Response Latency Methodology for Survey Research: Measurement and Modeling Strategies

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In public opinion research, response latency is a measure of attitude accessibility, which is the ease or swiftness with which an attitude comes to mind when a respondent is presented with a survey question. Attitude accessibility represents the strength of the association in memory between an attitude object and an evaluation of the object. Recent research shows that attitude accessibility, as measured by response latency, casts light on a wide range of phenomena of public opinion and political behavior. We discuss response latency methodology for survey research and advocate the use of latent response latency timers (which are invisible both to respondents and interviewers) as a low cost, low-maintenance alternative to traditional methods of measuring response latency in public opinion surveys. We show that with appropriate model specification latent response latency timers may provide a suitable alternative to the more complicated and expensive interviewer-activated timers.

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1 Introduction

In this article we present a methodology for measuring and modeling response latency, which in a survey context is the elapsed time between the moment an interviewer finishes reading a survey question and the moment the respondent begins to answer. While political scientists have used survey data for more than half a century to measure political attitudes and behavior, recent computer-assisted survey technology provides researchers with new opportunities to tap into the cognitive processes that underlie public opinion and political behavior. Measures of response latency in public opinion polls are one such technological development. Response latency has been used most widely in this context as an index of attitude accessibility, which is the relative ease with which an attitude comes to mind when a respondent is presented with a survey question. Attitude accessibility is theorized to reflect the strength of the linkage in memory between an attitude object and an evaluation of the object (Fazio 1995). Recent research that uses response latency as a measure of attitude accessibility has added and will continue to add to our understanding of political attitudes and behavior.

Studies that incorporate attitude accessibility are already impacting political science. This research has shown that preelection evaluations of political candidates, voting intentions, and party identifications are more predictive of subsequent voting behavior when these attitudes are highly accessible (e.g., Fazio and Williams 1986; Bassili 1993; Huckfeldt et al. 1999); that ambivalence toward political candidates, parties, and issues slows processing, and thus expression, of voting intentions and political opinions (e.g., Sniderman and Carmines 1997; Huckfeldt and Sprague 2000); that the accessibility of conflicting considerations in memory increases ambivalence toward abortion and the death penalty (Newby-Clark et al. 2002); that citizens’ perceptions of their associates’ political views become more accessible over the course of a presidential campaign (e.g., Huckfeldt et al. 1998, 2000); and that political campaigns render partisan identifications more accessible (Grant et al. 1999). Attitude accessibility, as measured by response latency, is a versatile and powerful concept in the study of public opinion and mass political behavior.

Given this, we suggest that political scientists who analyze mass survey data would benefit by incorporating response latency as a measure of attitude accessibility into their research designs. In this article we discuss the mechanics of measuring response latency and appropriate modeling strategies when response latency is employed as either a dependent or an independent variable. As response latency data are not yet widely available and can be expensive to collect, we propose a low-cost, low-maintenance alternative to the traditional method of measuring response latency in mass surveys. The traditional method of measuring response latency in telephone surveys requires interviewers to start and stop the response latency timer manually and, because of this, involves substantial costs in terms of interviewer time and training. Our proposed method uses latent timers that are programmed into computerized questionnaires. These computer timers automatically record the time required to complete each survey question, are completely invisible to interviewers, and are virtually cost-free. To test the viability of our new approach, we use data from two surveys that include both the traditional method and our alternative method of measuring response latency. We compare our proposed method of measuring response latency with the traditional method. The results suggest that our new method provides a viable alternative way to measure response latency for social scientists who wish to incorporate a measure of accessibility into their substantive research designs. We begin by discussing the concept of attitude accessibility and what response latency actually measures.
2 Attitude Accessibility, the Psychology of the Survey Response, and Response Latency

