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WHEN CORE BELIEFS COLLIDE: CONFLICT, COMPLEXITY, OR JUST PLAIN  
CONFUSION?

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## Abstract

In this paper, we argue that on many important public policy questions, people may be unsure of their preferences because their underlying principles or values are in conflict. We build a simple model of conflicting core beliefs, building on the work of Heider (1958). Using abortion policies as our test case, we develop a test for our theory using heteroskedastic probit, using data taken from the 1988 General Social Survey. The heteroskedastic probit results confirm our model, and in the last section of the paper, we trace the implications of this model for some of the larger questions in public opinion research.

# WHEN CORE BELIEFS COLLIDE: CONFLICT, COMPLEXITY, OR JUST PLAIN CONFUSION? \*

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## 1 Introduction

The premise of our paper is that important political debates involve fundamentally tough questions, where deeply held and widely shared core beliefs, principles, or values, are in conflict. Occasionally, we arrive at consensus about how to settle difficult questions — when to go to war in the Persian Gulf, or when to withdraw from Viet Nam, for instance. And often we ‘debate’ what are surely valence questions — like respect for the flag, which was a prominent example in a recent Presidential election. But the most challenging questions for political elites and mass publics alike are conflictual, like the rights of choice vs. respect for life in the debate over abortion policy, the protection of timber jobs or protection of endangered species, or the toleration of racist speech vs. redressing concerns of minorities. No doubt, there are some people who have little difficulty resolving these debates, but for the bulk of us these are hard choices. And if they are hard choices for elites, they will be hard choices for many in the public when interviewed for mass surveys.

This problem of ambivalent responses to difficult questions grows out of the expanding research on ‘core beliefs’ (e.g., Feldman, 1988). This literature shows great promise towards identifying something like a system of mass beliefs. Converse [1964] documented the difficulties in finding anything like an overarching ideology in all but a scant fraction of the mass public. Of course, the past three decades has seen considerable research to challenge Converse’s original findings. Verba and Nie [1972] questioned whether a more politically active time might reveal greater structure to mass beliefs. Lane [1962] suggested that the survey technique itself could not reveal nuances in beliefs. Achen [1975] pointed to measurement error, arguing that it’s not fuzzy respondents, but fuzzy questions that account for the instability of preferences. Yet after all that research, we are left with Kinder’s [1983] review article observing that there are many bases to mass beliefs.

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Instead of a single over-arching ideology, recent research identifies nuggets of core beliefs around which a surprisingly rich collection of preferences appear to be structured. Feldman [1988] showed that values of equality of opportunity, economic individualism, and free enterprise went a long way toward explaining survey responses on welfare, government spending, federal activism, and support for minorities. Kinder and Sanders [1990] used split sample techniques to show how framing questions of affirmative action in terms of reverse discrimination (as opposed to undeserved advantages) were strongly related not just to questions of racial policy, but also to preferences for political candidates.

The presence of core beliefs in opposition to one another presents a problem for survey response. Feldman and Zaller [1992] put this problem as the ‘ambivalence axiom’: “Most people possess opposing considerations on most issues, that is, considerations that might lead them to decide the issue either way.” In combination with two further axioms (the “response axiom” and the “accessibility axiom”), Feldman and Zaller are able to develop a model explaining response stability, ideological consistency, and general response effects. (Table 9, page 608, of their article lists seventeen different empirical phenomena their model purports to explain). They identify three related ways for checking ambivalence: counts of opposing remarks, spontaneous expressions of ambivalence or difficulty making up their minds, and counts of “two-sided” comments.

While these methods do demonstrate the presence of opposing considerations (Feldman and Zaller’s definition of ambivalence), they are not necessarily indicative of underlying conflict. At one extreme, it is possible to be categorized as ambivalent under Feldman and Zaller’s method, while not really ‘considering’ both sides of a question: Respondents who are well-educated and well-informed about policy questions may be able to provide the arguments of both sides of a debate, while adhering more strongly to one, or to neither. At another extreme, the presence of opposing considerations potentially increases support for one position. The so-called ‘inoculation effect’ arises when subjects exposed to two-sided messages are better able to resist later counter-messages than those subjects exposed to one-sided messages (e.g., Lumsdaine and Janis 1953; Hovland, Lumsdaine, and Sheffield 1949; McGuire 1964).

We argue in this paper that in many cases individual core beliefs will be in conflict, not merely the considerations they draw upon when formulating their survey response. When core beliefs conflict, it becomes difficult for an individual to determine their position on related policy choices. We believe this conflict on some important core beliefs may account for the uncertainty respondents have on many dimensions of public policy (e.g. Alvarez and Franklin 1993) as well as the perplexing problem of response instability (e.g. Feldman and Zaller 1992).

