The Two Faces of Public Opinion

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Public opinion polls appear to be a more inclusive form of representation than traditional forms of political participation. However, under certain circumstances, aggregate public opinion may be a poor reflection of collective public sentiment. I argue that it may be difficult to gauge true aggregate public sentiment on certain socially sensitive issues. My analysis of NES data from 1992 reveals that public opinion polls overstate support for government efforts to integrate schools. Specifically, selection bias models reveal that some individuals who harbor anti-integrationist sentiments are likely to hide their socially unacceptable opinions behind a "don't know" response. As an independent confirmation of the selection bias correction technique, I find that the same methods which predict that opinion polls understate opposition to school integration also predict the results of the 1989 New York City mayoral election more accurately than the marginals of preelection tracking polls.

1. Introduction

In *Voice and Equality*, Verba, Schlozman, and Brady (1995) convincingly argue that traditional forms of political participation, such as campaign volunteerism and contact with representatives, magnify the voice of the resource rich at the expense of the less privileged. There is, however, one form of political representation that would appear, at first blush, to defy the pattern of bias described by Verba, Schlozman, and Brady—public opinion polls. As Verba writes, "sample surveys provide the closest approximation to an unbiased representation of the public because participation in a survey requires no resources and because surveys eliminate the selection bias inherent in the fact that participants in politics are self-selected" (1996, 3).

Although public opinion polls may appear to be a more inclusive form of representation than traditional forms of political participation, there are a

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number of problems and limitations inherent in viewing polls as a source of unbiased mass input into the policy process. Under certain circumstances, opinion polls may poorly reflect collective public sentiment because some individuals may bow to the social pressures of the survey interview and choose to abstain from specific questions rather than give opinions which might paint them in an unfavorable light. In the aggregate, these tendencies could have serious consequences. If significant portions of the population are loath to disclose views which could be construed as socially unacceptable, polls measuring collective opinion on sensitive topics may underestimate the true levels of support for or opposition to those policies.

To illustrate the difficulties involved in measuring aggregate opinion on sensitive issues, I use National Elections Study (NES) data to show that public opinion polls overstate support for school integration. I also show that the methods which predict that opinion polls understate opposition to government involvement in school integration also predict the results of the racially charged 1989 New York City mayoral election more accurately than the marginals of the pre-election polls taken in the weeks leading to the election. These results validate the performance of my methods in socially sensitive settings. All told, the results in this article suggest that survey questions on school integration—and more generally, questions on racial attitudes—may provide an inaccurate picture of public sentiment on such sensitive issues.

2. Individual-Level Effects: The Social Milieu and the Survey Response

Conventional theories of public opinion have treated the survey response as the product of individuals' attempts to reveal their fixed preference on a given policy issue. Recently, however, a more fluid view of the survey response has emerged, based in part on theories of preference construction developed in cognitive psychology. This view, advanced most forcibly by Feldman and Zaller (Feldman 1989; Zaller 1992; Zaller and Feldman 1992), argues that "individuals do not typically possess 'true attitudes' on issues, as conventional theorizing assumes, but a series of partially independent and often inconsistent ones" (Zaller 1992, 93).

Although Zaller and Feldman's model has proven to be a powerful way of thinking about public opinion, it is limited in important ways. Specifically, it does not account for response effects arising from the *social* nature of the interaction in the survey interview.[1] Ignoring the social context, how-

[1]To be fair, Feldman and Zaller argue that cues in the social environment—such as the race of the interviewer—could affect the survey response, but only insofar as people might be cued by the immediate social context to give greater weight to particular considerations when they are unsure of their opinion. Zaller and Feldman say that social desirability effects are at odds with their interpretation of the survey response.

ever, omits a key factor from consideration. The interview, after all, is a "conversation at random" (Converse and Schuman 1974), a form of *social* interaction between two individuals: the interviewer and the respondent.

Survey researchers have long recognized that the environment of the survey setting could have potentially significant effects on the nature of the opinions individuals express (Hyman 1954; Singer, Von Thurn, and Miller 1995). With these concerns in mind, psychologists have proposed a number of models of the survey response which integrate the cognitive and social dimensions of both opinion formation and expression (Sudman, Bradburn, and Schwarz 1996; Tourangeau 1992; Tourangeau and Rasinski 1988; Wilson and Hodges 1992). These models use somewhat different terminology to describe the various tasks involved in the question-answering process, but they all offer a more complete view of the survey response process than that offered by Feldman and Zaller. Specifically, these models recognize that the translation of an individual's private summary judgment into a survey response is accomplished by means of a social interaction between the survey respondent and the interviewer. Under some circumstances, the opinion *constructed* by the respondent is not necessarily the same as the opinion *expressed* by that respondent.[2]

This gap between private opinion and public utterance most likely results from "social desirability" concerns, a desire to cloak attitudes that society as a whole might deem unacceptable for fear of social sanctions.[3] It is plausible that under circumstances where respondents fear they might be "censured" or socially shunned for their attitudes—either by society or the interviewer—they might shade those attitudes when reporting them to the interviewer.

2.1 Considering the "Don't Know" Response: Opinionation and Action

Respondents may do more than shade their opinion in socially "difficult" circumstances. Under certain conditions, respondents may choose to hold their tongues altogether. Most work which has examined the decision to abstain from survey questions assumes that respondents do not answer survey questions because they are uncertain how they feel about an issue, policy, or political candidate (Krosnick and Milburn 1990; Schuman and Presser 1981). This is certainly true in many cases, but it is also possible that individuals could arrive at a "don't know" answer because they do not wish to reveal their political preferences to the survey interviewer. If a person constructs a private judgment that they do not feel comfortable expressing,

[2]This is not to say that the failure to report faithfully a private judgement is necessarily a fully conscious process.