2.1 Attitude Accessibility in Telephone Surveys

Attitude accessibility is the speed with which an attitude comes to mind when a respondent is asked a survey question, and is measured by response latency—the time it takes for a respondent to begin to answer a survey question after it has been asked. Accessibility is theorized to represent the strength of the association in memory between an attitude object and an evaluation, where object and evaluation are construed broadly. Highly accessible attitudes come to mind quickly, whereas less accessible attitudes come to mind slowly. Attitude accessibility is one of several strength-related properties of attitudes, including extremity, intensity, certainty, and importance, among others, that are consequential for the stability of attitudes over time, resistance to persuasion, and influence on information processing and behavior (Petty and Krosnick 1995).1

The conceptualization of accessibility as the strength of the association in memory between an attitude object and an evaluation casts light on existing attitude models in political science. Converse’s nonattitudes thesis (Converse 1964), for example, might be conceptualized as an attitude–non-attitude continuum, anchored at one end by completely inaccessible nonattitudes, where no opinion or relevant considerations are stored in memory, and at the other end by well-rehearsed, highly accessible attitudes that can be directly retrieved and reported (Fazio et al. 1986). Many, perhaps most, attitudes likely fall toward the middle of the continuum, formed on-the-spot based on considerations that happen to be accessible when the question is asked (Zaller and Feldman 1992). As a measure of attitude strength, attitude accessibility provides a window on the mental processing that underlies survey responses and the strength of political attitudes.

2.2 The Psychology of the Survey Response and Response Latency in Telephone Surveys

Psychologists who study the survey response suggest that respondents form and report answers to survey questions in four mental stages: question comprehension, retrieval of relevant information from memory, integration of the information to form a summary judgment, and selection of an appropriate response option (Tourangeau and Rasinski 1988). In survey research, attitude accessibility is parallel to the retrieval and integration stages of the question-answering process. When asked an opinion item, the survey respondent retrieves an attitude stored in memory or, if no such attitude is available, retrieves relevant considerations that are then integrated into a summary judgment. Operationally, accessibility, as indexed by response latency, is measured by the time it takes to retrieve, form, and report an answer to a survey question.

Response latency is used most often as a measure of accessibility, but the time it takes for a respondent to answer a survey question may be influenced by factors that arise at each stage of the question-answering process (Bassili 1996; Bassili and Scott 1996). Questions that are poorly worded, that call for a complex or difficult judgment, that require the respondent to integrate inconsistent considerations, that include inappropriate or vague response options, or that implicate social desirability concerns may each increase response latency (Bassili 1996). Therefore, response latency in surveys is not purely a measure of attitude

1Research shows that these various dimensions do not reflect a single underlying strength construct (see Krosnick et al. 1993).
accessibility, but the information processing involved in answering survey questions. Despite this, researchers can (and do) use response latency as a measure of attitude accessibility because they can eliminate or control potential extraneous influences on response times through careful questionnaire design. The logic and recommendations for guarding against influences on response time other than accessibility are essentially the same as those suggested in the survey design literature to guard against unwanted effects of questionnaire design on substantive survey responses, such as question wording effects, question order effects, and social desirability bias. Just as the questionnaire design literature encourages researchers to guard against survey design effects by asking clear and unambiguous questions with appropriate response options, the same advice helps accessibility researchers to guard against unwanted influences on response latency. By asking unambiguous and appropriately worded questions, researchers can avoid contaminating response latencies with delays in the comprehension and response selection stages of the survey response (see Bassili and Scott 1996). In this way, researchers can better isolate accessibility by avoiding the likelihood that respondents will spend time puzzling over the meaning of the question or response options. In sum, the interpretation of response latency in surveys, like the interpretation of reaction time in psychological laboratory experiments (Fazio 1990) and the interpretation of survey responses generally, depends on the specific context, wording, and substance of the questions.

In addition to the effects of questionnaire design, response latencies might also be influenced by operational factors of measurement, such as the ability of interviewers to measure response latency accurately. We address this issue in our discussion of the mechanics of response latency below.

