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To: Participants in the NES Conference on Candidate Evaluation, and the NES Board of Overseers

From: William G. Jacoby

Re: Feeling Thermometers

Over the past few years, I have heard what seems to be an increasing amount of criticism of the candidate feeling thermometer items which are routinely included in the CPS National Election Studies. In conversations with colleagues, presentations at convention panels, and most recently, in comments at the NES Conference on the Impact of the Presidential Campaign, several prominent political scientists have suggested that the feeling thermometers are problematic, and that they should be removed from the NES interview schedules, or at the very least, substantially reduced in number.

The purpose of this memorandum is to present as strong a case as possible against this latter position. I believe that there are a number of theoretical and practical arguments in favor of retaining the feeling thermometers in the National Election Studies. These items are not only useful for examining candidate evaluation and voting choice; they can also be used to assess citizens' perceptions and cognitive structures with respect to the political candidates and other public figures confronting them within the electoral environment.

Theoretical Arguments in Favor of the Feeling Thermometers

Regardless of one's theoretical perspective, the feeling thermometers are a critical tool for developing an empirical understanding of electoral behavior. I believe that they can easily be justified from the standpoints of both the social psychology of voting, and the spatial model of elections. Let us consider each of these, in turn:

Social Psychological Justification

Two of the charges that are commonly levelled against the feeling thermometers are that "We don't know what these items are measuring" and that "They combine/confound affective and

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cognitive reactions toward the candidates. In response, I contend that the first charge is incorrect, while the second charge is true but not problematic.

The question of what the feeling thermometers are measuring can be answered very simply: They are measuring *attitudes* toward the candidates. In their well-known and influential text on attitude theory, Fishbein and Ajzen (1975) define "attitude" as a stable evaluative predisposition to respond positively or negatively toward some stimulus object. This is exactly the kind of information that is provided by the feeling thermometer items. Therefore, it is useful and theoretically consistent to regard the responses to the feeling thermometers as measures of individual attitudes toward the candidates. Of course, where we go from there is open to question. The precise status of attitudes vis-a-vis other orientations and subsequent behaviors is a matter of longstanding and lively debate within social psychology (e.g., see Eagly and Chaiken 1993; Olson and Zanna 1993). But, the ongoing scholarly disagreements over exactly how attitudes "fit into things" simply underscores the fact that the feeling thermometers help open up a variety of potential avenues for empirical research into the social psychology of citizens' voting choices.

The questions about the affective or cognitive nature of the feeling thermometers can be sorted out quite easily, once we recognize the attitudinal nature of the responses to the items. It is, indeed, true that the thermometers combine affective and cognitive components. But, doing so is fully consistent with social psychological theories of the determinants of attitudes. Once again relying on Fishbein, attitudes are (literally) the product of cognition and affect:

$$A_{ij} = \sum B_{ijk} E_{ik}$$

In the preceding equation, A_{ij} represents individual i 's attitude toward stimulus object j , B_{ijk} represents individual i 's belief that stimulus j possesses trait k , and E_{ik} represents i 's evaluation of trait k . The summation is taken across all of the separate beliefs that i maintains about j , and the number of terms in this sum is an empirical question. Thus, an attitude is based upon what a person knows about a stimulus, along with feelings about that knowledge. In terms of candidate evaluation, the components of the equation could be operationalized very easily: The A term is measured by the feeling thermometer toward candidate j , the B terms by survey items asking respondent perceptions about j , and the E terms by questions asking respondent reactions toward those perceptions. To be more specific, the B terms could represent perceptions of candidate personal traits, while the E terms would tap respondents' ratings of those traits' importance. This would lead in the direction of Kinder's (1986) work on candidate schemas. Alternatively, the B terms could represent candidate issue positions, while the E terms are respondents' own positions on the same issue. This operationalization has been used to directly test Fishbein's theory of attitude formation (e.g., Reynolds 1974) and more recently, to develop the directional model of issue voting (Rabinowitz and Macdonald 1989). Thus, the feeling thermometers do combine affect and cognition, but it is exactly this combination that helps make them such useful items. As political scientists, our research objectives should include: ascertaining exactly *which* cognitions affect reactions toward candidates; determining whether cognitions are amenable to political manipulation (say, over the course of a

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presidential campaign); and examining how the public feels about the various beliefs that they maintain toward the candidates. For these purposes, the feeling thermometers must be used along with measures of candidates' personal traits, issue positions and the like. They are certainly not interchangeable replications of each other.