What do we mean, though, when we say that core beliefs are conflictual? Take abortion as the policy of interest. It is very likely that some individuals might feel that women should have the right to control their bodies, while also believing that all human life is important. These individuals, we argue, have conflicting core beliefs. And since their beliefs conflict, these individuals will have more difficulty with policy choices

concerning abortion. For example, when asked if a woman should be allowed to terminate a pregnancy for any reason whatsoever, individuals with conflicting core beliefs will have more difficulty determining their position, and their answer to the survey question.

So, if our suspicions are correct — that *conflict* between core beliefs makes for difficult choices and uncertain or unstable responses — then we require different methods to identify such conflict. Further, if it is conflict that matters, then response effects take on a deeper significance in questions of the responsiveness of elites to mass opinion.

Our paper develops a model of opinion on conflicting questions. In the next section of the paper we lay out a simple model which draws upon balance theory (Heider 1958) to depict the conflict between core beliefs. This model implies, for policy questions which have uncertain relationships to the underlying core beliefs, that individuals with conflicting beliefs will have more difficulty with these policy questions. In the second section of this paper we outline a test of this implication, involving heteroskedastic probit models. There, we focus exclusively on abortion as our test case. In the last section we close with a brief discussion of the implications of our work.

## 2 A Model of Conflicting Core Beliefs and Ambivalent Responses

Our model takes as its beginning the ideas in “balance theory” developed by Heider in the 1940s and 1950s. Heider [1958] explored the problems of balance in triads involving a person (P), an other person (O), and an outside object (C). Each of the three relationships (P-O, P-C, O-C) may be positively or negatively signed. A triad is balanced when the product of the signs of the three relationship is positive, and in imbalance when the product is negative. Figure 1 displays the four balanced and four imbalanced triads. For example, suppose that person P likes Bill Clinton (C), person O likes Clinton, and P likes O. This triad is balanced. Likewise, if P likes Clinton, O hates Clinton, but P dislikes O, the triad is also balanced. If P likes Clinton, O hates Clinton, but P likes O, then the relationship is imbalanced.

Imbalanced relationships encourage P and O to resolve the problem. There are three ways in which an imbalanced triad can be balanced: the sign of one of the relationships could change (P could learn to dislike O or to dislike Clinton); one of the relationships could become a null relationship (P severs connections to O); or the relationship to C or O could change (O-hates Clinton, but likes the deficit-reduction package) (Petty and Cacioppo 1981, pp. 128–129).

As difficult as these triads may be, the problem becomes much more complex when another person is added to the relationships. Figure 2 displays a nested triad involving two others and a single object. Suppose that P maintains a positive relationship with both O1 and O2 (e.g., if both are P’s parents). O1 likes object X, while O2 dislikes

object C. P is in a bind: there is no sign on his relationship to C that restores balance to the entire system.

This problem is very close to the model of ambivalent response due to conflicting principles. (See Figure 3). Suppose that a respondent, R, is questioned about a policy that pertains to two distinct principles. R holds an attachment to each principle,  $\rho_1$  and  $\rho_2$  for principles 1 and 2 respectively. R further perceives that the policy under question accomplishes principle 1 with efficiency  $e_1$ , and principle 2 with efficiency  $e_2$ .

R's expected position on the policy ( $\mu$ ) is the following simple equation:

$$\mu = e_1\rho_1 + e_2\rho_2 \quad (1)$$

R is *perfectly ambivalent* when

$$e_1\rho_1 - e_2\rho_2 = 0. \quad (2)$$

That is, R holds an opinion about both principles, but the combination of the policy and R's attachments to the policy are equal in magnitude.

A more likely scenario arises when R is uncertain about the efficiency of the policy, but not the principles involved. (That is, both  $\rho_1$  and  $\rho_2$  are constants). R is in a state of *imperfect ambivalence* when the variance of  $e_1\rho_1$  overlaps the variance of  $e_2\rho_2$  by some degree of uncertainty ( $t$ ):

$$\frac{e_1\rho_1 - e_2\rho_2}{\text{Var}(e_1\rho_1 + e_2\rho_2)} < t. \quad (3)$$

It is not difficult to imagine circumstances when R holds positive attachments to two principles, but where the policy is adverse to one principle and strongly positive to another. Again, consider abortion policy: for many respondents, abortion represents a conflict between the woman's right to choose, and a respect for human life beginning sometime before birth. It is no accident that the activists on both sides chose positive labels ("pro-choice" and "pro-life"), and do not see themselves in the negative (as "anti-choice" or "anti-fetus"). If the policy in question is sufficiently uncertain as to how it respects both those principles, we should not be surprised to find that many respondents have difficulty answering questions about abortion, and that the responses appear to be excruciatingly sensitive to question wording.