3 The Mechanics of Response Latency in Telephone Surveys

3.1 Voice-Activated and Interviewer-Activated Timers as Measures of Response Latency

Response latencies in telephone surveys have most often been measured using either interviewer-activated response timers or voice-activated timers. Interviewer-activated or “active” response timers are programmed into computer-assisted surveys. They require the interviewer to start and stop the timer manually by strokes of a computer keyboard and verify that each response latency is valid. Response latencies are coded as invalid when the interviewer accidentally starts or stops the timer at the wrong time or the respondent asks the interviewer to repeat the question. The main drawbacks of active response latency timers is that they require expensive interviewer time and training and add noise to the data. Even the most attentive interviewer with the quickest reflexes is likely to add several hundredths of a second to a response latency measurement (Huckfeldt et al. 1999). Voice-activated or “automatic” response timers are triggered by the respondent’s voice, are nearly exact in their measurement of response latency, and so would seem an appropriate alternative to active timers (Bassili and Fletcher 1991). However, the greater precision of automatic timers comes at greater cost—both financially and methodologically—than the use of active timers. Automatic timers require researchers to equip their survey facilities with expensive new hardware and result in a much higher proportion of invalid responses than active timers (Bassili and Fletcher 1991; Bassili 1996). Automatic timers are set by

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2 An example of how to program both latent and active timers in CASES is included in supplementary material posted on the Political Analysis Web site.
the interviewer as he or she finishes announcing the last word of a survey question and are triggered by the first audible sound coming from the respondent’s receiver, whether it be a slamming door, “hemming and hawing” by the respondent, or a valid response. The sensitivity of automatic timers to extraneous sounds results in invalid measurements of up to 50% of the time or more (Bassili and Fletcher 1991; Bassili 1996). Although they provide a more reliable measure of response latency than active timers, the hardware requirements and high rates of data loss due to invalidity make automatic timers less than optimal for academic research.

The benefit of active timers is that they are not prone to such errors, as interviewers are trained to wait for the start of a genuine response. Although active timers add noise to the data, one comparison of active and automatic timers on the same survey items shows an average correlation of .94 (Bassili and Fletcher 1991). Moreover, in contrast to the high rate of invalidity among automatic timers, active timers usually result in rates of valid responses of over 90% (Bassili 1996; Grant et al. 1999). Thus active timers are cheaper, more dependable, and nearly as reliable as voice-activated timers, leading even the heretofore strongest proponents of automatic timers to agree that active timers are quite appropriate for use as measures of response latency in public opinion surveys (Bassili 2000; Fletcher 2000).

3.2 Analyzing Response Latency Data from Interviewer-Activated Timers

Although reliable, active timer data, like all latency data, require scrutiny and preparation because response latencies are characteristically highly skewed and “extraordinarily messy” (Fazio 1990, p. 75). Most survey software programs measure response latency in hundredths of a second. The sensitivity of response latency timers means that they can easily be affected by extraneous influences, such as baseline differences among interviewers in coding latencies and among respondents in answering survey items. Researchers can address these problems by accounting for the influence of outliers, interviewers, and respondent differences in baseline rates of response. The problem of outliers results from the small but inevitable proportion of respondents who take an extraordinarily long time to answer a survey item. Left unchecked, the positive skew produced by these outliers can bias summary statistics and coefficient estimates. Researchers typically reduce the skew by performing a reciprocal, square root, or logarithmic transformation. Ideally, unusually long latencies that result from interviewer error, respondent inattention, or other processes not of substantive interest are flagged by the interviewer’s coding of the validity of the latency immediately after the question is asked. In practice, interviewers do not always code unusually long and invalid latencies properly. Therefore, researchers must try to reduce the influence of invalid outliers without affecting long but valid latencies. In addition to transforming the data, researchers typically deal with the problem of outliers by setting to missing response times that are 2 or 3 standard deviations above the mean. Although essentially arbitrary, trimming the tail of the latency distribution in this manner results in the loss of a very small proportion of the latencies and improves analysis by reducing the signal-to-noise ratio, allowing researchers to assess more clearly associations between accessibility and substantive variables of interest (Ratcliff 1993).

