Judging the Positions of Political Candidates: Models of Assimilation and Contrast

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Numerous researchers have found that voters misperceive positions that are juxtaposed by political candidates. Evidence has been presented that voters who like a candidate assimilate the candidate's position to their own position on an issue, but little evidence has been found for contrast among those who dislike a candidate. These claims are critically examined both formally and empirically. It is shown that a series of possible errors or misperceptions have biased the estimates of assimilation and contrast. Using 1968 national survey data, the authors explored a new model for assessing assimilation and contrast that overcomes some of these misperceptions. The results suggest that previous research has relatively underestimated the impact of contrast effects.

In recent years, many social scientists have become interested in the perception of political candidates. Specifically, a number of recent studies have examined the extent to which the positions espoused by political candidates are systematically misperceived in ways equivalent to social psychological theories of cognitive consistency (Granberg & Brecht, 1974; Granberg & Jenks, 1977; Granberg & Selvidge, 1976; Kinder, 1978; King, 1977-1978).

All of these studies have relied on Heider's (1958) balance theory, which predicts that agreement with liked candidates is preferred to disagreement and that disagreement with disliked candidates is preferred to agreement. Such predictions imply that a voter's sentiment toward a political candidate should influence the perceptions of positions espoused by the candidate. Liked candidates' positions should be seen as similar to the voter's own position and hence assimilated to the voter's position; disliked candidates' positions should be seen as dissimilar and hence contrasted from the voter's own position.

To test this balance hypothesis, national survey data collected by the Center for Political Studies (CPS) at the University of Michigan have been used. These surveys have been conducted during every presidential election year since 1948, and recently they have included questions ascertaining the voter's own position on various social issues, his or her perception of the candidates' positions on those issues, and the voter's sentiment toward each candidate. To assess the degree to which sentiment induces assimilation and contrast effects, correlations have typically been computed between the perceived position of a candidate and the voter's own position for groups of voters that differ on sentiment toward each candidate. In these analyses, it has been assumed that assimilation of a liked candidate's position is indicated by a positive correlation and that contrast of a disliked candidate's position is indicated by a negative correlation.

The causal model consistent with these traditional assessments of sentiment effects appears in Figure 1. This model assumes that the voter's own position, \( V \), on a given political issue influences his or her perception of the candidate's position, \( C \), on the same issue. The variable \( U \) represents residual or disturbance variance in \( C \) that is assumed to be uncorrelated with \( V \). The effect of \( V \) on \( C \), which we denote \( f \), in Figure 1, has been

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...estimated either by the correlation between V and C (i.e., the path coefficient) or by the unstandardized regression coefficient. The subscript, s, indicates that the relationship between V and C is assumed to vary as a function of sentiment toward the candidate. While all of the studies conclude that the candidates' positions are misperceived as a function of the voter's own position, they have generally only supported the assimilation component of the balance hypothesis. The correlation or unstandardized coefficient is typically positive and quite large for voters who like the candidate, whereas the estimate of \( t \) is negative but generally quite close to zero among those who dislike the candidate. Contrast effects in the perception of disliked candidates have only rarely been demonstrated. Thus, for instance, Kinder (1978) concludes:

In the interest of preserving positive sentiment ..., it is essential for citizens to see candidates they like as holding positions similar to their own on all important issues, hence, a regular and powerful assimilation effect. But there is no comparable need to view disliked candidates as uniformly dissimilar. (p. 489)

The theoretical rationale typically used to explain this asymmetry in the effects of sentiment on perception of political candidates derives from modifications of Heider's (1958) balance theory suggested by Newcomb (1968). Newcomb's position on assimilation caused by positive sentiment should be more frequent and potent than contrast caused by disliking, which may lead to stronger judgment rather than efforts to achieve balance. Consistent failures to demonstrate contrast effects in the perception of political candidates seem to support Newcomb's point of view.

The purpose of this article is to question the validity of this often-reached conclusion about assimilation-contrast asymmetry. We begin by discussing three misspecifications in the traditionally assumed model of Figure 1. We show how these misspecifications, due to measurement error, reciprocal causation, and an omitted variable, may have inappropriately encouraged investigators to conclude that sentiment effects are asymmetrical. We then propose an alternative model that partially overcomes these misspecifications and allows a more adequate test of assimilation-contrast asymmetry. We conclude by applying this new model to data from the 1968 CPS national election survey.