It is also possible to imagine policies where there is some asymmetry in how efficiently the policy accomplishes each principle. For example, the earliest exception permitting abortion was to protect the life of the mother (see Ginsburg, 1989). This policy accomplishes the principle of respecting the woman's rights reasonably efficiently, but the conflict between the lives of mother and fetus lends ambiguity to the principle of respecting life. Some respondents may have little difficulty answering these questions, even though the principles may be in conflict.

The most direct way to test this model would be to question for attachments to well-defined and widely shared core beliefs, and to assess how the respondent perceives the efficiency with which specific policies accomplish the core beliefs. We know of no such data set that would permit such a direct test. But the foregoing algebra leads to an indirect test for conflict of principles.

Suppose that the question about policy is a binary choice: should we pass the law or not? We would conventionally approach this problem with a logit or probit model. However, both the logit and probit approaches assume constant error variance, and we have strong grounds under which to suspect that error variance is systematic with respect to the extent to which the respondent feels a conflict between the principles (Equation 3). Ignoring the heteroskedasticity of the probit or logit model will lead to erroneous estimates. More to the point, modelling the heteroskedasticity directly allows us to explore the nature of conflict in the respondent's attitudes.

We model this heteroskedasticity in a probit model of policy choice by by the following two equations (Greene 1993):

$$y_i^* = X_i\beta + \varepsilon_i \quad (4)$$

$$VAR[\varepsilon_i] = [\exp^{Z_i\gamma}]^2 \quad (5)$$

where  $y_i^*$  is a binary response to a policy question,  $X_i$  and  $Z_i$  are matrices of independent variables,  $\varepsilon_i$  is an error term, and  $\beta$  and  $\gamma$  are coefficient vectors to estimate.

This produces a log-likelihood function very similar to the usual probit log-likelihood:

$$\log L = \sum_i y_i \log \Phi \left( \frac{X_i\beta}{\exp^{Z_i\gamma}} \right) - (1 - y_i) \log \left[ 1 - \Phi \left( \frac{X_i\beta}{\exp^{Z_i\gamma}} \right) \right] \quad (6)$$

There are also a set of quite simple tests for heteroskedasticity in probit models (Davidson and MacKinnon 1984) which we will employ. Unless we can reject the null hypothesis that the error variances are homoskedastic (i.e., that  $\gamma = 0$ ), then there is no point proceeding with our analysis. We utilize only the most intuitive test, a likelihood ratio test for heteroskedasticity. The likelihood ratio test involves a comparison of an unrestricted model (one with a fully-specified variance model) to a restricted model (in which homoskedasticity is assumed).<sup>1</sup>

### 3 Attitudes Toward Abortion

Abortion remains one of the most conflictual issues in American politics, figuring prominently in state and national elections for a wide range of political offices. It also remains one of the most sensitive subjects with respect to question wording.

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<sup>1</sup>As Davidson and MacKinnon (1984) discuss, there are three heteroskedasticity tests possible: the likelihood ratio test, the Lagrange multiplier test, and the Wald test. We employ the former test since in our application it was not difficult to compute. One problem with these tests for heteroskedasticity, however, is that they can also pick up model misspecification.

One simple illustration took place in the 1980 American National Election Studies Pre- and Post-Election surveys. There were two wordings of the question in 1980, changing the categories for response. (Both versions of the questions were taken from the American National Election Studies Sourcebook (Miller and Traugott 1987, p. 166). One version of the question read:

Still on the subject of women's rights, there has been some discussion about abortion during recent years. Which one of the opinions on this card best agrees with your view? You can just tell me then number of the opinion you choose. (1) Abortion should never be permitted, (2) Abortion should be permitted only if the life and health of the woman is in danger, (3) Abortion should be permitted if, due to personal reasons, the woman would have difficulty in caring for the child, (4) Abortion should never be forbidden, since one should not require a woman to have a child she doesn't want.

The alternate version read:

There has been some discussion about abortion during recent years. Which one of the opinions on this page best agrees with your view? You can just tell me the number of the opinion you choose. (1) By law, abortion should never be permitted, (2) The law should permit abortion only in case of rape, incest, or when the woman's life is in danger, (3) The law should permit abortion for reasons other than rape, incest, or danger to the woman's life, but only after the need for the abortion has been clearly established, (4) By law, a woman should be able to obtain an abortion as a matter of personal choice.

The alternate categories elicited very different responses. Table 1 displays the different marginals for the two versions. The percentage of respondents who selected the most extreme pro-life position ("Never") was the same for both wordings (11%). The fraction selecting the most extreme pro-choice position ("Anytime" or "As a Matter of Personal Choice") increases by 11 percentage points, or a relative increase in that category of nearly 50%. It should be apparent why the latter wording drew greater response: framing the question as a question of personal choice taps into the deep psychological effect of reactance.<sup>2</sup>

This example serves our purpose in two ways. First, it shows that the individual choice is one important core value that trips on the question of abortion. Second, it shows the effects of eliciting different core beliefs in a survey question can be quite profound — if those core beliefs conflict and lead individuals to provide different policy positions for themselves.