Researchers can also sharpen the association between response latency and theoretically related variables by controlling for baseline differences among respondents in answering survey questions and baseline differences among interviewers in recording response latencies. Some respondents are naturally faster than others in answering survey questions and some interviewers are naturally faster than others in coding response times. To control for
respondents’ baseline speed of response, researchers typically include in their models the latency or average latency on one or more simple, factual, nonpolitical questions considered to be indicative of respondents’ baseline rate of response. Controlling for the baseline speed of response allows researchers to isolate between-respondent differences in response latency on particular survey questions from systematic differences in answering survey questions generally.

To date, researchers typically have not controlled for baseline interviewer differences in recording response latencies. As we discuss in detail below, where response time is the dependent variable, we recommend controlling for interviewer differences using a Cox proportional hazards model, stratified by interviewer. Where response latency is an independent variable, we recommend that researchers control for interviewer baselines in recording response times by including a measure of each interviewer’s (rather than each respondent’s) average measure of response latency across several questions. Researchers should be certain that respondents are assigned to interviewers at random and, to reduce the potential overlap between the respondent and interviewer baselines, set a minimum threshold of interviews for each interviewer. By controlling for respondent and interviewer baselines, researchers will be better able to isolate between-respondent differences in accessibility on the particular questions of interest.

3.3 Latent Timers as an Alternative Measure of Response Latency

Despite the apparent usefulness of active timers, their substantial cost in terms of interviewer training and coding of the validity of the latency measurements during the interview make them prohibitively expensive for academic researchers on tight budgets. We propose that unobtrusive or “latent” timers be used as an alternative both to automatic and active timers. Routinely programmed at little or no cost into computerized telephone surveys, latent timers are completely invisible both to respondents and interviewers, and thus require no additional interviewer training or monitoring. Interviewers simply conduct the computer-assisted telephone survey as usual, and response times are automatically stored, outside of the awareness of both interviewers and respondents. Latent timers measure the total duration of each question, from the moment the question appears on the interviewer’s monitor to the moment the respondent’s answer is recorded. Latent timers thus include the interviewer’s reading of the question, the response latency, the respondent’s verbalization of a response, and potentially other events such as questions or comments by the respondent or interviewer. The presence of these extraneous factors in the latency measure has prompted some researchers to suggest that latent timers are inappropriate as measures of response latency (Bassili 1997, 2000). In the analysis below, we show how our new methodology for response latency allows researchers to overcome this measurement problem, providing an opportunity to use latent timers as a low-cost, low-maintenance alternative to active timers as measures of accessibility in telephone surveys. We find that response latencies measured by latent timers are highly correlated with latencies measured by interviewer-activated timers. We also show that the extraneous factors included in latent timer measures of response latency can be controlled in essentially the same way—using essentially the same variables—as those used to control for extraneous influences in active timer latencies.

Where a latent timer measure of response latency is the dependent variable, researchers can control for respondent baseline differences in response latency and verbalizing answers to survey questions by including in the model a measure of each respondent’s latent timer (rather than active timer) on one or more factual or demographic items indicative of respondents’ baseline speed of response. When modeling response time as the dependent
variable, researchers can control for systematic differences among interviewers in the time it takes to read and code questions using a stratified Cox model. Where response latency is an independent variable, researchers can include in the model the same respondent baseline control and, to control for interviewer differences in the time it takes to read and code the questions, a measure of each interviewer’s average latent timer latency across several items. By controlling for respondent and interviewer baselines, using latent timers rather than active timers, researchers can control for the factors other than response latency that would otherwise contaminate latent timers as measures of response latency.