Feeling Thermometers and the Spatial Model of Voting

The basic idea behind the spatial model of voting is, of course, very simple: The issues of an election define dimensions, upon which candidates and voters are located. Taken together, these dimensions define a space; candidates and voters are represented as points within the space, with their locations determined by their coordinates along the dimensional axes. Each citizen votes for the candidate whose point is closest to his/her own ideal point within the space.

In formal or positive spatial models, the precise nature of the issue dimensions is not usually a matter of great concern; they are simply defined as the salient issues in the election under consideration. However, in empirical spatial models, the dimensions underlying the joint voter-candidate space are problematic. This is the case because we cannot know beforehand exactly *which* issues the electorate will use to judge the field of candidates that confronts them. Any attempt to specify the dimensions on a priori grounds (e.g. looking at voter and candidate positions along particular seven-point issue scales) runs the potential risk of misspecifying the criteria that citizens actually use to evaluate the candidates.

In order to overcome the preceding problem, we need "content-neutral" measures of where individual citizens' stand, relative to the candidates. This is precisely the kind of information provided by the feeling thermometers. Specifically, the latter can be interpreted as measures of the distances from an individual's ideal point to each of the respective candidates' points within the space. Initially, we do not know what this space looks like. One major objective of a spatial analysis is to "work backward" from these measured distances, to recover a dimensional configuration of ideal points and candidate points that is as consistent as possible with the thermometer ratings. Once this is accomplished, the properties of the space can be interpreted, to identify the criteria that people used to evaluate the candidates in the first place.

There are a number of different methodological approaches that can be employed for this purpose. Those that have received the most attention within political science include Rabinowitz' (1976) line of sight method, the least-squares approach used by Enelow and Hinich (1984), and the maximum likelihood method presented by Brady (1991). Poole's unfolding method (1984) could also be used with the feeling thermometers.

Note that all of the preceding approaches try to determine the ways that people really think about political figures; they explicitly avoid a priori specifications of evaluative criteria. But once again, such a strategy is only possible when the input data, themselves, avoid "pushing" respondents toward the use of particular judgmental dimensions. The feeling thermometers are particularly

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advantageous in this regard, because they only ask whether people feel positively or negatively toward political figures; they do not require any elaboration of *why* people feel this way. Other items included in the NES interview schedules can be brought to bear on *sources* of the candidate evaluations. However, the evaluations, themselves, constitute vital information for understanding how citizens react toward stimuli in the political world.

Practical Utility of the Feeling Thermometers

In addition to the theoretical justifications that I have just discussed, the feeling thermometers have a number of practical advantages that deserve consideration. First and probably foremost, they provide a means of obtaining a great deal of information in a particularly efficient manner. As one participant in the recent NES Conference on the Impact of the Presidential Campaign put it, "They're easy and cheap!" The feeling thermometers enable us to collect public reactions toward a fairly large set of candidates, while only using a relatively short block of time in the interview; this, we're getting a sizable "bang for the buck" from these items.

Along with their utility as measures of reactions toward single candidates, differences between pairs of an individual's feeling thermometer ratings can be combined in order to generate proxy measures of voting choice for that person. This is particularly relevant, given the large number of candidates and potential candidates that have confronted the American public during recent presidential election years. The differential thermometer scores provide a much more efficient way to examine pairwise candidate choices than the most obvious alternative: A large number of "trial heat" items asking respondents for whom they would vote, given various pairs of candidates. If there are k candidates, then the latter approach requires a total of $k(k-1)/2$ separate items. In contrast, all of the pairwise evaluations could easily be constructed from just the k thermometers, alone. Furthermore, the thermometers would allow us to easily discern indifference between certain pairs of candidates—once again, a likely occurrence, given crowded candidate fields.

Another practical consideration lies in the fact that differential feeling thermometers are very strongly related to actual voting choices. In fact, predictions of the vote based upon feeling thermometers are actually a bit more accurate than predictions based upon stated vote intentions! Table 1 contains some evidence on this point taken from the 1988 National Election Study. The table shows the proportions of Bush and Dukakis voters correctly predicted from stated vote intentions (in the NES pre-election survey) and from the pre-election differential thermometer ratings. The thermometer-based predictions are not only as good as those from the stated vote intentions; they are actually *more* accurate, although only by a tiny margin. Nevertheless, the correlations (also shown in Table 1) are slightly higher between the differential thermometer scores and votes than they are between intended and actual votes.