Mismodeling in the Traditional Model

All models are necessarily inadequate representations of reality; that is, they are misspecified to some unknown extent. In this section, we discuss three aspects of the V-C relation that are not accounted for in the traditional model, and we discuss the likely consequences of these misspecifications for traditional tests of assimilation-contrast asymmetry.

Mismispecification Due to Measurement Error

Classic psychometric theories of measurement assume that every observed variable reflects both true score and error. The error component is classically assumed to be random with respect to both the true score variance and all other variables. It is well known that errors of measurement in variables attenuate correlations. If \( \hat{t} \) is estimated by the correlation between C and \( \hat{V} \), \( \hat{c}_{V,C} \), random measurement error in C and \( \hat{V} \) leads to attenuation. If \( \hat{t} \) is estimated by the unstandardized regression coefficient of C regressed on \( \hat{V} \), \( \hat{c}_{V,C} \), random measurement error in C and \( \hat{V} \), then the association between them is probably misestimated under the model portrayed in Figure 1.

Although random error is a source of misspecification in the model in that it causes bias in estimates of \( \hat{t} \), this misspecification may not lead to bias in tests of assimilation-contrast asymmetry. For all sentiment groups, random measurement error probably results in a more or less equal attenuation of \( \hat{t} \). However, not all measurement error is random. There is a considerable body of literature in the area of attitude measurement that sug...
metrical in Figure 1 if the omitted reciprocal effect of similarity on liking is nonlinear. That is, if the effect of increasing similarity of positions on liking is greater than the effect of increasing dissimilarity on disliking, then the results of an analysis of the model in Figure 1 might mistakenly conclude that the effects of sentiment are asymmetric. However, there exists abundant evidence that the effect of similarity on liking is quite linear (Byrne, 1971). Thus, whereas this sort of reciprocal effect is a misspecification in the model of Figure 1, it is unlikely that it mistakenly leads to the conclusion that the effects of sentiment on Y are asymmetric.

The second sort of reciprocal causation omitted from the model of Figure 1 is a "persuasion" effect (Markus & Converse, 1979). The model assumes that V affects C but that C does not affect V. In fact, however, it is likely that the positions espoused by liked and disliked candidates affect the positions a voter espouses, although the effect may not be large (Markus, 1982). Candidates who are liked may persuade a voter to adopt positions similar to their own. Disliked candidates may persuade a voter to adopt dissimilar positions. If such persuasion effects are more potent for a liked candidate than for a disliked one, then the omission of this reciprocal effect of C on V may mistakenly encourage the conclusion that assimilation effects (of V on C) are stronger than contrast effects in the model of Figure 1. In other words, if the tendency to be persuaded toward a liked candidate is stronger than the tendency to be persuaded away from a disliked candidate, then the asymmetry in the effects of sentiment that is typically obtained may be due to the effect of C on V rather than to the assumed effect of V on C.

There is in fact both theoretical and empirical support for the hypothesis that persuasion toward a liked candidate is greater than persuasion away from a disliked candidate. The theoretical support derives from the important mediating role of similarity in social comparison processes (Festinger, 1954). According to social comparison theory, similar others are more often used as referents for judging and modifying one's attitudes than dissimilar others. The factors that are likely to make a candidate seem to be a similar referent (e.g., party affiliation) are also factors that induce liking for a candidate. Hence, it follows that liked candidates may be more important referents (i.e., more persuasive) than disliked candidates. The empirical support for the notion that persuasion toward a liked other is greater than persuasion away from a disliked other is found in research on congruity theory (Osgood & Tannenbaum, 1955). Osgood and Tannenbaum found that congruity theory required an important modification in order to be consistent with the experimental data generated to support it. This modification, called the "assertion constant," was introduced to account for the experimental result that movement away from the position advocated by a disliked source was not as great as movement towards a liked source. In sum, then, there exists compelling theoretical and empirical support for the hypothesis that persuasion effects are greater if a candidate is liked than if the candidate is disliked. Such asymmetry of persuasion effects may improperly lead researchers to conclude that the effects of V on C are asymmetric in the misspecified model that omits the effect of C on V.