[3]Of course not all individuals are equally sensitive to such concerns. Individuals vary in the degree to which they engage in "self-monitoring" (Snyder 1987).

they might choose to abstain from the question, rather than revealing an embarrassing opinion or shading that opinion to fit what they believe would be socially acceptable behavior (for a somewhat different exposition of this argument, see Noelle-Neuman 1984).

3. Aggregate Effects: School Integration

Certainly, response effects related to social concerns will not contaminate the measures of opinion on all issues. In order for individual-level social effects to bias aggregate measures of public opinion, the social context of the survey setting must systematically affect the expressed opinions of individuals—or at least a group of individuals—in the sample. To the extent that individual characteristics *systematically* affect the willingness or ability of some—if not all—respondents to answer survey questions, the aggregate signals measured in public opinion surveys may paint a distorted picture of underlying collective public sentiment. It is important, then, to identify specific issue areas where we might find such systematic social effects.

One important dimension that scholars have considered when assessing the validity of aggregate signals sent by the public through opinion polls is the "hard" versus "easy" issue dimension identified by Carmines and Stimson (1980). Those authors argue that some issues are hard in the sense that they require careful consideration of technically difficult choices relating to the means by which government should respond to novel problems on the policy agenda. Easy issues on the other hand, involve symbolic concerns relating to the ends of public policies long in the public's eye. But while the formative complexity dimension captured by Carmines and Stimson is undoubtedly an important factor to consider when gauging the validity of public opinion polls as a representation of how the public feels about the issues of the day, that typology is incomplete. Issues may, after all, be "hard" and "easy" not only in the cognitive sense identified by Carmines and Stimson, but also from a social standpoint. Thus, analysts and consumers of opinion polls must also pay attention to the ease of opinion elicitation in particular issue areas.

One area of politics that seems to contain a good number of cognitively easy, but socially difficult, issues is questions relating to policies of racial equality. Over the past 40 years, massive changes in racial attitudes have occurred. Segregationist and exclusionary principles that were accepted by a large majority of Americans in the 1940s and 1950s find bare traces of support today (see Schuman et al. 1997). But while overall support for the position of racial equality has increased greatly since the middle of the century, many Americans remain profoundly ambivalent about polices which seek to use government efforts to improve the position of blacks. Thus, while many Americans may endorse general principles of equality, large segments of the

mass public are less supportive of programs designed to implement those policies (Jackman 1978; Schuman et al. 1997). Under such circumstances, respondents may be inclined to hedge and moderate their racially conservative views on *policies* to avoid appearing to subscribe to racist *principles*. Questions which tap into racial policy concerns, then, are a fertile arena in which to gauge the effects of the social pressures of the survey interview setting on expressed public preferences (Kuklinski and Cobb 1998; Krysan 1998).

One question which is particularly well suited to such purposes is the National Election Study (NES) school integration question, which asks if respondents support government intervention to ensure that black and white children go to the same school.[4] In the early 1990s, a little less than half of the respondents supported government intervention. In 1992, for example, 49.4 percent of respondents endorsed such efforts. More important for the present purposes, however, is the fact that over one-third of the respondents—35.3 percent in 1992—chose to abstain from the question. This unusually high number of "don't know" responses may, in part, be a function of the fact that NES uses a "full filter" (Schuman and Presser 1981) for the integration question. Specifically, respondents are first asked if they have an opinion on the integration question and then are asked what that opinion is. This structure gives respondents an opportunity to opt out of the question-answering process at an early stage and, quite possibly, if my hypothesis is correct, to avoid a socially uncomfortable response by saying that they don't know how they feel about the integration question.[5]

4. Model Specification: School Integration and Selection Bias

If my intuitions about the school integration data are correct, then a number of respondents who oppose government involvement in school integration might choose to abstain from the integration question rather than reveal an opinion that could potentially be construed as socially unacceptable. If this is the case, the sample of individuals who offer an opinion on

[4]The question reads, "Some people say that government in Washington should see to it that white and black children go to the same schools. Others claim that this is not the government's business. Have you been concerned enough in this question to favor one side or the other? [If yes] Do you think the government in Washington should see to it that white and black children go to the same schools, or stay out of this area, as it is not their business?" It should be noted that this item is almost certainly an especially strong version of the integration question because it references the Federal government's coercive role in school integration.

[5]Before I continue, it is important to note that my argument is not that respondents necessarily choose to hide their sentiments concerning school integration behind the "don't know" response because they do not want the world to know they are racists. Instead, some people might fear that their opposition to school integration might be construed as racism, even though their opposition might result from legitimate policy concerns (see Krysan 1998).

the integration question will differ in systematic ways from the sample of nonrespondents. Put another way, if some respondents who oppose integration hold their tongues rather than voice their opposition, those individuals who *do* answer the integration question will be "unusual" in the sense that they are more likely to hold favorable attitudes towards school integration than the rest of the population. Thus, if my hypothesis is correct, the school integration question-answering process will be plagued by a selection bias problem.

Achen (1986) notes that the effects of selection bias can be avoided in regression analysis if and only if the unobserved factors influencing selection are uncorrelated with the unobserved factors influencing outcomes. Such a state of affairs will arise here only if the process by which people decide if they have an opinion and the processes by which they decide their opinion are independent events. Models that account for selection bias, then, will enable me to test directly my hypothesis concerning the effects of the survey interview setting on expressed opinion. In particular, selection models will measure the extent and nature of the link between the decision to offer an opinion on school integration and the decision to take a position on that issue.