Given the very strong relationships revealed in Table 1, one could ask why it is necessary to include both the feeling thermometers and the vote intention questions in the interview schedule. That is, why couldn't the latter simply be used, rather than the former? The response to this question

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is that, despite their high correlations, vote intentions do seem to be a different phenomenon from the information obtained in the feeling thermometers.

Some evidence on this point is illustrated in Figures 1 through 3. The figures show daily patterns of vote intentions and feeling thermometer ratings over the course of the 1988 campaign. In each figure, the horizontal axis is the same: It represents the number of days into the campaign, starting with September 6, 1988 as day 1 (the first day of interviewing in the NES pre-election wave) and ending with November 6, 1988 as day 63 (the day before election day).

Figure 1 shows temporal patterns in the proportion of intended votes for Bush (Panel A) and the proportion of differential thermometer scores that favored Bush (Panel B). Figure 2 shows similar information for Dukakis intentions and evaluations. The curves are all LOWESS nonparametric fits to the data. It is not my intention to provide any real analysis of these patterns in this memorandum. For present purposes, it is sufficient to merely note that both Figures show rather substantial differences between Panels A and B. In Figure 1, the pattern of Bush vote intentions seems to approximate a polynomial function, while the thermometer ratings reveal a monotonically increasing tendency toward Bush over the course of the campaign.

The temporal patterns for Dukakis shown in Figure 2 are not simply mirror images of the respective Bush trends. Here, it is the vote intentions that more closely approximate a monotonically decreasing pattern, while the differential thermometer ratings jump around a bit more. Note, however, that the latter *never* show Dukakis with a particularly high proportion of supporters. This suggests a different interpretation of the 1988 election from the conventional wisdom of Dukakis frittering away an early, commanding lead over Bush.

Along with any effects it may have on citizens' preferences, a presidential campaign is also widely believed to have an activation effect on public opinion. In other words, the excitement and publicity surrounding the campaign is supposed to stimulate citizens' interest in the overall process, crystallize their feelings about the candidates, and polarize their orientations toward the electoral contest. Figure 3 shows that the differential feeling thermometers pick up this kind of pattern. Panel A of the figure shows the temporal pattern in the proportion of respondents who gave a higher rating to either Bush or Dukakis (i.e. no ties or failure to evaluate one of the two). The LOWESS curve plotted in the figure shows a steady increase over time; the correlation between the two is positive and significant (albeit weak) at 0.198. In contrast, Panel B of Figure 3 plots daily proportions of respondents who expressed a voting intention for either Bush or Dukakis. As is easily apparent, the LOWESS curve for these data is nearly flat, showing that the presence or absence of specific vote intentions are not related to the progress of the campaign. The correlation for Panel B is 0.005. The evidence in Figure 3 complements the information already presented in Figures 1 and 2. Not only do the differential thermometers seem to track differently over time from intended votes; they also seem to reveal substantively interesting patterns that just do not exist with respondents' stated vote intentions.

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Conclusions

The conclusions that I hope will be drawn from this memorandum are straightforward: First, some of the frequently-stated criticisms of the feeling thermometers simply do not stand up to close scrutiny. Second, the feeling thermometers are crucial tools for the process of testing both social psychological and spatial theories of electoral behavior. And third, the feeling thermometers have a number of practical advantages as measures of citizens' candidate preferences. For all of these reasons, I believe that the feeling thermometers are central and largely irreplaceable items for studying candidate evaluation. Therefore, they should be retained as a standard batteries of items in all future biennial administrations of the National Election Studies.

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Table 1: Predicting 1988 Votes for Bush and Dukakis, Using Respondents' Stated Vote Intentions and Differential Feeling Thermometers.

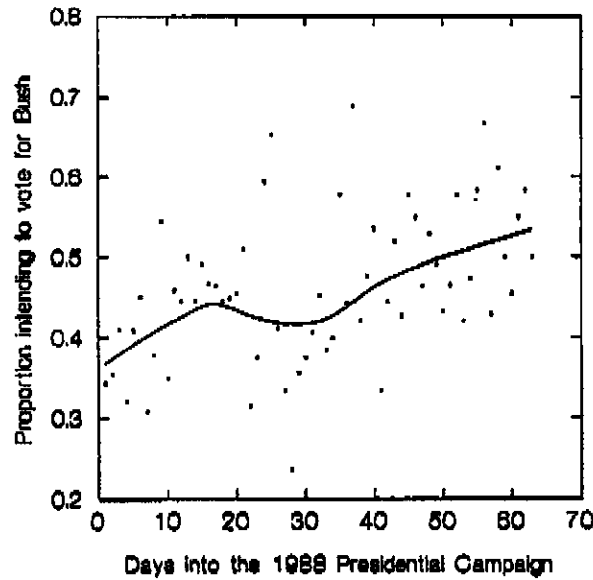
	Reported 1988 Vote (from NES Post-Election Interview)	
	Bush	Dukakis
Percent correctly predicted by intended vote for candidate	89.90%	90.5%
Correlation between intended vote and actual vote for candidate	0.80	0.81
Percent correctly predicted by differential feeling thermometers	87.57%	87.70%
Correlation between feeling thermometer prediction and actual vote for candidate	0.75	0.76