**Misspecification Due to an Omitted Variable**

The validity of the model in Figure 1 rests on the assumption that all relevant variables have been included. The failure to include an important variable could seriously bias the assessment of assimilation-contrast asymmetry.

Laboratory experiments in the area of persuasive communications (e.g., Selt and Holmberg, 1961) have examined an important variable that is omitted from the model of Figure 1. In studies of how persuasive communications are judged, the position implied by the actual communication is usually known. This actual position is used to determine whether subjects misperceive the content of the communication. For studies of the perception of political candidates by voters, candidates direct messages to the voters concerning their actual positions on various issues. These actual positions, implicit in communications from the candidates, may
then be distorted by the voters according to their sentiment for the candidates, in the ways suggested by balance theory. We can define the actual content of a message from a candidate to voters as the undistorted position, or $C$. The model in Figure 1 must be modified to account for the fact that the voter’s perception of a candidate’s position is in part influenced by $C$, or the content of the actual communications addressed to the voter. To modify the model, we might think of $(C - C)$ as the amount of distortion by the voter in the perception of the communications from the candidate. The quantity $(V - C)$ is the discrepancy between the voter’s own position and the undistorted position of the candidate. The amount of distortion in the perception of a candidate’s position, that is, the amount of assimilation or contrast, should be a joint function of the voter’s sentiment toward the candidate and the quantity $(V - C)$. In other words, given some constant level of positive sentiment, a voter whose own position is relatively close to the candidate’s undistorted position should engage in less distortion than a voter whose own position is relatively discrepant from $C$.

This new model can be expressed as

$$(C - C) = k(V - C) + U,$$

where $k$ is assumed to vary with sentiment toward the candidate and where $U$ represents residual variation in $(C - C)$ that is uncorrelated with $(V - C)$. The model can be expressed equivalently as

$$C = C + k(V - C) + U.$$  (1)

If $k$ varies with sentiment, this model accounts for assimilation and contrast effects. Is the case of assimilation, when voters strongly like the candidate, the value of $k$ would be near one. If we substitute $k = 1$ in Equation 1 we have

$$C = C + 1(V - C) + U,$$

$$= V + U.$$  

Thus, when $k$ equals one, the voter’s own position equals his or her perception of the candidate’s position on the average, constituting perfect assimilation. For voters who are neutral toward a candidate, the value of $k$ should be zero. Substituting $k = 0$ in Equation 1 gives

$$C = C + O(V - C) + U$$

$$= C + U.$$  

Thus, when $k$ equals zero, the voter’s perception of the candidate’s position equals the candidate’s undistorted position on the average. Neither assimilation nor contrast takes place. Finally, when voters strongly dislike a candidate, the value of $k$ should approach one negative. Substituting $k = -1$ in Equation 1, we have

$$C = C + (-1)(V - C) + U$$

$$= 2C - V + U.$$  

This implies that $C$ falls between $V$ and $C$ on the average. Thus, when $k$ is negative, there is distortion in $C$ away from $V$ in the direction of $C$. This constitutes contrast.

To determine whether the effects of sentiment are asymmetric, that is, to examine the hypothesis of assimilation-contrast asymmetry, we would like to examine the sentiment-$k$ relation. Assimilation-contrast asymmetry would be indicated if the absolute value of $k$ was greater for those who like a candidate than for those who dislike the candidate to an equal degree. Symmetry would be indicated if the values of $k$ were equal but of opposite sign for those who like and dislike a candidate to an equal degree. The distorting effects of sentiment would be symmetrical, then, if the sentiment-$k$ relation was linear and centered at zero. That is, when sentiment is neutral, $k$ should be zero, and as sentiment diverges from neutrality, $k$ changes linearly.

At issue, then, is the relation between sentiment and $k$ in the specified model that includes $C$. Unfortunately, however, $C$ is an unknown variable and hence we probably cannot estimate $k$ without bias. We can examine, however, whether the correlation between $C$ and $(V / r_C)$, or the regression coefficients of $C$ on $V$ ($b_C$), is a good approximation of $k$. If one or both of them is, then we could look for assimilation-contrast asymmetry using these coefficients rather than the unknown $k$.

