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Evaluation of Media Exposure Items
In the 1989 NES Pilot Study

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The 1989 Pilot Study devoted a significant amount of space to the measurement of mass media exposure. It also incorporated a series of innovative questions that directly assessed whether respondents had learned the fundamental details of a variety of news stories that were prominently featured by the media during the interviewing periods. The Pilot thus provided an excellent opportunity to evaluate the reliability and predictive validity of alternative measures of mass media use. Briefly, our examination of the data leaves us with the following set of five general conclusions and recommendations.

1. *Over-reporting of media use by respondents appears to be substantial.* For this reason, efforts to reduce exaggeration -- through techniques such as the current NES practice of narrowing the reference period for reports of media use to the past week -- should be continued.

2. *We can safely set aside concerns that narrowing the reference period for exposure questions to a single week might result in less reliable or valid assessment of general patterns of media use.* Results of a split-sample question-wording experiment comparing alternate question versions -- one asking respondents to report levels of media use in "the past week" and another in "a typical week" -- indicate that the "typical week" wording produces higher mean levels of reported use, but offers no particular advantage in predicting actual reception of the news. Furthermore, comparisons of exposure items across three time points (the pre-election wave of the 1988 NES and the two waves of the Pilot) illustrate that questions framed in the "past week" version are indeed reflective of general media use.

3. *Self-reported rates of media exposure are only weakly predictive of actual news reception.* The media use items carried on the Pilot do not predict respondents' ability to recall major news stories to the degree we had anticipated. In fact, a standard measure of background political information is far more useful in discriminating which persons learn about major news events from the media -- even non-political stories, such as an airline disaster or the courtroom appearance of a Hollywood actress. Although this finding does not necessarily indict self-report exposure measures as invalid indicators of

simple exposure to news (as in being in the mere presence of a televised news broadcast), it does raise important questions about their validity as measures of attentiveness to news or as indicators of news reception. Thus, media use measures may be quite problematic for certain analytical purposes (e.g., for the purpose of identifying those people most likely to have acquired a particular piece of news over the course of a campaign).

4. Despite our best efforts to improve upon current NES self-report exposure measures, these items remain as reliable and valid as any of the alternatives carried on the Pilot. Questions about media exposure are quite difficult to combine into workable scale measures, due in large part to the multidimensionality of mass media use. In fact, the best scale measures of exposure we were able to construct did not perform appreciably better than single items. On the bright side, however, the current NES measures do appear to reflect stable underlying phenomena. Measures of exposure gathered nearly a year before the Pilot (in the 1988 pre-election study) predict the actual reception of news during the Pilot Study interviewing periods just as well as the exposure items carried on the Pilot itself.

5. Direct assessment of news reception, through simple questions asking respondents whether they remember and can recall the basic details of particular news events, is both a practical and highly useful survey technique. With such items, we have been able to develop and test a diffusion model that allows for the estimation of how quickly different news stories get out to the public, which segments of the public are most likely to learn of them, and how long they are remembered. We suggest that the NES Board consider the possibility of incorporating similar measures into future studies, where appropriate. Although somewhat ill-suited for face-to-face interviewing, our technology is easily applied in telephone surveys (such as NES primary studies). The ability to monitor the diffusion of news about particular campaign events and issues would significantly enhance our ability to understand the effects of campaigns on election outcomes.

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Our report is divided into five sections, summarizing the research and findings that support each of the five general conclusions outlined above. In some cases -- as in our discussion of results bearing upon alternate question wordings -- we will report our findings in some detail. In other cases

-- for example, when we consider the predictive validity of self-reported media exposure and the comparative superiority of political information in measuring the likelihood of news reception -- we will simply summarize findings from our two attached papers:

"Measuring Individual Differences in Likelihood of News Reception," drafted for presentation at the 1990 annual meeting of the American Political Science Association.

"In One Ear and Out the Other: Learning and Forgetting of the News," drafted for presentation at the annual meeting of the Midwest Political Science Association.