4 Comparing Active and Latent Timers as Measures of Response Latency

4.1 Correlation of Latent Timer Measurements with Active Timer Measurements

As discussed above, automatic timers, which provide nearly exact measures of response latency, are very highly correlated with active timers. Because latent timers include a number of extraneous factors other than accessibility, one might expect the zero-order correlations between latent timers and these more precise measures of response latency to be greatly diminished. However, analysis of response latency data gathered with both active and latent timers does not support this expectation. (Available data allow us to compare latent timers with active timers, but not automatic timers.) The 1996–1997 Indianapolis-St. Louis Political Network Election Study, conducted at the Indiana University Center for Survey Research, included both active and latent timers on standard questions of party identification (PID) and ideology. The correlation between the active and latent timers was .74 on PID and .73 on ideology. While imperfect, these correlations suggest that with appropriate controls for respondent and interviewer baselines, latent timers might be used as reliable approximations of the more precise active timers. In the next section we further test our hypothesis that latent timers might be used in place of active timers as measures of response latency by comparing directly models in which response latency is measured using either an active or a latent timer.

4.2 Response Latency as the Dependent Variable

Several recent studies model attitude accessibility directly, where response latency is the dependent variable (e.g., Huckfeldt et al. 1998; Grant et al. 1999; Huckfeldt and Sprague 2000; Huckfeldt et al. 2000). Most of these studies transform the latencies to normalize the data and regress the latencies on predictors of accessibility using OLS. Rather than OLS, we recommend that researchers use the semiparametric Cox model, stratified by interviewer. As the dependent variable is a duration, the Cox model is an appropriate analytic technique (see Box-Steffensmeier and Jones forthcoming). The most significant benefit that comes from using the Cox model is that it allows for a better substantive interpretation of accessibility. This occurs because rather than modeling the normalized latencies, the Cox model shows changes in the hazard rate, which is the instantaneous risk that a response time will end. This parallels the concept of accessibility, which in a survey context is the speed with which an attitude comes to mind after the question is asked. Indeed, accessibility is conceptually equivalent to the hazard rate of the hazard model. This claim is supported by Luce (1986, p. 13) who, in his influential book on the use of response time measures in

3 In order for a researcher to include the interviewer control, respondents must be assigned to interviewers at random and each interviewer must have conducted a sufficiently large number of interviews so that respondent latencies will not be collinear with the interviewer’s baseline.
psychological research, argues that the concept of the hazard rate fits naturally with how we tend to think about response latency.

The Cox model assumes that hazard rates (in this case, the instantaneous propensity of a respondent to answer a survey question after it is asked) are proportional for all respondents. In analysis of response latency data, we find that the proportionality assumption is violated by the control for respondents' baseline speed of response. Researchers can overcome this nonproportionality problem and also control for interviewer differences in reading and recording latencies by stratifying by both the respondent baseline and by interviewer (see Box-Steffensmeier and Zorn 2001).

In this analysis we compare the utility of latent timers against that of active timers where response latency is the dependent variable. The data for this analysis come from the July–October 1998 Buckeye State Poll, a monthly random-digit dialing telephone survey of Ohio residents conducted by the Center for Survey Research at Ohio State University. The substantive model replicates Grant et al.’s (1999) study of changes in the accessibility of partisanship over the course of an election campaign season. These researchers hypothesized that as a campaign season develops and election day draws near, the politicized environment makes voters’ PIDs increasingly accessible. For the purpose of comparison, we estimated three Cox models: two using an active timer measure of response latency on the main PID question as the dependent variable and one using a latent timer on PID as the dependent variable. The dependent variable—response latency—reflects the accessibility of partisanship. Shorter response times indicate more accessible partisanship, and longer response times reflect less accessible partisanship. The key predictor in each model is the number of days into the campaign since the first interviews were conducted during the summer prior to the election. In all three models, we allow for different baseline hazard rates based on variables that should not affect the accessibility of PID but may nonetheless affect response time. These variables include baseline speed of response, interviewer effects, and the total time of the interview. Each model also includes controls for partisan and ideological extremity, newspaper reading, education, and age.