Because we wish to determine whether the sentiment-$k$ relation is linear and centered at zero, these same two criteria should be
Substituting \( k_e = 0 \) in

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(V' - C) = U
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Table 1

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<th>( k_e )</th>
<th>( r_{CV} )</th>
<th>( b_{CV} )</th>
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<tbody>
<tr>
<td>.50</td>
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<td>0.00</td>
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<td>-.50</td>
<td>-.45</td>
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</tbody>
</table>

Table 2

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<tr>
<th>( k_e )</th>
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<td>.25</td>
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<td>0.00</td>
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<td>-2</td>
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<tr>
<td>-.50</td>
<td>-14</td>
<td>-23</td>
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</table>

between \( C \) and \( V \) may not be terribly large, because we tend to learn about political can-

didates primarily through television and the mass media. Nevertheless, some small posi-

tive correlation between \( C \) and \( V \) is reason-

ably.

The regression coefficient, \( b_{CV} \), from the linear correlation but not the criterion of centrality.

In other words, \( b_{CV} \) varies linearly with \( k_e \), but it is displaced in a positive direction.

To illustrate these conclusions, we present in Table 2 the values of \( r_{CV} \) and \( b_{CV} \) for various values of \( k_e \) when \( C \) is positively correlated with \( V \). From these results, it should be clear that conclusions about assimilation-contrast asymmetry based on the actual values of \( r_{CV} \) and \( b_{CV} \) are likely to be erroneous when \( C \) and \( V \) are correlated. The correlation between \( C \) and \( V \) does not vary linearly with \( k_e \). Both \( r_{CV} \) and \( b_{CV} \) are displaced in a positive direction, thus falsely encouraging the conclusion that contrast ef-

fects are relatively weak. It is important to note that the amount of displacement in \( b_{CV} \) is a function of the relation between \( C \) and \( V \). If the candidate's distorted position is not highly correlated with \( V \), then \( b_{CV} \) would not be greatly displaced. Examining \( b_{CV} \) might then be useful for testing the assimilation-contrast asymmetry hypothesis. If \( b_{CV} \) varies linearly with sentiment, then \( k_e \) must also vary linearly with sentiment. If \( b_{CV} \) is only slightly displaced from zero at neutral sentiment, then \( k_e \) can be assumed to show even less displacement.
Null hypothesis. We propose that mathematical models are not effective in predicting the behavior of complex systems. We conduct simulations to test this hypothesis. The results show that the mathematical models are not accurate in predicting the behavior of the system. Therefore, we conclude that mathematical models are not effective in predicting the behavior of complex systems.
The variables $V_i$ and $C_i$ are indicators of $V$ and $C$, respectively; $\lambda_i^2$ and $\lambda_i^2$ are loading coefficients representing the effects of latent constructs on their indicators; and $e_i^2$ and $e_i^2$ are residuals to the indicators that are uncorrelated with $V$ and $C$. Notice that we have used the same subscript, $i$, with both $V_i$ and $C_i$. This indicates that each $V_i$ is linked to a specific $C_i$ with which it shares error variation. In other words, a specific $e_i^2$ is allowed to correlate with the corresponding $e_i^2$.

To illustrate the model, suppose each voter was asked to rate himself or herself on scales assessing two attitudes: toward the Vietnam War and toward the military budget. Assuming these self-ratings both reflect in part a single underlying construct, $V$, the former measure might be $V_i$, and the latter $V_j$. Each voter also rates the candidate's positions on these two scales, $C_i$ and $C_j$, respectively. The model allows us to estimate the effect of $V$ on $C$, controlling for the correlated errors between the ratings taken on the Vietnam War scale and between the ratings taken on the military budget scale.

Assuming that the coefficients of this model can be estimated, then the estimated $V$-$C$ relation, $\beta$, would not be biased due to correlated errors of measurement. Thus, this model avoids the first of the misspecifications we have discussed. Further, if we estimate the variances of both $V_i$ and $C_i$ and examine $\delta$ as an unstandardized coefficient, then we can partially overcome the misspecification due to the omission of $C_i$. We do this by examining the linearity of the relation between $V_i$ and $C_i$ and the degree to which it is dispensed from zero at neutral sentiment. From this we hope to infer whether the unknown coefficient $\lambda_i^2$ varies linearly with sentiment and is centered at zero.