But an equally important value, for many respondents, is the question of respect for life beginning sometime before birth. In the NES question, although one could cast the

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<sup>2</sup>Reactance is aroused when a subject believes that a freedom has been removed, and can be triggered even if the subject has no desire to exercise that freedom. See Brehm (1966) for more on the theory of reactance.

vast majority of respondents under either question wording as supporting abortion rights under some contexts (the last three categories), one could also interpret the marginals as supporting some restrictions on abortion.

The NES question on abortion is, however, a relatively weak one. The General Social Survey, for years, has included a more complex battery of questions on abortion. Instead of asking respondents to choose among a limited set of options, the GSS battery asks respondents whether they believe abortion should be allowed under any of seven circumstances, for each scenario separately. The question reads, “Please tell me whether or not *you* think it should be possible for a pregnant woman to obtain a *legal* abortion if...”

- If there is a strong chance of serious defect in the baby?
- If she is married and does not want any more children?
- If the woman’s own health is seriously endangered by the pregnancy?
- If the family has a very low income and cannot afford any more children?
- If she became pregnant as a result of rape?
- If she is not married and does not want to marry the man?
- The woman wants if for any reason?

In terms of the difficult policy choices facing elected officials, the GSS battery comes much closer than the NES to the actual decisions they would have to face. The GSS battery thus makes for an excellent opportunity to test our arguments about the role of conflicting core beliefs and values in producing ambivalent response.

The first part of our model is to predict levels of support for abortion rights under each of the seven scenarios. For the development of this model, we reach into the burgeoning literature on abortion attitudes. In order to accumulate sufficient variables to test this model, we use the 1982 GSS.<sup>3</sup>

Luker (1984) describes the conflict in attitudes towards abortion as stemming from fundamental conceptions of the role of women. While direct questions about women’s roles would be especially useful, we lack such direct measures for the particular years of the GSS question. We do, however, have a measure of support for the ERA. By the later years of the campaign by pro-ERA activists, many of these activists explicitly linked support for the ERA with abortion rights (see Mansbridge 1986, pp. 122–128). We include *ERA Support*, the response to the question “Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose this amendment?” *ERA Support* is scaled from 0 (strongly oppose) to 1 (strongly support).

Additionally, Luker (1984) also found that religion remained a significant contributor to pro-life activism. We include several measures: *Catholic* is a dummy variable denoting

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<sup>3</sup>More detailed discussion of the variables used in our analysis is in the Appendix.

whether the respondent is a catholic; *Attend Church* records the frequency with which the respondent attends church, scaled from 0 (never) to 8 (several times a week); *Religious Intensity* records whether the respondent expressed a strong religious intensity, scaled from 0 (not religious) to 1 (very strong religious preference).

We include two dummy variables for race and gender: *Black* denotes whether the respondent is black, and *Male* denotes the respondent's sex. Black Americans have had persistently stronger opposition to abortion than whites, even after controlling for religion, education, social status, and region (Combs and Welch 1982; Hall and Ferree 1986; Brehm 1993). Gender has not had a convincingly consistent relationship with abortion attitudes, even if the problem is seen by some activists as a question of women's rights.

The second half of our model requires development of predictions for the error variance in the binary choice part of the model. Our basic argument is that individuals who possess strong attachments to both of the underlying core principles should have a harder time making a decision about abortion; hence they should have a greater error variance. One way of noting whether the respondent has actually thought about both of the core principles is to ask the respondent to elaborate on the reasons for and against abortion. The 1982 GSS asked, in an open-ended code, for the respondents to state reasons both for and against abortion. We include both *Pro Count* and *Con Count*, which are simply counts of the number of reasons for and against. Since we are arguing that it is the simultaneous presence of both attitudes that should increase error variance, we look toward the product of the two.

The GSS also asked respondents how much information they had on the abortion debate, how firm their opinions were about abortion, and how important the problem of abortion is to them. We include measures for all three of these in the error variance part of the model. Note that one would probably not expect strength of opinions on abortion to affect the direction of support, but instead to affect the difficulty respondents have in stating their position.

We estimate the heteroskedastic probit model for each of the seven indicators of attitudes toward abortion, and report the results of these estimates in Table 2. At the bottom of this table, we report the likelihood ratio tests for heteroskedasticity in each of these models.

Our discussion of the results of the heteroskedastic probit model begins with the choice models. Note that the findings of the general literature on attitudes toward abortion policy remain entirely intact. Black respondents were more likely to disfavor abortion under all seven of the scenarios: the coefficient on *Black* is always negative, and in all but in case ("too poor"), the coefficient is statistically significant. The puzzle of strong black opposition to abortion remains confirmed in our estimates here.