If the estimates reveal that selection bias does not exist in the school integration question-answering process, then we can say with confidence that my hypotheses concerning the link between social desirability concerns and the "don't know" response is incorrect. Conversely, to the extent that my statistical analysis reveals the presence of selection bias, we may reasonably infer that the social context of the survey interview leads some individuals to suppress their preferences and offer a "don't know" response instead. We can then use the results of these analyses to infer the nature of the preferences concealed by the "don't know" response.

Several models exist which account for the statistical effects of the process of selection into the sample of respondents. One correction that is especially well suited for my purposes is the bivariate probit selection model (Dubin and Rivers 1990; Greene 1997). In this model, the presence of social desirability effects can be gauged by the statistical and substantive significance of the parameter estimate of ρ, the correlation of the errors between the two equations. If ρ is zero, then the unmeasured factors which influence whether a respondent will offer a response to the school integration question are independent of the unmeasured factors which lead that respondent to support or oppose government efforts to integrate schools. Under such circumstances, my hypothesis concerning the presence and effects of social concerns in the survey interview must surely be incorrect. If, on the other hand ρ is positive, then the unmeasured factors which lead someone to answer the school integration question are correlated with the unmeasured fac-

tors which lead them to give a more racially liberal response on the integration question. In other words, if ρ is positive, then individuals who do answer the integration question are, by simple dint of answering the question, more likely to support integration than individuals who abstain from the question. We may then conclude that some individuals who harbor anti-integrationist sentiments are likely to hide their socially unacceptable opinions behind a mask of indifference.

4.1 Model Specification

In the analyses that follow, I present the results of a single two-equation model of the question-answering process. These equations model, first, the process by which individuals decide whether they have an opinion which they are willing to reveal to the survey interviewer (the selection equation) and then, second, the process by which they decide what their opinion is (the outcome equation). I constructed this model with two concerns in mind. First, I included variables which would provide a good representation of the respondent's decision to give an opinion and decide upon a policy position. However, I also included a series of demographic variables in both the selection and outcome equations to be sure that any correlation estimated between the errors in the two equations was intrinsic to the question-answering process and not simply an artifact of omitted explanatory variables common to both equations.[6] While including these variables may decrease the parsimony of the results, by adopting an overly inclusive modeling strategy I can be sure that any selection bias I estimate is endemic to the question-answering process and not simply an artifact of model misspecification.

I modeled the selection process as a function of: (1) variables which proxy for general political engagement—because previous work (Schuman and Presser 1981; Krosnick and Milburn 1990) has found that an individual's propensity to offer an answer on a survey is related to his or her general level of engagement with the political system; (2) measures indicating how difficult it was to contact the respondents, on the assumption that those who are difficult to reach would also be reluctant to answer specific survey questions (Brehm 1993); and (3) the variables which measure the demographic characteristics of the respondents.[7] I modeled the outcome equation as a function of

[6]Specifically, I included measures of a respondents' age, race, sex, education, income, number of school-age children, area of residence, religion, occupation, and home-ownership status. I also included a measure of the race of the interviewer (see footnote 10).

[7]To measure general political engagement, I included the respondents' level of political information (see Zaller 1992), a dummy variable measuring whether the respondent will place themselves on a liberal-conservative scale, and a measure of how often the respondent discusses politics. To measure how difficult it was contact the respondent, I included measures of whether the respondent was sent a refusal conversion letter, whether the respondent received a persuasion letter, and the number of calls required to secure the interview.

general political affiliations, material interests, and political principles (see Kinder 1998).[8] In addition, as above, I included the demographic measures to control for model misspecification.

5. Model Estimation and Interpretation

Table 1 presents my coefficient estimates for a model of the complete school integration question-answering process using data from the 1992 NES. I present coefficients for both (1) the case where the outcome equation is estimated separately from the selection equation—the "independent probit" model column—and (2) the case where the selection and outcome equations are estimated jointly in the bivariate probit selection model—the "bivariate probit" column—thereby accounting for possible selection bias in the question-answering process. As the table demonstrates, both the selection and outcome equations contain a number of statistically and substantively significant predictors of opinionation and attitude choice. The more interesting matter for the present purposes, however, is whether those individuals who volunteer an opinion on the school integration question differ systematically from the nonplacers.

The short answer to this key question is an unequivocal yes. As Table 1 shows, the coefficient on ρ is highly significant in both a statistical and a substantive sense. Specifically, the parameter estimate of ρ is large and almost three times the size of its standard error. Thus, it appears that the process by which individuals decide to offer an opinion is not independent of the process by which they decide what that opinion is. Because ρ is positive, this result suggests that, as I hypothesize, the unmeasured factors which lead someone to reveal their answer to the survey interviewer also lead them to take a more supportive stance on the integration issue. Conversely, individuals who harbor anti-integrationist sentiments are likely to hide their opinions behind a mask of indifference.

Identifying the presence of selection bias, though important, is only half the story. Ultimately, what is important is ascertaining the effects of that bias. Correcting the outcome equation for the selection bias present in the question-answering process alters the model estimates in several ways. A comparison of the independent probit results and the bivariate probit results indicates that using the selection bias correction alters the substantive

[8]To measure political affiliations, I included measures of the respondents' partisan identification and their ideological self-placement (or nonplacement). To measure political principles, I included measures of the respondents' levels of trust in government, support for equality, racial resentment, and moral conservatism. Finally, to measure material interests, I included a measure of the number of children the respondents had in school.