Estimation

Given two indicators of both $V$ and $C$, the coefficients of the model in Figure 3 can be estimated using LISREL (Version 4; Jöreskog & Sörbom, 1978), once an additional constraint is placed on the model. For the model to be identified, $V_i$ and $C_i$ must be assumed to be equally good indicators of $V$ and $C$, and $e_i$ and $e_i$ must be assumed to be equally good indicators of $C$. In other words, we assume that $\lambda_i^2 = \lambda_i^2$ and that $\lambda_i^2 = \lambda_i^2$.

To estimate the unstandardized structural coefficient representing the effect of $V$ on $C$, we must estimate the variances of both latent constructs. This can be accomplished by setting one $\lambda_i$ for each latent construct at unity to establish its measurement metric (Kenny, 1979). Thus, in combination with the constraint that both indicators of each construct have equal loadings, $\lambda_i$, results in all $\lambda_i$ being set at unity.

Given these constraints on the model, LISREL provides maximum-likelihood estimates of the following unknown parameters: (a) the variance of the latent exogenous construct, $\gamma_x^2$, (b) the unstandardized coefficient, $\beta$, (c) the residual variation in $C$, $\delta$, (d) the residual or error variation in the indicators, $e_i^2$ and $e_i^2$; and (e) the covariances between indicators of $C$ and $V$ using the same scale of measurement, COV $(e_i, e_i)$, COV $(e_i, e_i)$. Because we are interested in the magnitude of the unstandardized $\delta$ coefficient and whether it varies linearly with sentiment, the model's parameters should be estimated for samples that differ on sentiment.

In addition to estimating the unknown parameters of the model, LISREL also provides a chi-square goodness-of-fit statistic for examining whether the model is consistent with the data. This goodness-of-fit test can be conducted whenever the model is overidentified (i.e., whenever more information is available than is necessary to derive the parameters). Under the present set of constraints, a chi-square can be computed simultaneously across the different sentiment groups to examine whether the model is simultaneously consistent with the data from all groups. A nonsignificant chi-square suggests that the data and the model are consistent. This test, however, depends dramatically on the size of the samples. With large samples, trivial discrepancies between the data and the model may lead to a significant chi-square (Bentler & Bonett, 1980).

Data

The coefficients of this model were estimated from data collected as part of the 1968 CPS National Election Study. We chose to
### Table 1: Growth Rate and Hob Fecundity

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number</th>
<th>Growth Rate</th>
<th>Hob Fecundity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>20</td>
<td>0.5</td>
<td>30</td>
</tr>
<tr>
<td>Treatment</td>
<td>30</td>
<td>0.7</td>
<td>40</td>
</tr>
<tr>
<td>Experiment</td>
<td>40</td>
<td>0.8</td>
<td>50</td>
</tr>
</tbody>
</table>

For the growth parameters, we observed significant differences between the control and treatment groups, with the treatment group showing a higher growth rate. Hob fecundity was also higher in the treatment group compared to the control.

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### Table 2: Mortality and Female Survival

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Average Mortality</th>
<th>Female Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10.5%</td>
<td>80</td>
</tr>
<tr>
<td>Treatment</td>
<td>7.5%</td>
<td>90</td>
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</table>

The mortality rate was significantly lower in the treatment group compared to the control. Female survival rates also showed a positive trend in the treatment group, with a 10% increase in survival.
the four sentiment groups is reasonable, given the relatively large sample: Nixon, \( x^2(4) = 9.52, p = .059 \); Humphrey, \( x^2(4) = 14.44, p = .006 \).

For purposes of examining assimilation-contrast asymmetry, we are primarily interested in the \( b \) coefficients: the unstandardized effect of \( V \) on \( C \), controlling for correlated measurement error in indicators of \( V \) and \( C \). Once these correlated errors of measurement are controlled, we might expect contrast effects to be more apparent than previous research has found. In fact this is the case. For the low-sentiment groups (0-25) in both the Nixon and Humphrey models, \( b \) takes on substantial negative values, significantly different from zero in both cases. Substantial evidence for contrast effects thus exists once the misspecification due to correlated errors of measurement is alleviated.

To overcome the third misspecification, that due to the omitted variable, \( C \), we would like to see whether \( b \) is centered at zero (i.e., equals zero when sentiment is neutral) and whether it varies linearly with sentiment. Recall that \( b \) is used as an approximation of the unknown coefficient \( k_0 \). What we really would like to determine is whether \( k_0 \) varies linearly with sentiment and equals zero at neutral sentiment. We have shown that \( b \) varies linearly with \( k_0 \) but is displaced from it in a positive direction to the extent that the unknown variable \( C \) is correlated with \( V \).

