$$\sum_{i\neq j} \beta_{in}\beta_{jm} \approx \sqrt{\text{Sum}_n \text{Sum}_m} \qquad [7]$$

The approximation would be exact if the beta weights did not change over time, since that would imply:

$$\sum_{i\neq j} \beta_{in}\beta_{jm} = \sum_{i\neq j} \beta_i\beta_j = \sum_{i\neq j} \beta_{in}\beta_{jm} = \Sigma\beta_{im}\beta_{jm} \qquad [8]$$

Thus, an excellent estimate of $r_{G_nG_m}$ is given by:

$$r_{G_nG_m} = \frac{\text{Sum}_{nm}}{\sqrt{\text{Sum}_n \text{Sum}_m}} \qquad [9]$$

These computations differ from those of cluster analysis and those of LISREL (Jöreskog, 1973) in correctly deleting the test-retest correlations, which have spurious terms due to the specific factors. Thus, by deleting the main diagonal from the matrices of inter-item correlations in the calculation of cross-lag cluster correlations by the method described above, we have corrected for both random measurement error (unreliability) and specific factor effects. The perceptive reader has probably already noted that the above derivation can be adapted so as to allow one to calculate the variance of a cluster of indicators from the matrix of inter-item correlations for that cluster. This is a result that will come in handy in Chapters Three and Four, our data analysis chapters.

APPENDIX D

UNCORRECTED INTERCORRELATION MATRICES FOR THE AMERICAN ISSUE AND PARTY ATTITUDE CLUSTERS*

ALL (N = 752)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	62	60	18	22	24
58		100	63	10	15	16
60			100	18	23	24
56				100	85	85
58					100	86
60						100

ALL ISSUES (N = 752)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	57	49	13	18	20
58		100	59	8	12	13
60			100	13	17	19
56				100	85	85
58					100	86
60						100

< HS (N = 216)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	58	58	24	23	25
58		100	62	7	7	8
60			100	16	23	22
56				100	90	87
58					100	89
60						100

≥ HS (N = 535)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	62	59	12	18	18
58		100	62	10	17	17
60			100	17	21	21
56				100	82	83
58					100	83
60						100

HIGH POLITICAL ACTIVITY (N = 355)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	63	61	24	24	24
58		100	63	15	15	15
60			100	21	26	22
56				100	89	88
58					100	87
60						100

LOW POLITICAL ACTIVITY (N = 315)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	58	58	6	20	23
58		100	65	0	15	15
60			100	13	24	24
56				100	74	79
58					100	80
60						100

HIGH MEDIA EXPOSURE (N = 359)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	62	66	19	21	26
58		100	65	5	10	15
60			100	17	22	27
56				100	88	88
58					100	88
60						100

LOW MEDIA EXPOSURE (N = 319)

	ISSUES 56	ISSUES 58	ISSUES 60	PARTY 56	PARTY 58	PARTY 60
56	100	61	53	15	22	18
58		100	61	11	18	11
60			100	17	27	16
56				100	80	81
58					100	82
60						100

*All correlations are Pearson's r.

APPENDIX E

TEST OF THE THREE-WAVE MODELS IN THE BRITISH DATA WITH THE LIBERALS INCLUDED*

MODEL	ρ^2_{ISSUES}	ρ^2_{PARTY}	$\beta_{I_1I_2}$	$\beta_{I_2I_3}$	$\beta_{P_1P_2}$	$\beta_{P_2P_3}$	$\beta_{I_1P_2}$	$\beta_{P_1I_2}$	$\beta_{I_2P_3}$	$\beta_{P_2I_3}$	$r_{I_1P_1}$	AVERAGE SQUARED DEVIATION
CONGRUITY	.99	.95	.58	.95	.73	.58	.17	.30	.36	-.04	.93	.003
INFORMATION PROCESSING-REINFORCEMENT	.99	.95	.89	.92	.73	.58	.17	†	.36	†	.93	.002
SRC	.99	.95	.58	.95	.92	.88	†	.30	†	-.04	.93	.008

*The N for each of these models is 705. The Liberal party is scored midway between the Conservative and Labour parties.

(†) denotes a parameter not estimated in the model

All betas are significant at the .05 level.

APPENDIX F

UNCORRECTED INTERCORRELATION MATRICES FOR THE BRITISH ISSUE AND PARTY ATTITUDE CLUSTERS*

ALL (N = 546)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	62	57	68	65	63
66		100	65	64	64	64
70			100	59	57	62
64				100	90	84
66					100	85
70						100

ALL ISSUES
ALL (N = 546)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	73	64	63	60	57
66		100	68	57	58	55
70			100	54	53	55
64				100	90	84
66					100	85
70						100

HIGH SES (N = 195)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	60	54	64	61	61
66		100	60	61	64	63
70			100	59	59	63
64				100	90	88
66					100	86
70						100

LOW SES (N = 323)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	54	50	62	57	55
66		100	60	52	51	52
70			100	47	42	51
64				100	84	76
66					100	77
70						100

HIGH MEDIA EXPOSURE
(N = 315)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	67	61	71	69	66
66		100	64	67	67	67
70			100	63	61	65
64				100	91	86
66					100	87
70						100

LOW MEDIA EXPOSURE
(N = 231)

	ISSUES 64	66	70	PARTY 64	66	70
64	100	55	48	63	57	56
66		100	64	58	59	59
70			100	53	50	56
64				100	86	81
66					100	81
70						100

*All correlations are Pearson's r.