Men are always more inclined to oppose abortion under all seven alternatives, but the estimates are not statistically significant in four of the seven cases ("mothers' health,"

“too poor,” “no more children,” and “single”). While there might be some interest in the relationship of gender to attitudes about abortion, the evidence here is that gender is not an overwhelming or consistent predictor of such attitudes.

Religiosity clearly affects attitudes toward abortion, and in significant ways. Being Catholic is not the best reflection of religiosity as it pertains to abortion, however. The coefficient on *Catholic* is of inconsistent sign across the seven models, and statistically distinguishable from zero in only two of those cases (“mothers’ health” and “birth defect”). *Religious Intensity* is consistently negative: those who have strong religious preferences are more likely to reject abortion under all seven scenarios, and to a statistically significant degree in all but two of those cases (“rape” and “no more children”). Frequency of attending church turns out to be the strongest measure in the model. The coefficient is always negative, always statistically significant. Note also that this is the only variable whose scale runs from 0 to 8 (instead of 0 to 1), so that at its maximum range, it has a powerful effect undermining support for abortion.

Mere knowledge of the ERA has no influence on support for abortion — in no case were the coefficients on knowledge of the ERA significant, and the variable does change sign. Support for the ERA, however, is a powerful predictor of support for abortion rights in all but one of the scenarios (“rape”).

We think the forgoing findings are useful in and of themselves, since they demonstrate the many bases of attitudes towards abortion and point to possible sources of conflict. But the most intriguing aspect of the problem arises in the variance model. First, notice that of the seven probit models we estimated, only one of the likelihood ratio tests for heteroskedasticity does not exceed the critical  $\chi^2$  value of 12.9 (the model “no more children”). The remaining six models, though, show strong evidence of heteroskedasticity.

Next, we want to draw particular attention to the coefficient on the interaction term between the number of reasons offered for and against abortion. Respondents who are experiencing ambivalence and can give both positive and negative mentions about abortion should be more difficult for the standard probit approach to model, under some circumstances. In the case of support for abortion when the mother’s health is in danger, being able to give both positive and negative reasons decreased the error variance, and to a statistically significant degree. We argued above that the health of the mother is the “easiest” waiver for respondents to grant for abortion rights. In the terms of our story about ambivalence, the ambiguity about the problem of respecting human life might make this a relatively straightforward — if wrenching — decision for respondents to make.

Likewise, support for abortion rights in the case of rape and birth defect follow consistently with the history of restrictions under abortion. Ginsburg (1989) describes the emergence of abortion under circumstances other than for the health of the mother with the terrible Rubella epidemics of the late 1950s and early 1960s, and the horrific birth defects from thalidomide poisoning. These disasters led to more relaxed laws permitting so-called ‘therapeutic’ abortions. In the present model, the interaction terms are negative, but not statistically significant at conventional levels. The implication is that being

able to rehearse both positive and negative mentions decreased the error variance, but only slightly so.

In each of the remaining four models, the coefficient on the interaction term is positive, and statistically significant (although only at  $p < .10$  for “too poor”). That is, the error variances for respondents who could express both reasons for and against abortion were consistently greater. We take this result to be indirect, but strong, evidence of the effect of conflicting beliefs on ambivalent attitudes toward abortion policy.

Other coefficients in the error variance model are worthy of comment. First, an identical story can be told for the effect of firmness of opinion on ambivalent response. Respondents with firm opinions about abortion appeared less ambivalent under the first three scenarios, but more ambivalent under the more problematic reasons to grant exceptions for abortion. Also, the effect of being able to rehearse a reason favoring abortion in every case decreased the error variance. In other words, those respondents who could express positive reasons were less likely to be ambivalent, all other things held equal. Being able to recite reasons against abortion increased ambivalence under the three “easy” abortion waivers, but decreased ambivalence under the harder waivers. This is further indication of how conflicting values presents a significant problem, in this case, for pro-life respondents under conditions of threats to the mother’s health, rape, or birth defects.

Note that the importance of the question of abortion rights to the respondent was statistically distinguishable from zero in one scenario only (“mother’s health”), and that it tended to increase ambivalence, rather than to decrease it. Furthermore, respondents who felt well informed about abortion were *more* ambivalent under the two extreme positions (“mother’s health” and “any reason”). One feature of ambivalence in contrast to uncertainty is that additional information should reduce uncertainty but that it need not reduce ambivalence; this finding is consistent with that expression.

The findings from these heteroskedastic probit models are entirely consistent with our arguments about ambivalence arising from conflicting core values. When core values are of equal weight, and a policy equally implicates both, then the respondents are more ambivalent in their responses and harder for our standard models to predict. It is only when there is some asymmetry in the implications of the policy for the principles when respondents appear to be less ambivalent.