Because \( b \) varies linearly with \( k_0 \), it can be used to determine whether \( k_0 \) varies linearly with sentiment. The values of \( b \) for the Nixon and Humphrey models are graphed in Figure 4 as a function of the four sentiment levels. For both candidates, the linear trend in the \( b \)-sentiment relation is quite apparent. Using the standard errors for these coefficients provided by the estimation procedure, it is possible to calculate the significance of linear and nonlinear trends in these coefficients across sentiment levels. In both cases the linear trends are highly significant (\( Z = 6.17, p < .001 \), for Nixon, and \( Z = 5.11, p < .001 \), for Humphrey). None of the nonlinear trends approach statistical significance. If assimilation-contrast asymmetry were supported by these results, the graphed lines in Figure 4 would show a positive nonlinear trend. That is, the slope of both lines would become steeper as sentiment becomes more positive. Such nonlinearity is simply not present.

Although we have shown that \( k_0 \) varies linearly with sentiment, it is still the case that the \( b \) coefficients of Table 4 are not centered at zero. The coefficients for the two positive-sentiment groups in the case of each candidate are of somewhat larger absolute value than are the coefficients for the two negative-sentiment groups. Nevertheless, the amount of displacement is not substantial. Extrapolating from the Nixon estimates, at neutral sentiment \( b = .07 \). At neutral sentiment for the Humphrey groups \( b = .10 \). Neither of these values differ significantly from zero (\( Z = .99 \) and \( 1.23 \), respectively).

Because we have shown that \( b \) is positively displaced from \( k_0 \), we can see the amount of displacement of \( b \) at neutral sentiment is quite small, it may be that \( k_0 \) itself, the coefficient in which we are really interested, is centered at zero. Recall that \( b \) is positively displaced from \( k_0 \) to the extent that \( V \) and \( C \), the candidate's undistorted position, are correlated. Using the formulas in the Appendix, it is possible to derive the correlation between
V and C that would produce a displacement of \( \beta \) from \( k_i \) by .07 for Nixon and by .10 for Humphrey. In other words, if \( k_i \) were in fact zero at neutral sentiment, what is the size of the correlation between \( V \) and \( C \) necessary to displace \( \beta \) by .07 and .10 for Nixon and Humphrey, respectively? If these correlations are of reasonable size, then our results suggest that \( k_i \) may in fact be centered at zero.

Two assumptions must be made to estimate these correlations. First, we must estimate the variance of \( C \). It seems likely that this variance is considerably less than the variance of the voter's own position. Hence, we have assumed that \( \sigma^2 \) is one half of \( \sigma^2 \) (from Table 4) for each of the sentiment groups. Second, we assume that the slope of \( C \) regressed on \( V (k_i) \) is constant across sentiment levels. In other words, a unit difference in \( V \) is associated with equal unit difference in \( C \) regardless of sentiment level. Under these assumptions, the correlation between \( C \) and \( V \) necessary to displace \( \beta \) from \( k_i \) by .07 in the case of Nixon is .095. In the case of Humphrey, a correlation of .105 between \( C \) and \( V \) would produce a displacement of \( \beta \) from \( k_i \) by .10. It seems to us that these low correlations between \( C \) and \( V \) are entirely reasonable. If \( k_i \) were centered at zero and if only 2% of the variance of \( V \) was associated with variance in \( C \), the \( b \) coefficients would show the displacement that we estimate in fact show. It seems reasonable, then, to believe that although \( \beta \) is not centered at zero, \( k_i \) may well be.

In sum, we have shown that the unknown coefficient, \( k_i \), varies linearly with sentiment and may well be centered at zero. At the most, \( k_i \) is displaced from zero by a nonsignificant amount. Hence, when the misspecifications due to correlated measurement errors and an omitted variable are alleviated, no evidence remains to support the assumption-contrast asymmetry hypothesis. This result is particularly striking in light of the fact that we have still not removed the bias due to the reciprocal causation mis-specification.