We estimate this model of accessibility of PID using a latent timer to see if a change in measurement—from an active timer to a latent timer—changes our understanding of the accessibility of partisanship over the course of an election campaign. The first column of Table 1 presents a model based on the active timer measure of response latency on the PID question. This model takes into account the interviewer’s coding of the validity of the latency measurement. Because the latent timers do not have the benefit of interviewer coding of the latency timing as valid or invalid, the second column of Table 1 presents a model, also based on the active timer, that ignores the interviewer’s validity coding. We estimate this model to determine whether or not the inclusion of invalid active timer latencies affects the substantive results. The dependent variable in the third column of Table 1 is based on

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4Because the stratified Cox model does not allow one to obtain estimates of the effects of the stratifying variable on response time, it is generally most appropriate to stratify on control variables that might influence response time but which are not germane to one’s theory.

5We stratify by the total time of interview as an additional control for the talkativeness of respondents and interviewers. Respondents and interviewers who proceed quickly through an interview should have a shorter total interview time, whereas respondents and interviewers who speak slowly or make more extraneous comments should have a longer total interview time. These variables are measured as follows: baseline speed of response (0 = below or equal to the median response time on computer ownership question, 1 = above median), interviewer (stratified with one value for each interviewer), and total interview time (in minutes).

6Latencies coded as invalid include instances in which the interviewer re-reads the question, the respondent answers before the interviewer finishes reading the question, or the interviewer strikes the response time key incorrectly.
Table 1 Comparing active and latent timer models of accessibility of PID (1998 OSU Buckeye State Poll)

<table>
<thead>
<tr>
<th></th>
<th>Active timer (with validity coding)</th>
<th>Active timer (no validity coding)</th>
<th>Latent timer (no validity coding)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days into campaign</td>
<td>.23** (.04)</td>
<td>.21** (.04)</td>
<td>.14** (.04)</td>
</tr>
<tr>
<td>Partisan extremity</td>
<td>.16** (.04)</td>
<td>.17** (.04)</td>
<td>.39** (.04)</td>
</tr>
<tr>
<td>Ideological extremity</td>
<td>.07 (.11)</td>
<td>.08 (.11)</td>
<td>.19 (.11)</td>
</tr>
<tr>
<td>Read newspaper</td>
<td>.01 (.01)</td>
<td>.01 (.01)</td>
<td>.01 (.01)</td>
</tr>
<tr>
<td>Age</td>
<td>.00 (.00)</td>
<td>.00 (.00)</td>
<td>−.00 (.00)</td>
</tr>
<tr>
<td>Education</td>
<td>.07** (.02)</td>
<td>.06** (.02)</td>
<td>.04* (.02)</td>
</tr>
<tr>
<td>N</td>
<td>1952</td>
<td>2009</td>
<td>1972</td>
</tr>
</tbody>
</table>

Note. Source: 1998 Ohio State University Buckeye State Poll. Stratified Cox models. Standard errors in parentheses. Each model is stratified by interviewer, baseline speed of response (0 = response time below median on computer ownership question, 1 = above median), and total time of interview (in minutes).
*p < .05; **p < .01.

the latent timer measure of response latency on PID. This model also ignores the interviewer’s validity coding. All three models are based on the natural log of the latencies, following the convention of setting latencies more than 3 standard deviations above the mean to missing.

Overall, the results presented in Table 1 show that with proper model specification, changing the measurement from active to latent timers does not change the substantive interpretation of the results. Comparing the active timer models in the first two columns shows that ignoring the interviewer’s validity coding has little effect on the relation between the predictors and accessibility of partisanship. This is not to suggest that validity coding when using active timers is superfluous, but at least in this case, lacking validity coding does not substantially change the results. There are differences between the active timer models in the first two columns and the latent timer model in the third column. The coefficient on “days into campaign” is smaller in the latent timer model and the coefficient on partisan extremity is larger. However, the substantive interpretation is essentially the same—accessibility of partisanship increases over the campaign season, and extreme partisans have more accessible partisan orientations than weak partisans. The results are not identical in the active and latent timer models, but the similarity of the substantive interpretations provides support for our contention that, with appropriate controls, latent timers may be used in place of active timers as measures of response latency where response latency is the dependent variable.