Table 1. Support for School Integration

Variable	Independent Probit Coefficient (SE)	Bivariate Probit Coefficient (SE)
	Outcome Equation	
Constant	0.509 (0.445)	–0.044 (0.432)
Age	0.003 (0.003)	0.004 (0.003)
Black	0.185 (0.150)	0.265 (0.136)**
Hispanic	0.847 (0.195)**	0.747 (0.207)**
Male	–0.176 (0.092)**	–0.124 (0.090)
Homeowner	–0.033 (0.096)	–0.007 (0.088)
Education	0.086 (0.206)	–0.003 (0.186)
Income: <$10,000	0.048 (0.161)	0.077 (0.148)
Income: $10,000–$14,999	0.049 (0.159)	0.102 (0.144)
Income: $15,000–$24,999	–0.099 (0.148)	–0.105 (0.133)
Income: $35,000–$49,999	–0.227 (0.146)	–0.226 (0.131)*
Income: $50,000–$74,999	–0.232 (0.148)	–0.231 (0.131)*
Income: $75,000+	–0.139 (0.179)	–0.084 (0.169)
Income Not Ascertained	–0.195 (0.200)	–0.274 (0.186)
North-Central	–0.203 (0.122)*	–0.150 (0.114)
West	0.062 (0.134)	0.074 (0.118)
South	–0.222 (0.139)	–0.144 (0.129)
Grew Up in South	0.150 (0.130)	0.131 (0.120)
No Religion	0.074 (0.135)	0.022 (0.134)
Catholic	0.060 (0.109)	0.050 (0.099)
Jewish	–0.023 (0.280)	0.086 (0.267)
Other Religion	–0.093 (0.144)	–0.099 (0.134)
Occupation: Professional	–0.175 (0.155)	–0.086 (0.149)
Occupation: Manager	–0.162 (0.191)	–0.134 (0.184)
Occupation: White-Collar	–0.073 (0.160)	–0.057 (0.145)
Occupation: Self Employed	–0.181 (0.181)	–0.142 (0.165)
Occupation: Skilled Worker	0.278 (0.184)	0.287 (0.172)*
Occupation: Homemaker	–0.111 (0.175)	–0.080 (0.163)
Occupation: Other	–0.183 (0.146)	–0.186 (0.133)
Number of School-Age Children	–0.573 (0.364)	–0.527 (0.343)
Racial Resentment	–2.084 (0.379)**	–1.742 (0.407)**
Equality	1.400 (0.256)**	1.163 (0.265)**
Trust in Government	1.054 (0.194)**	0.870 (0.202)**
Moral Conservatism	–0.804 (0.223)**	–0.664 (0.209)**
Religious Importance	0.181 (0.124)	0.157 (0.110)
Party Identification	0.150 (0.073)**	0.131 (0.064)**
Liberal	–0.145 (0.124)	–0.115 (0.108)
Conservative	0.075 (0.109)	0.074 (0.095)
No Ideology	0.073 (0.120)	–0.102 (0.124)
Interviewer Black	1.029 (0.338)**	0.772 (0.344)**

(continued)

Table 1. Support for School Integration *(continued)*

Variable	Independent Probit Coefficient (SE)	Bivariate Probit Coefficient (SE)
	Selection Equation	
Constant	—	0.177 (0.200)
Age	—	0.003 (0.003)
Black	—	0.340 (0.107)**
Hispanic	—	0.152 (0.138)
Male	—	–0.001 (0.072)
Homeowner	—	0.036 (0.072)
Education	—	0.349 (0.164)**
Income: <$10,000	—	0.103 (0.123)
Income: $10,000–$14,999	—	0.132 (0.125)
Income: $15,000–$24,999	—	–0.070 (0.111)
Income: $35,000–$49,999	—	–0.128 (0.109)
Income: $50,000–$74,999	—	–0.121 (0.112)
Income: $75,000+	—	0.018 (0.143)
Income Not Ascertained	—	–0.274 (0.145)*
North-Central	—	0.016 (0.093)
West	—	0.051 (0.103)
South	—	0.078 (0.093)
No Religion	—	–0.107 (0.097)
Catholic	—	0.004 (0.082)
Jewish	—	0.182 (0.234)
Other Religion	—	–0.077 (0.108)
Occupation: Professional	—	0.160 (0.119)
Occupation: Manager	—	0.013 (0.137)
Occupation: White-Collar	—	0.054 (0.118)
Occupation: Self Employed	—	0.074 (0.136)
Occupation: Skilled Worker	—	0.178 (0.141)
Occupation: Homemaker	—	0.039 (0.130)
Occupation: Other	—	0.056 (0.109)
Political Information	—	0.462 (0.152)**
Discuss Politics	—	0.296 (0.100)**
No Ideology	—	–0.314 (0.079)**
Number of School-Age Children	—	–0.150 (0.278)
Refusal Conversion	—	0.108 (0.256)
Persuasion Letter	—	–0.012 (0.128)
Number of Calls	—	–0.008 (0.045)
Interviewer Black	—	–0.103 (0.185)
	Correlation Parameter	
ρ	—	0.753 (0.224)**
N/Log Likelihood	1255/–677.848	1915/–1869.802

* = $p < .10$; ** = $p < .05$

performance of many outcome equation variables. While none of the substantively significant coefficient estimates change sign, the substantive power of many of the coefficients is altered by the selection bias correction. For example, correcting for selection bias increases the size of the coefficient on the dummy variable indicating whether the respondent is black by about 20 percent relative to the independent probit equation.[9] This result indicates that the gap between whites and blacks in support for school integration may be even larger than an analysis of the sample of the respondents who offer an opinion on integration suggest.[10]