OVER-REPORTING OF MEDIA EXPOSURE

The assessment of media exposure through the use of survey questions is a challenging task, for both researcher and subject. Respondents may experience considerable difficulty in recalling accurately the details of what is often a very low-salience set of behaviors (e.g., casually browsing through the newspaper, watching television while relaxing with family, or picking up a magazine in one's spare time). There is also a considerable danger that respondents will answer questions about media use, not on the basis of what they can recall about their actual behavior, but rather on the basis of their ideas concerning how they would *like* to behave or out of a wish to meet the perceived expectations of the interviewer. The possibility of exaggerated reports of media use would appear particularly great in surveys dealing with public affairs; still it is very difficult to estimate exactly how much over-reporting, if any, actually occurs.

Selected questions from the Pilot study, however, can help give us some indication of the extent of over-reporting. In particular, wave two respondents were asked how often in a typical week they made use of a number of very specific news sources: for example, the *Wall Street Journal*, C-SPAN television programming, National Public Radio, and the MacNeil/Lehrer News Hour on PBS.

Results. Far greater numbers of Pilot respondents claim to use each of these news sources than other, presumably more reliable, evidence would suggest. For instance, 35 percent said they listen to National Public Radio. Data collected by the Arbitron Ratings Company through the use of detailed weekly diaries, however, place the proportion of adults listening to NPR at least once a week at 6 percent. Moreover, while our Pilot respondents who claim to be NPR listeners reported listening an average of 4 days per week, NPR's internal estimate is that most listeners tune in just 2 to 3 times a

week.¹

Reported reading of the *Wall Street Journal* by Pilot respondents appears similarly exaggerated. Estimates of readership based on the 1984 and 1988 NES election surveys, where respondents are asked to name the particular newspaper or papers they read, put the figure at around 2 percent of respondents. By comparison, 10 percent of our Pilot respondents replied affirmatively to the question, "In a typical week, do you get any news from the *Wall Street Journal*?" And while the offices of the *Wall Street Journal* tell us that 10 percent of people earning more than \$60 thousand read their newspaper, the comparable estimate based upon responses to the Pilot question is 24 percent (14 out of 59 respondents).

Given that these are each "elite" news outlets, we might naturally expect higher than usual rates of over-reporting in response to such questions. But even less clearly elite forms of media use may be susceptible to exaggeration. For example, the three major television networks together account for roughly a 30 percent share of the households with television (*Electronic Media*, December 11, 1989). Although we cannot directly compare such a figure to our survey results, an extrapolation from the Pilot respondents' reported days per week of viewing national network news would result in an estimated share of households much closer to 50 percent (e.g., 38 percent reported watching national network news 5 or more days per week, and only 17 percent reported watching none of the network news broadcasts).

We can draw no firm conclusions from these results regarding the precise extent of the exaggeration produced by responses to the current NES exposure items, nor can we safely infer that the problem stems from a social desirability response set. But these results do suggest that an over-reporting problem exists, and that the degree of exaggeration may be substantial.²

"PAST WEEK" VERSUS "TYPICAL WEEK" REFERENCE PERIODS

One of the measurement issues of concern to the Pilot Study Committee is the impact of varying

¹ These data were obtained from a telephone call to the offices of National Public Radio.

² The higher levels of reported media use we found in the Pilot do not appear to stem from sampling problems associated with the panel design. The mean levels of television viewing and newspaper reading during the Pilot, for example, do not differ markedly from those reported in the 1988 pre-election survey.

time frames in questions about media exposure (i.e., asking about media use "in a typical week" as against "in the past week"). Although narrowing the reference period should theoretically aid respondents in recalling their own recent behavior -- and thus help to mitigate the potential exaggeration problems we note above -- there is some worry that week-to-week fluctuations in media use might render questions using the shorter reference period problematic.

For this reason, several of the exposure items on the Pilot were run in alternate wordings as part of a split-sample experiment. Forms A and B carried the questions using the "past week" reference period, while forms C and D carried the identical questions with a "typical week" time frame. In addition, wave one respondents who were asked about their television news viewing and newspaper reading in the *past* week were also subsequently asked whether that particular week was typical with respect to their media use habits and, if not, to report their levels of viewing or newspaper reading in a *typical* week.