4.3 Response Latency as an Independent Variable

Latent timers as measures of response latency are likely to be used most fruitfully by political scientists as independent variables rather than dependent variables. Huckfeldt et al. (1999), for example, use active response latency measures on standard PID and ideology questions to show that accessibility of partisanship and ideology moderate the influence of these
Table 2  Replication of the first model of Huckfeldt et al.: effect of ideology on support for government spending, contingent on accessibility of ideology, controlling for baseline speed of response

<table>
<thead>
<tr>
<th></th>
<th>Active timer model</th>
<th>Latent timer model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>29.99** (.66)</td>
<td>17.65 (14.85)</td>
</tr>
<tr>
<td>Ideology</td>
<td>-1.44** (.16)</td>
<td>-1.46** (.16)</td>
</tr>
<tr>
<td>Baseline speed</td>
<td>-.65 (.79)</td>
<td>-.59 (.79)</td>
</tr>
<tr>
<td>Interviewer control</td>
<td></td>
<td>1.75 (2.08)</td>
</tr>
<tr>
<td>Ideological response time</td>
<td>1.38 (.78)</td>
<td>.90 (.81)</td>
</tr>
<tr>
<td>Baseline speed × ideology</td>
<td>.02 (.19)</td>
<td>.04 (.19)</td>
</tr>
<tr>
<td>Ideology response time × ideology</td>
<td>-.55** (.19)</td>
<td>-.46* (.20)</td>
</tr>
<tr>
<td>N</td>
<td>1710</td>
<td>1802</td>
</tr>
</tbody>
</table>


orientations on political opinions and candidate evaluations. Here we compare the results of pairs of active vs. latent timer models that replicate models presented elsewhere by Huckfeldt et al. (1999) that include response latency as independent, rather than dependent, variables.

The data for this analysis come from the 1996–1997 Indianapolis-St. Louis Political Network Election Study. The first column of Table 2 replicates exactly the first model Huckfeldt and his colleagues report. Using an active timer measure of response latency on ideology, the model shows that the effect of ideology on support for government spending is greater for respondents with more accessible ideological orientations. The dependent variable in this model (support for government spending) is an index of how much of their taxes respondents would like to be spent in 11 different areas.8 Using OLS, they regressed this index on ideology (a 7-point scale), response time on the ideology question (dummy coded at the median of each category of ideology so that respondents with more accessible ideology are coded 1 and respondents with less accessible ideology are coded 0), a measure of respondents’ baseline speed of response (based on each respondent’s average response time on 10 generally non-political latent timers, dummy coded at the sample median), an interaction between ideology and response time on the ideology question, and an interaction between ideology and the baseline measure.9

The second column of Table 2 replicates the model in column 1 but replaces the active timer measure of response latency with a latent timer measure. In this and our other replications using latent timers as independent variables, we control for interviewer effects by including a measure of each interviewer’s mean on the latent timer. Like Huckfeldt and his colleagues do with the active timers, we take the median split within each category of ideology and use this as our measure of response latency. To control for both baseline speed of response and respondents’ speed of verbalizing responses to the question, we use the

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8These include arts, education, environment, international peace keeping, etc. The variable ranges from 0 (no tax dollars spent in any of these areas) to 44 (as many tax dollars as possible in each of these areas).

9Huckfeldt et al. (1999) dummy code response latency at each category of ideology to avoid conflating accessibility of ideology with extremity of ideology. Therefore, based on this measure, both moderate ideologues and extreme ideologues can have accessible or inaccessible ideological orientations.
same index of 10 latent timers that Huckfeldt and his colleagues use as their control for respondents’ baseline speed of response.