The movement of the coefficient estimates across the two model specifications is certainly significant, but what is more impressive is the movement of the constant term. While the intercept in the school integration choice outcome equation is highly positive in the separate probit model, it is approximately zero in the bivariate probit selection model. This result indicates that once selection effects are accounted for, respondents are more likely to oppose school integration than the separate probit model suggests.[11] In effect,

[9]I estimated my models using the full sample of respondents—both blacks and whites—because I am interested in discerning the effects of the social context of the survey interview for aggregate public opinion. Estimating the model using only white respondents does not change the basic findings of the model (results available from author upon request). If anything, the selection effects reported here are accentuated in the whites only analysis. In addition, simulations of the predicted probability of supporting integration confirm that the gap between the races is greater than the independent probit results indicate. Thus, the differences I identify in the coefficient estimates across the two models are ultimately important because they lead to differences in the predicted behavior of individuals.

[10]Controlling for the race of the interviewer (Finkel, Guterbock, and Borg 1991; Kinder and Sanders 1996; Schuman and Converse 1971) does not change the results. While the presence of a black interviewer may increase the respondent's likelihood of offering a pro-integration response, it does not change the probability he or she will answer the question (see Berinsky [1999] for a discussion of race-of-interviewer effects in the present context).

[11]This estimate is most likely the result of the omission of those measures which could capture individual variation in the selection effects found here. Specifically, I hypothesize that the constant is attenuated because we do not measure the respondent's sensitivity to the social environment of the survey. As noted above, work in psychology (Snyder 1987) indicates some individuals are more likely then others to react to social pressures. The effects estimated here, however, compound inter-individual variation in sensitivity to social concerns into a single aggregate effect. In other words, the absence of measures of social sensitivity drive the selection effects into the constant term. Thus, the attenuation of the constant term should not be taken to mean that *everyone* approaches the school-integration question-answering process the same way. Rather it should be construed as an indication that those measures which capture the heterogeneity of answering process—such as levels of self-monitoring—are not in the outcome equation. That said, the model estimates provide strong support for the hypothesis that selection bias exists in the question-answering process. Furthermore, and more important for present purposes, we can confidently trace out the effects of this selection bias on the shape of aggregate public opinion.

correcting for selection bias attenuates the probability of supporting government efforts to integrate schools in the aggregate.[12]

5.1 Aggregate Consequences

While the individual-level analyses presented above are interesting and important in their own right, it is equally important to discern the effect of these individual-level processes on the shape of *aggregate* public opinion. Thus, to draw out the implication of my results for our understanding of collective public opinion on school integration I ran a series of simulations where I predicted aggregate support for government involvement in school integration.

In order to gauge the aggregate effects of the selection bias in the question-answering process, I estimated the mean predicted probability of giving a supportive response under two conditions. I first estimated collective opinion distribution where selection effects are ignored (the independent probit estimates). Second, I predicted opinion distribution where such effects are controlled for using the bivariate probit method (the bivariate probit estimates). In this way, the predicted behavior of the collective sample can be used to gauge the effect of controlling for selection bias.

The result of this simulation is clear. Predicted support for school integration is much lower under the condition where selection bias is corrected relative to the "uncorrected" specification. Specifically, projected support drops from 49.4 percent to 35.9 percent. Thus, the simulation results indicate that expressed opinion on the school integration question is a poor barometer of underlying support for integrationist policy.[13]

6. An Independent Confirmation: The 1989 NYC Mayoral Race

While my findings concerning the school integration are strong, the results are ultimately somewhat incomplete because there is no observable "check" on the results. In this section, however, I demonstrate that the selection bias model I used above is also a valid predictor of underlying public sentiment on sensitive issues. Specifically, I show that the model predicts not only selection effects in the measurement of socially sensitive attitudes, but also selection bias in reports of individual behavior in socially sensitive situations.

[12] These results hold across a variety of model specifications. In particular, ρ remains significant when more restricted specifications of the selection and outcome equations are used for estimation. The results also replicate for school integration data in 1990 and 1994 and data concerning government intervention in hiring practices in 1992. All these results are available from the author upon request (see Berinsky 1999).

[13] The general pattern of these results replicate in 1990 and 1994 (results available from the author upon request).

6.1 Candidate Choice and the "Don't Know" Response in Biracial Elections

Just as opponents of government efforts to integrate schools seem to hide their opposition behind a veneer of indifference, pre-election polls in electoral contests which involve candidates of different races offer a situation where individuals might be loath to express their true candidate preferences for fear of appearing racist. Work by Reeves (1997) suggests that individuals who are apprehensive about voting for black candidates may "vacate the field" in pre-election polls and declare themselves undecided rather than come out and say that they oppose a black candidate.

Such a process would explain seemingly inexplicable pre-election polling results in the 1989 New York City mayoral election, where the black candidate David Dinkins held a fourteen- to eighteen-point advantage over his white opponent Rudolph Giuliani in polls taken only days before the election, but ended up winning the race by less than two percentage points. The reason for the fallibility of the pre-election polls has been much-debated (Clymer 1989, Rosenthal 1989). But, given the series of racially charged incidents in the summer of 1989—led by a racially motivated murder of a black youth in Bensonherst, Queens—it is clear that the social and political climate in New York made it difficult to remove the race factor from the electoral environment. This was especially true of certain groups—such as Jewish voters—who lay at the core of the Democratic Party. Though there may have been many valid reasons to support Giuliani in the election, given the tenor of the times, it may have been difficult to perceive a Giuliani vote as anything but an anti-black vote (see McConnell 1990). Thus, many respondents may have had an incentive to say they were "undecided" rather than reveal their pro-Giuliani sentiments. And indeed many respondents indicated in the days before the election that they were uncertain for whom they would vote (Reeves 1997).