Conclusion

The purpose of this article has been to develop an analysis strategy that is based on a set of reasonable assumptions to explore whether voters mis perceive the positions espoused by political candidates. To do this, we have examined three different unreasonable assumptions or mis specifications in earlier research on this issue. We have argued that these mis specifications, due to correlated errors of measurement, reciprocal causation, and an omitted variable, have erroneously led researchers to conclude that assimilation effects are more potent than contrast effects. We have developed and tested a model that overcomes these mis specifications due to correlated errors of measurement and the omitted variable. Under this model, which still suffers from the reciprocal causation mis specification, no evidence was found for the assimilation-contrast asymmetry hypothesis. On a slightly broader concluding note, our ultimate objective has been to illustrate how causal models are implicitly assumed whenever researchers examine data to determine whether they are consistent with a hypothesis. It may be that the implicitly assumed models are unrealistic. With the development of techniques for examining and estimating the parameters of causal models (Duncan, 1972; Kenny, 1979), we are now in a position to examine critically the models we assume.

References

Garfinkle, D., & Zuckerman, H. St. Dominant placements in the 1954 election: Application of social judgment and
assumptions to explore the pozenions es-
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was found for the asymmetry hypothesis.1

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has been to illustrate how
premised data to determine
istent with a hypothesis.
explicitly assumed models
velopment of mining and estimating the
models (Duncan, 1975; 1984). We are now in a position to do
models we assume.

Appendix

Derivation of \( f_{cv} \) and \( b_{cv} \) Under Different Assumptions Concerning \( C \)

Given the Model \( C = C' + kD' + \epsilon' \)

Assume that \( C \) is constant. It follows that

\[
\sigma_C^2 = k^2 \sigma_D^2 + \sigma_\epsilon^2.
\]

Therefore,

\[
f_{cv} = \frac{COV(C', \epsilon)}{\sigma_C} = \frac{k \sigma_D}{\sigma_C} \quad \text{and} \quad b_{cv} = \frac{COV(C, \epsilon)}{\sigma_\epsilon} = \frac{k \sigma_D}{\sigma_\epsilon}.
\]

Assume that \( C' \) is variable and \( COV(C', \epsilon') = 0 \) it follows that

\[
\sigma_C^2 = k^2 \sigma_D^2 + 2k \sigma_D \sigma_C \text{COV}(C', \epsilon') + \sigma_\epsilon^2.
\]

Therefore,

\[
f_{cv} = \frac{COV(C', \epsilon)}{\sigma_C} = \frac{k \sigma_D + \sigma_C \text{COV}(C', \epsilon)}{\sigma_C} = \frac{k}{\sigma_C} + \frac{\sigma_C \text{COV}(C', \epsilon)}{\sigma_C} \quad \text{and} \quad b_{cv} = \frac{COV(C', \epsilon)}{\sigma_\epsilon} = \frac{k \sigma_D + \sigma_C \text{COV}(C', \epsilon)}{\sigma_\epsilon} = \frac{k}{\sigma_\epsilon} + \sigma_C \text{COV}(C', \epsilon) \sigma_\epsilon.
\]

where \( h_{cv} \) is the unstandardized regression coefficient of \( C \) on \( \epsilon' \).

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Kinder, D. R. Political person perception: The asym-
metrical influence of sentiments and choice on per-
ceptions of presidential candidates. Journal of Person-

King, M. Assimilation and contrast of presidential can-

Markus, G. B. Political attitudes during an election year: An report on the 1980 NES patient study. American Pol-

Markus, G. B., & Converse, P. E. A dynamic simul-
tion equations model of electoral choice. American Pol-
itical Science Review, 1979, 73, 1005-1020.

Mintz, L. W., & Spiegel, I. As the standard the mos-


Osgood, C. E., & Tannenbaum, P. H. The Principle of congruity in the predicting of attitude change. Psy-

Ostrom, T. M., & Uphare, H. S. Psychological perspec-
tive and attitude change. In A. C. Greenwald, T. C. Broek, & T. M. Ostrom (Eds.), Psychological founda-

Plass, B. L., & Jones, C. C. Reciprocal effects of roles 
priming, party loyalty and the vote. American Pol-
itical Science Review, 1979, 73, 1071-1089.

Sherif, M., & Hood, C. I. Social Judgment. New-
Haven, Conn.: Yale University Press, 1954.