For both models presented in Table 2 the key predictors are ideology and the interaction between ideology and response time on the ideology question. The variables measuring response latency on ideology (and the interaction of ideology response time and ideology) differ between the two models. All other variables that appear in both models are the same. Because of this interaction, the coefficient on ideology represents the effect of ideology on support for government spending when response time is above the median in each category of ideology, which is to say less accessible (ideology response time = 0). The coefficient on the interaction between ideology and response time is the increase in the effect of ideology on support for government spending when response time is below the median, which is to say more accessible (ideology response time = 1). The active timer model shows that the effect of ideology on support for government spending increases by 38% \((-0.55\) minus \(-0.55\)) among respondents with more accessible ideological orientations, and the latent timer model shows that it increases by about 32% \((-0.46\) minus \(-0.46\)). Thus the latent timer model shows a slightly diminished effect, but it is very discernable and similar to the substantive interpretation of the active timer model. Both the active and latent timer models show that accessibility increases the effect of ideology on support for government spending.

We replicated all 10 of the response latency models presented by Huckfeldt et al. (1999) using latent timers and found a recurrent pattern: The latent timer models show somewhat diminished but still clearly discernable effects. For example, our replication of their second model shows that the effect of ideology on an index of ideologically consistent support for various social issues (abortion, death penalty, school choice, etc.) increases by 41% among respondents with accessible ideology in the active timer model and by 30% in the latent timer model. Similarly, they present an active timer model showing that the relationship between ideology and partisanship is increased by 42% among respondents with more accessible ideology. Our replication using a latent timer on the ideology question shows the relationship is increased by 34%. The only contradictory evidence from our replications emerges in a single model from a table of five models that examine the effects of accessibility of partisanship on evaluations of various political figures. Our latent timer models do a good job replicating the active timer models predicting evaluations of Bill Clinton, Bob Dole, Al Gore, and Newt Gingrich, but the coefficients in the latent timer model predicting evaluations of Jack Kemp do not approach significance. Overall, however, the latent and active timer models produce statistically and substantively similar results, supporting our contention that latent timers may be used as measures of response latency, especially where response latency is an independent variable.

5 Conclusion

Over the past decade, political scientists have begun to incorporate measures of response latency in telephone surveys to demonstrate the influence of attitude accessibility on political attitudes and behavior. Accessibility reflects the strength of the association in memory between an attitude object and an evaluation (Fazio and Williams 1986). As measures of attitude accessibility, response latency timers provide researchers with the benefit of an operative and objective measure of attitude strength that is not subject to the biases

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10 Similarly, because of the interaction the coefficient on ideology response time is the effect when ideology equals zero, which is “extreme liberal” on the ideology scale.

11 See our appendix on the Political Analysis Web site for our replications of these other nine models.
of respondents’ self-reports (Bassili and Krosnick 2000). In this article we discussed the mechanics of measuring response latency in telephone surveys and presented a new method of collecting and analyzing response latency data. We hope that our discussion of response latency measures in general, and our low-cost, low-maintenance method of measuring response time in particular, will increase the collection and use of response latency data.

We presented evidence that demonstrates that with appropriate controls for the verbal interaction between interviewer and respondent, latent timers might be used effectively as measures of response latency in public opinion research. Traditional methods of gathering response latency data in survey research require either expensive hardware or substantial interviewer time and training. Latent timers, by contrast, are transparent both to interviewer and respondent, and are virtually cost-free. We replicated several substantive models published or presented elsewhere that employed active latency timers as either dependent or independent variables. In each case we then replaced the active timer measure of response latency with our new latent timer measure and compared the results of the two models. Our replications show that latent timers provide an adequate, useful, widely available, and low-cost alternative to active response latency timers.

References

Response Latency Methodology