Intended vote for Bush (or Dukakis) is operationalized as a dichotomy, scored one for a person who intends to vote for Bush (or Dukakis) and zero otherwise. Actual votes are coded the same way. Note that intended votes for Bush and Dukakis are not perfectly complementary because of respondents who intended to vote for some other candidate or those who said they were undecided at the time of the interview. Differential feeling thermometer predictions are also coded as dichotomies, with a Bush prediction when a respondent gives Bush a higher rating than Dukakis, and vice versa. Again, Bush and Dukakis predictions are not perfectly complementary, because of tied thermometer ratings.

Source: 1988 CPS American National Election Study

Figure 1: Public Preferences for Bush, Over the Course of the 1988 Presidential Campaign.

A. Preference Operationalized as a Stated Intention to Vote for Bush in the Pre-election Wave of the 1988 National Election Study.



B. Preference Operationalized with Feeling Thermometer Scores for Bush that Exceed those for Dukakis in the Pre-election Wave of the 1988 National Election Study.

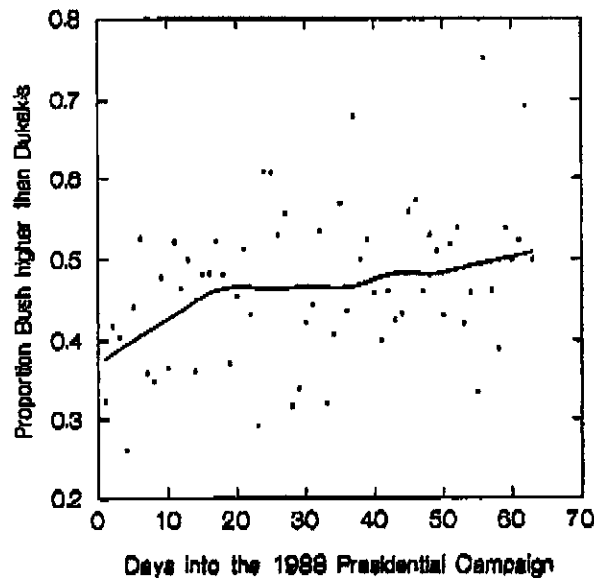
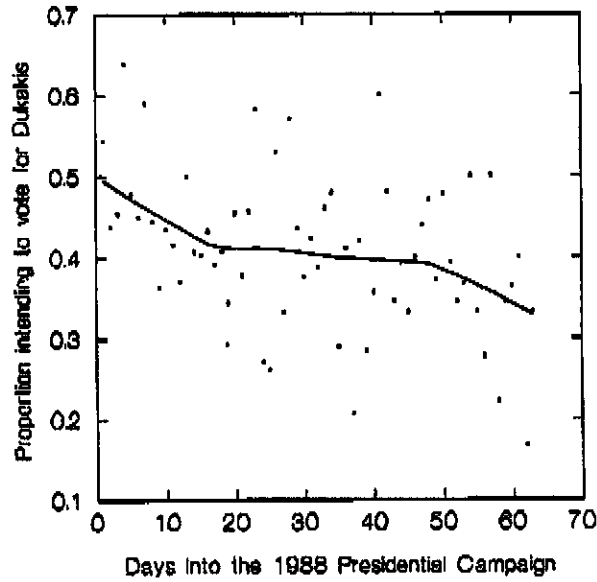


Figure 2: Public Preferences for Dukakis, Over the Course of the 1988 Presidential Campaign.

A. Preference Operationalized as a Stated Intention to Vote for Dukakis in the Pre-election Wave of the 1988 National Election Study.



B. Preference Operationalized with Feeling Thermometer Scores for Dukakis that Exceed those for Bush in the Pre-election Wave of the 1988 National Election Study.