## 4 Discussion

We have presented a simple model demonstrating how core beliefs can conflict — and how that conflict influences the policy preferences of individuals. Also, we provided a set of simple tests of the model, focusing on heteroskedastic probit models of abortion policy preferences. In these models, we found strong evidence to support our model of conflicting core beliefs and ambivalent survey responses.

Of course, an explicit focus on only one issue, abortion, is inadequate. We need to extend the model to other issues in order to show that the model has implications beyond this single, divisive issue. We plan to turn to racial issues in the near term, since we have strong expectations that the core principles underlying racial policy preferences may conflict for many individuals. Unfortunately, we have not yet identified data as rich as the GSS abortion data we employed in this analysis, which we can use to extend the model to racial issues.

Our model also has broad ramifications for many problems in public opinion research. The implication we tested here, that individuals with conflicting abortion principles have greater error variances in their responses to many abortion policy questions, has direct linkages to the growing literature on imperfect information in political behavior (Alvarez, 1992; Alvarez and Franklin, 1993; Bartels, 1986; Franklin, 1991; Page, 1978). For our model implies that individuals with conflicting core beliefs may have more “uncertain” opinions about their policy positions.

Additionally, our model has immediate implications for the literature on the survey response (Achen, 1975; Feldman and Zaller, 1992b). Individuals with conflicting core beliefs may respond to survey questions differently than those with consistent core beliefs. Indeed, in Table 1, where we presented the responses to alternative wordings of abortion exceptions in the 1980 ANES, we argued that the differences in responses may be attributed to the effects of conflicting core principles on abortion.

Relatedly, this means that we may shed some new light on the perplexing question of response temporal instability. Given that those with conflicting core principles might be quite sensitive to changes in question wording, it is also possible that their responses to the same questions may be volatile in panel formats. If their core beliefs collide, making their policy preferences relatively uncertain, respondents may exhibit a greater tendency to give different answers to the same question across repeated interviews.

And last our model has implications for the larger realm of politics, where elites and public opinion interact, and where the level of analysis is on aggregate changes of public preferences. As a recent example of these analyses, Page and Shapiro (1992, p. 20) argued:

For our purposes, however, the most important implication is that the logic of averaging out random fluctuations in order to find a stable central tendency applies even better to *collective* than to individual opinion . . . So long as the measurement errors in different individuals' opinions are not systematically related to each other, such a survey can product a highly reliable estimate of collective preferences, as of the moment of interviewing.

Our model and our empirical results strongly suggest that this assertion underlying Page and Shapiro's work, and most aggregate analysis of public opinion, are incorrect if they rely on such assumptions. When policy preferences are based on core principles, we have shown that the measurement errors can correlated across individuals. This means that

simple aggregation of individual policy preference data can be quite misleading, since the aggregates will not correctly approximate the underlying public beliefs about the particular policy issue.

This opens the door to an interesting approach to the interaction between elite and mass opinion. For, what if elites sense the underlying conflict between core principles? This may mean that to influence mass opinion on a certain policy choice, elites will either try to intensify the conflict between the principles, or that they may try to eliminate the conflict for many individuals. An example of such a process may be the issue of racial desegregation during the 1960's (e.g., Carmines and Stimson, 1989). An another way to look at the dramatic changes in elite behavior and public opinion about this issue during this period is that for an important segment of the public, their core beliefs about civil rights and equality may have been influenced by the changing positions of key elites and the political parties on the issue of desegregation. Certainly other examples of similar elite behavior exist.

## Appendix

The heteroskedastic probit model for attitudes toward abortion policy relied upon the 1982 General Social Survey, extracted from the cumulative GSS file for 1972–1991. The data were collected for the National Data Program for the Social Sciences, National Opinion Research Center, University of Chicago. The data were distributed by the Roper Center for Public Opinion Research, University of Connecticut.