The 1989 New York City mayoral race, then, parallels many of the conditions found in the context of the school integration question. In both cases, a large number of respondents abstained from offering their opinion or candidate choice. In both cases, the broader social climate made expressing a racially conservative opinion—a vote for Giuliani or opposition to government involvement in school integration—a socially difficult act. In the New York mayoral race, however, we have the advantage of being able to "check" how well the selection bias correction employed in the school integration data conforms to an observable outcome—in this case, the actual election results. Specifically, since we know that the pre-election polls overestimated Dinkins's true level of support among the public we can see how well the predicted results from the selection bias correction conforms to the *true* election outcome.

6.2 Data and Model Specification

To gauge the presence and effect of selection bias in the 1989 mayoral pre-election polls, I used data from a poll conducted by ABC News and the New York Daily News on October 31 to November 6. This poll shows that 45.9 percent of registered voters supported Dinkins, 35.4 percent supported Giuliani, 4.8 percent supported another candidate, and 14.0 percent were undecided.[14] Thus, the pre-election poll indicates that Dinkins had 56.4 percent of the two-party vote—a seemingly commanding lead of almost 13 percentage points. These results conform to the results of other pre-election polls (see Reeves 1997) but *not* to the true results of the election held just one day after the poll ended, where Dinkins received 51.2 percent of the two-party vote. It appears likely then that this polling data might be contaminated by the same type of selection bias found in the integration data.

In order to determine whether, in fact, this hypothesis was true, I estimated two models of the candidate choice process using the 1989 mayoral data. In the first model (the independent probit) I used a simple probit to predict a respondent's preference for Dinkins or Giuliani. In the second model (the bivariate probit model) I introduced the correction for selection bias.[15]

6.3 Results

As Table 2 demonstrates, the bivariate probit selection model indicates that the 1989 New York pre-election polling data is indeed contaminated by the same selection bias as the school integration data. ρ is positive and highly significant in both a statistical and a substantive sense. This result indicates that those people who are likely to express a voting preference are—by simple dint of answering the preference question—more likely to say they support Dinkins. Conversely, the "don't know" option conceals a large base of Giuliani support. Interestingly, however, unlike the school integration question, the effects of the selection bias in the pre-election polling data are not captured in the constant term. Rather, the selection bias affects the model coefficient estimates through the independent variables. For example, the uncorrected probit predicts that older respondents are more likely to vote for Giuliani than for Dinkins. But correcting for selection bias increases the predictive power of the age variable by over 50 percent. Similarly, the coefficient on the variable indicating whether the respondent is Jewish increases by over 20 percent once the selection bias correction is introduced. These results indicate that respondents who are older and Jewish—those groups

[14]The candidate choice question, like the NES school integration question, was asked with a full filter.

[15]My model posits that candidate choice (the outcome equation) is a function of the respondents' party of registration, ideology, education, age, religion, income, gender, and race. The willingness to offer a choice (the selection equation) is a function of these variables and the respondent's reported certainty of voting (which is used to identify the model).

Table 2. Support for Dinkins

Variable	Independent Probit Coefficient (SE)	Bivariate Probit Coefficient (SE)
Outcome Equation		
Constant	–0.066 (0.204)	–0.099 (0.201)
Republican	–1.146 (0.096)**	–1.040 (0.109)**
Independent	–0.499 (0.116)**	–0.467 (0.115)**
Other Party Identifier	–0.215 (0.234)	–0.200 (0.235)
Liberal	0.449 (0.080)**	0.464 (0.078)**
Conservative	–0.341 (0.088)**	–0.310 (0.091)**
No Ideology	0.542 (0.241)**	0.285 (0.255)
Education	0.467 (0.156)**	0.444 (0.152)**
Age	–0.004 (0.002)*	–0.006 (0.002)**
Catholic	–0.412 (0.101)**	–0.390 (0.103)**
Jewish	–0.277 (0.114)**	–0.326 (0.115)**
Other Religion	–0.121 (0.144)	–0.143 (0.138)
Refused to Identify Religion	–0.443 (0.281)	–0.502 (0.272)*
Income: <$8,000	0.366 (0.168)**	0.313 (0.169)*
Income: $8,000–$11,999	0.494 (0.167)**	0.437 (0.178)**
Income: $12,000–$19,999	0.196 (0.132)	0.173 (0.130)
Income: $20,000–$29,999	0.164 (0.106)	0.152 (0.105)
Income: $50,000+	–0.063 (0.092)	–0.036 (0.089)
Income Not Ascertained	0.325 (0.144)**	0.152 (0.182)
Female	0.005 (0.069)	–0.022 (0.069)
Black	2.110 (0.140)**	2.046 (0.203)**
Hispanic (White and Other)	0.791 (0.112)**	0.807 (0.108)**
Black Hispanic	1.458 (0.236)**	1.424 (0.243)**
Selection Equation		
Constant	—	1.416 (0.249)**
Republican	—	0.405 (0.405)**
Independent	—	0.035 (0.131)
Other Party Identifier	—	0.050 (0.242)
Liberal	—	0.214 (0.089)**
Conservative	—	0.045 (0.093)
No Ideology	—	–0.544 (0.159)**
Education	—	0.073 (0.167)
Age	—	–0.010 (0.002)**
Catholic	—	0.006 (0.119)
Jewish	—	–0.310 (0.126)**
Other Religion	—	–0.101 (0.136)
Refused to Identify Religion	—	–0.246 (0.228)
Income: <$8,000	—	–0.130 (0.157)
Income: $8,000–$11,999	—	–0.132 (0.166)
Income: $12,000–$19,999	—	–0.087 (0.138)
Income: $20,000–$29,999	—	–0.033 (0.113)
Income: $50,000+	—	0.102 (0.106)
Income Not Ascertained	—	–0.552 (0.121)**
Female	—	–0.130 (0.074)*
Black	—	0.482 (0.123)**
Hispanic (Not Black Hispanic)	—	0.394 (0.162)**
Black Hispanic	—	0.287 (0.249)
Certainty of Voting	—	0.332 (0.165)**
Voted in 1988	—	–0.122 (0.117)
Correlation Parameter		
ρ	—	0.658 (0.302)**
N/Log Likelihood	2192/–911.708	2509/–1748.439

* = $p < .10$; ** = $p < .05$

who might be loath to express their anti-Dinkins sentiment—are more likely to support Giuliani then the uncorrected probit estimates suggest. Moreover, people who are reluctant to reveal information about their income are less likely to support Dinkins than would appear from the uncorrected estimates. None of the effects are surprising given the results of the selection equation. As Table 2 demonstrates, these groups of individuals—Jews, older respondents, and the reticent—are less likely than other individuals to volunteer their candidate choice.

Though the results from the 1989 data may be different in type from the school integration results, they are similar in kind. In both cases the "no-opinion" result seems to be a cover—for at least a significant proportion of the sample—for opposition to policies and candidates in choices that are racially sensitive. This similarity between the school integration results and the 1989 pre-election poll results carries over to a simulation that predicts respondent's candidate choice. As before, the average predicted probability of supporting Dinkins is estimated under two conditions: (1) the separate probit estimate and (2) the bivariate probit estimate. Using the independent probit results yields an aggregate predicted level of support of 55.3 percent for Dinkins, a result in line with the poll marginals, but inconsistent with the election results. However, introducing the correction for selection bias decreases the predicted support for Dinkins to 51.8 percent. The point estimates of the predicted support for Dinkins under the bivariate probit results, then, predict the actual electoral results almost perfectly. Thus, it seems that the selection bias correction compensates for the shortcomings of the pre-election polls.

These analyses are especially important. Because the estimates corrected for selection bias do a better job of predicting the actual election results than the uncorrected estimates, it is clear that the selection bias correction provides a more reliable estimate of the true vote intentions than the preferences expressed in the survey. Given that the circumstances surrounding the mayoral election are similar to that of the school integration setup, we can then have greater confidence that the corrected estimates for the school integration data are closer to "the truth" as well.

7. Conclusion

Taken on their face, the results presented in this article are illuminating. The unspoken opposition to government integration efforts revealed in my analyses indicates that latent mass opposition to school integration is higher than would appear from the marginals of opinion polls. This result may explain, in part, the unfinished legacy of the school integration efforts begun in the 1950s (Hochschild 1984). In addition, the results from the 1989 New York City mayoral analysis provide a compelling account of the shortcom-

ings of the pre-election polls in that race. Specifically, certain groups of individuals—Jews, older respondents, and the reticent—chose to keep silent rather than voice their opposition to Dinkins. But while the analyses presented in this paper are interesting in their own right, these results also have broader implication for how we understand both the individual survey response and collective opinion.

At the individual level, my findings of selection bias in the school integration question-answering process suggest that the opinions respondents *express* in the survey interview are not necessarily identical to the opinions they *construct* when coming to grips with a survey question. The results presented in this article, therefore, underscore the importance of attending to the effects of the social environment of the survey interview when investigating public opinion. The "new look" in public opinion research—led by the work of Feldman and Zaller—has revolutionized our thinking about how individuals approach the cognitive tasks involved in the question-answering process. But it is now necessary to revolutionize also our understanding of the social side of the survey response and consider both the cognitive and social processes involved in the dual tasks of opinion formation and opinion expression.

The findings reported in this paper also have important implications for how we understand aggregate public opinion. The misrepresentation of individual opinion in the survey interview may be interesting in and of itself. But that misrepresentation acquires political bite to the extent that it biases collective opinion signals. The results reported in this paper suggest that, indeed, such bias exists in aggregate public opinion. Because the social environment of the survey interview systematically affects the willingness of respondents to answer survey questions on sensitive topics—here, questions on racial attitudes—aggregate opinion polls may provide an inaccurate picture of true public sentiment on sensitive issues. This phenomenon is problematic for policy formation and implementation if elites in any way use polls to serve as a barometer of public sentiment on sensitive policy controversies. Thus, we should give pause before fully embracing the notion of aggregate public opinion as an unbiased form of mass participation.

At the same time, the analyses reported in this paper should not be taken as an indictment of the survey enterprise. While some individuals may misrepresent their political preferences in the environment of the survey interview, the message to take from this paper is not that we cannot gain valid information from polls. Instead, the results in these analyses highlight the importance of paying attention to and accounting for the types of biases which may taint measures of aggregate public opinion. One important factor is the heterogeneity in the levels of social sensitivity that exists across issues. To poll effectively, we need to pay close attention to the content of an issue

and consider how the social climate might affect the opinion distribution on that issue. But we can do more than think about this critical issue. In this article, I advance a technique which allows us not only to speculate on the presence of social effects, but allows us also to measure and, more importantly, to account for its bias. With a more critical and discerning eye towards the larger political and social environment, then, we may measure public opinion more effectively and move towards an understanding of the shape of public sentiment on key issues facing the nation.