- *Abortion Policy* - The question text read “Please tell me whether or not *you* think it should be possible for a pregnant woman to obtain a *legal* abortion if...” (READ EACH STATEMENT, AND CIRCLE ONE CODE FOR EACH. “(A) If there is a strong chance of serious defect in the baby? (B) If she is married and does not want any more children? (C) If the woman’s own health is seriously endangered by the pregnancy? (D) If the family has a very low income and cannot afford any more children? (E) If she became pregnant as a result of rape? (F) If she is not married and does not want to marry the man? (G) The woman wants it for any reason?” We coded the responses into seven dummy variables, with answers of ‘yes’ coded 1, ‘no’ coded 0, all other values set to missing data.
- *Black* - This dummy variable was coded 1 if the respondent was black, 0 otherwise.
- *Male* - This dummy variable was coded 1 if the respondent was male, 0 otherwise.
- *Catholic* - This dummy variable was coded 1 if the respondent was a Catholic, 0 otherwise. Religious preference was determined by the following question, “What is your religious preference? Is it Protestant, Catholic, Jewish, someother religion, or no religion?”
- *Religious Intensity* - This variable was coded from the followup question to religious preference, “Would you call yourself a strong (PREFERENCE NAMED) or a not very strong (PREFERENCE NAMED)?” This variable was set to 1 for strong preference, .67 for not very strong preference, .33 for somewhat strong preference, and 0 for no religious preference.
- *Attend Church* - This variable was coded from the question “How often do you attend religious services?” with codes 0 (never), 1 (less than once a year), 2 (about once or twice a year), 3 (several times a year), 4 (about once a month), 5 (2 – 3 times a month), 6 (nearly every week), 7 (every week), and 8 (several times a week).
- *ERA Means* - This variable was coded from the question “Do you understand what the Equal Rights Amendment means?” with yes coded as 1, no coded as 0, all others as missing data.
- *ERA Support* - This variable was coded from the question “Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose this amendment?” with the codes 1 (strongly favor), .67 (somewhat favor), .33 (somewhat oppose), and 0 (strongly oppose). All other responses were missing data.

- *Pro Count* - This variable was coded from the question “As far as you’ve heard what are the main arguments *in favor* of abortions?” with the value being the number of reasons offered by the respondent.
- *Con Count* - This variable was coded from “And, as far as you’ve heard, what are the main arguments *against* abortion?” with the value being the number of reasons offered by the respondent.
- *Abortion Importance* - This variable was coded from “How important is the abortion issue to you — would you say it is one of the most important, important, not very important, or not important at all?” Codes were 1 (most important), .67 (important), .33 (not very important), and 0 (not important at all).
- *Abortion Info* - This variable was coded from the question “How much information do you have about the abortion issue? Do you have all the information you need, most of the information, some information, or very little information?” with the codes 1 (all the information), .67 (most of the information), .33 (some of the information), 0 (very little information).
- *Abortion Firm* - This variable was coded from “How firm are you about your opinion on abortion — would you say you are very likely to change your opinion, somewhat likely to change, somewhat unlikely to change, or very unlikely to change?” with the codes 0 (very likely to change), .33 (somewhat likely), .67 (somewhat unlikely), and 1 (very unlikely).

Table 1: Responses to alternate wordings of abortion exceptions

Category	Pct	Category	Pct
Never	11	Abortion Never Permitted	11
If health is in danger	44	Only in Case of Rape, Incest or Danger	32
If personal difficulty	17	Only When Need Clearly Established	18
Anytime	27	As a Matter of Personal Choice	36
Don't Know	4	Don't Know	4

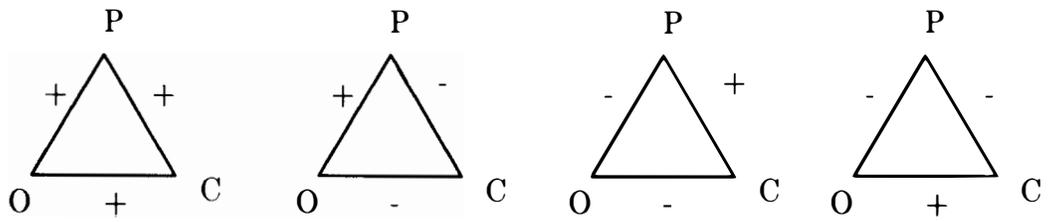
Source: 1980 American National Election Studies.

Table 2: Heteroskedastic Probit Estimates of Attitudes Toward Abortion Policy, 1982  
General Social Survey