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APPENDIX A
Coding Protocol, NES Variables

Age	Age of the respondent, in years
Education	7 category NES education variable measuring highest level of education (0 = grade school; 1 = advanced degree).
Region Variables	A Series of 4 dummy variables indicating the respondent's census region of residence (North-East, North-Central, West, and South). The omitted category is respondents who live in the North-East.
Religion Variables	A series of 5 dummy variables indicating the respondent's religion (Protestant, Catholic, Jewish, other religion, and no religion). The omitted category is respondents who are Protestants.
Occupation Variables	A series of 8 dummy variables indicating the respondent's occupation, according to classifications developed by Hout et al. (1995) (professional, manager, white-collar, self-employed, skilled worker, un- or semi-skilled homemaker, and other). The omitted category is respondents who are un- or semi-skilled.
Number of Children	The natural log of the number of children in the household ages 6–17 (+1).
Party Identification	5 category partisanship variable. This variable is simply the NES 7-Category partisanship variable with the independent leaners collapsed with the weak partisans (–1 = Strong Republican; 1 = Strong Democrat).
Liberal	Dummy indicating self-identification as "extremely liberal," "liberal," or "slightly liberal" on the NES seven-point ideology scale (0 = not liberal; 1 = liberal).

Conservative	Dummy indicating self-identification as "extremely conservative," "conservative," or "slightly conservative" on the NES seven-point ideology scale (0 = not conservative; 1 = conservative).
Moderate	Dummy indicating self-identification as "moderate; middle of the road" on the NES seven-point ideology scale (0 = Not moderate; 1 = moderate).
No Ideology	Dummy indicating respondents who "don't know" or "haven't thought much about" where they place on the NES seven-point ideology scale (0 = claim ideology; 1 = claim no ideology).
Equality	6 category NES Equality scale. Respondents are assigned their mean score across all the individual equality items as long as they answer half or more of those items (0 = low support for equality; 1 = high support for equality).
Trust in Government	4 category NES Trust in Government scale. Respondents are assigned their mean score across all the individual limited government items as long as they answer half or more of those items (0 = low trust in government; 1 = high trust in government).
Moral Conservatism	4 category NES Moral Conservatism scale. Respondents are assigned their mean score across all the individual moral conservatism items as long as they answer half or more of those items (0 = low support for moral conservatism; 1 = high support for moral conservatism).
Religious Importance	4 category variable which gauges the degree of guidance religion provides in the respondent's everyday life (0 = Not important; 1 = provides a great deal of guidance).
Political Information	9 category NES variable measuring knowledge of politics (0 = low; 1 = high).
Discuss Politics	8 category variable measuring the number of days in the past week in which the respondent discussed politics with their friends and family, recoded to the 0-1 interval (0 = never discuss politics; 1 = discuss politics every day).
Number of Calls	The natural log of the number of face-to-face and telephone calls made to the respondents home in order to obtain the interview.
Persuasion Letter	Dummy variable indicating whether the interviewer attempted to convert a respondent who initially refused to participate in the NES.
Refusal Conversion	Dummy variable indicating whether a persuasion letter was sent to the respondent.
Interviewer Black	Dummy variable indicating the race of the interviewer (0 = white interviewer; 1 = Black interviewer)

APPENDIX B
Coding Protocol, 1989 NYC Election Variables

Age	Age of the respondent, in years.
Education	6 category variable measuring highest level of education (0 = grade school; 1 = advanced degree).
Religion Variables	A series of 5 dummy variables indicating the religion in which the respondent was brought up (Protestant, Catholic, Jewish, other religion, and refused to identify religion). The omitted category is respondents who are Protestants.
Republican	Dummy indicating if the respondent is registered with the Republican Party (0 = not registered as a Republican; 1 = registered as a Republican).
Democrat	Dummy indicating if the respondent is registered with the Democratic Party. This category of party identification is the omitted category in the analyses (0 = not registered as a Democrat; 1 = registered as a Democrat).
Independent	Dummy indicating if the respondent is registered as an independent (0 = not registered as an independent; 1 = registered as an independent).
Other Party Identifier	Dummy indicating if the respondent is registered with a party other than the Democratic Party or the Republican Party (0 = not registered with another party; 1 = registered with another party).
Liberal	Dummy indicating self-identification as "very liberal" or "liberal" on a five-point ideology scale (0 = not liberal; 1 = liberal).
Conservative	Dummy indicating self-identification as "very conservative" or "conservative" on a five-point ideology scale (0 = not conservative; 1 = conservative).
Moderate	Dummy indicating self-identification as "moderate" on a five-point ideology scale (0 = not moderate; 1 = moderate).
No Ideology	Dummy indicating respondents who "don't know" their ideology or "don't think in those terms" and decline to place themselves on a five-point ideology scale (0 = claim ideology; 1 = claim no ideology).
Certainty of Voting	Variable indicating how likely the respondent thinks it is that he or she will vote in the mayoral election. If the respondent thinks that he or she will "probably vote," "chances are 50/50," or she "doesn't think she will vote," this variable is scored a "0." If the respondent is "certain to vote," the variable is scored a "1."
Voted in 1988	Dummy variable indicating whether the respondent voted in the 1988 Presidential election (0 = no; 1 = yes).

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