Variable	Mothers' Health	Rape	Birth Defect	Too Poor	No More Children	Single	Any Reason
<b>Choice Model</b>							
Constant	2.55 (.46)	1.92 (.40)	2.02 (.40)	.02 (.01)	.03 (.08)	.11 (.09)	-.07 (.13)
Black	-.51 (.14)	-.47 (.13)	-.54 (.15)	-.09 (.06)	-.11 (.06)	-.23 (.10)	-.15 (.09)
Male	-.08 (.11)	-.20 (.09)	-.21 (.11)	-.04 (.04)	-.02 (.03)	-.06 (.05)	-.13 (.07)
Catholic	-.52 (.13)	-.15 (.10)	-.33 (.12)	.01 (.04)	.02 (.04)	-.03 (.04)	.05 (.07)
Religious Intensity	-.39 (.20)	-.17 (.14)	-.51 (.19)	-.17 (.10)	-.13 (.69)	-.18 (.09)	-.22 (.12)
Attend Church	-1.04 (.25)	-.99 (.23)	-.91 (.24)	-.35 (.17)	-.43 (.17)	-.47 (.20)	-.79 (.26)
Know What ERA Means	-.18 (.17)	-.14 (.15)	.01 (.16)	.10 (.08)	.09 (.07)	.09 (.08)	.12 (.10)
Support ERA	.33 (.17)	.12 (.14)	.40 (.18)	.22 (.12)	.31 (.13)	.31 (.13)	.51 (.17)
<b>Variance Model</b>							
Pro Count	-.14 (.07)	-.19 (.09)	-.06 (.08)	-.25 (.22)	-.26 (.18)	-.34 (.17)	-.22 (.15)
Con Cont	.17 (.09)	.20 (.12)	.37 (.12)	-.50 (.19)	-.58 (.17)	-.41 (.16)	-.48 (.14)
Pro Count × Con Count	-.44 (.04)	-.03 (.05)	-.09 (.05)	.19 (.11)	.25 (.09)	.21 (.08)	.22 (.08)
Importance	.51 (.15)	.17 (.15)	-.14 (.16)	-.16 (.31)	-.18 (.26)	-.24 (.25)	-.30 (.25)
Information	.37 (.13)	-.13 (.14)	.05 (.14)	-.32 (.29)	-.28 (.25)	-.28 (.24)	.68 (.23)
Firmness of Opinion	-.37 (.16)	-.58 (.17)	-.61 (.16)	.60 (.58)	.47 (.43)	1.81 (.67)	.63 (.38)
<b>Heteroskedasticity Test</b>							
Likelihood Ratio Test ( $\chi^2$ )	47.4†	46.7†	41.2†	12.5	19.9†	27.2†	25.9†

Note: Standard errors are in parentheses below coefficients. † indicates a  $\chi^2$  significant at the  $p \leq .05$  level.

**Balanced triads**



**Unbalanced triads**

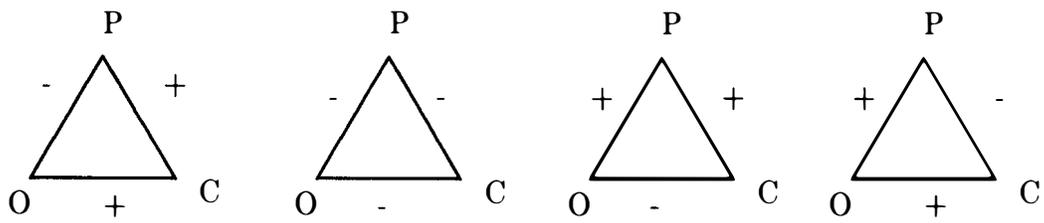


Figure 1: Heider's Balanced and imbalanced triads

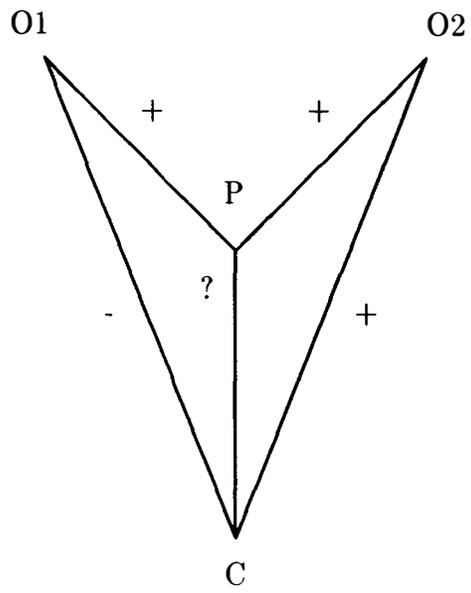


Figure 2: A difficult nested balance problem

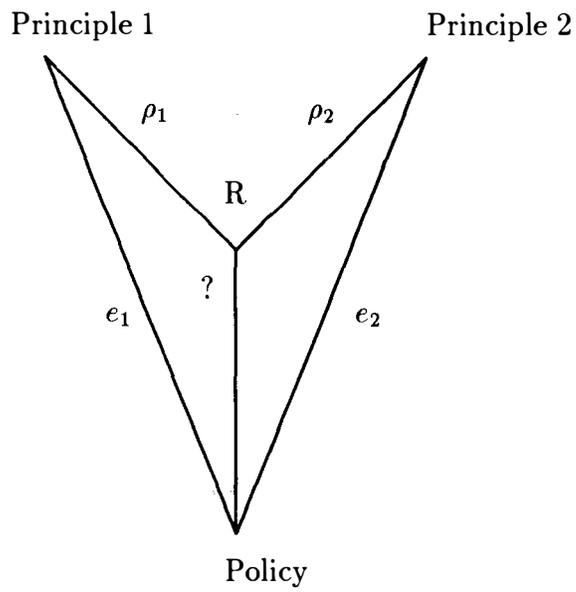


Figure 3: Ambivalent response under conflicting principles

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