Results. A majority of Pilot respondents said that their media use in the past week was indeed typical of most. Seventy percent indicated that the past week was typical with reference to the amount of news they watched on TV, while 80 percent reported that their pattern of newspaper reading in the past week was typical. Of those respondents who indicated that the past week was *not* typical, about one-third said that their usual rate of exposure was lower (or the same), while two-thirds reported that their exposure during a typical week was greater than in the past week. Thus the self-reported differences between media exposure in the past week and in a typical week lean systematically toward heavier use in a typical week -- an average of 1.5 more days per week for television news viewing and 2.3 days per week for newspaper reading. Although this result may have been due to the particular period of time during which these questions were asked (summertime media use could have dropped off due to vacations, for example), it may just as well have stemmed from a tendency to over-report "typical" exposure rates.

Results of the split-sample wording experiment similarly indicate that providing a "typical week" time frame in media exposure questions produces higher mean rates of reported usage. Table 1 displays item descriptive statistics, broken down by wording form, for the wide variety of exposure questions that were carried in alternate wordings. In 16 out of 18 tests the "typical week" mean is higher,

Table 1

Reported Media Exposure By Question Wording Form

Exposure Item	Wording Form	Wave One			Wave Two ^a		
		Mean	(SD)	N	Mean	(SD)	N
Newspaper							
Daily Newspaper	Past Week	3.80	(2.72)	311			
	Typical Week	4.57**	(2.59)	301			
Attention to Nat'l News ^b	Past Week	2.94	(1.06)	257			
	Typical Week	3.16*	(.94)	271			
Television							
News (non-specific)	Past week	4.12	(2.50)	310			
	Typical week	4.68**	(2.18)	301			
Attention to Nat'l News ^b	Past week	3.13	(1.06)	276			
	Typical week	3.36*	(.96)	280			
National Network News	Past Week	3.05	(2.51)	312			
	Typical Week	3.72**	(2.28)	301			
Local and State News	Past Week	4.07	(2.41)	310			
	Typical Week	4.49*	(2.24)	301			
Morning News Programs	Past Week	1.66	(2.37)	312	1.54	(2.12)	243
	Typical Week	1.78	(2.23)	300	1.49	(2.12)	241
Nighttime Entertainment	Past Week	2.75	(2.32)	308	2.56	(2.24)	250
	Typical Week	3.14*	(2.12)	299	3.08**	(2.17)	241
Radio							
Talk Radio	Past Week	.67	(1.60)	311	.83	(1.72)	250
	Typical Week	.99*	(1.78)	300	.83	(1.62)	242
News Programs	Past Week	.80	(1.81)	311	1.17	(2.03)	249
	Typical Week	1.14*	(1.96)	300	1.23	(2.02)	241
News on the Hour	Past Week	3.41	(2.68)	309	3.70	(2.65)	249
	Typical Week	4.11**	(2.56)	299	3.95	(2.54)	241
Magazine							
News Magazines ^a	Past Week	.20	(.40)	312	.19	(.39)	251
	Typical Week	.32**	(.47)	302	.26*	(.44)	242

a Only a subset of the split-sample items were repeated in alternate wordings on wave two.

b Attention questions have a response scale from 0="none" to 5="a great deal" and smaller *N*s because they were only asked of those respondents reporting some newspaper reading or TV news viewing. News magazine reading is coded 0=non-reader and 1=reader of at least one magazine. All other items means represent days per week.

* Difference between wording forms significant at level $p < .05$, two-tailed.

** Difference between wording forms significant at level $p < .01$, two-tailed.

and in 13 cases the difference is statistically significant. Not only does the "typical week" version produce higher means for the exposure questions, it also produces significantly higher reports of *attention* paid to news about national politics (items which are follow-ups to the questions asking about rates of newspaper reading and TV news watching). Although we might reasonably suspect that social desirability response set accounts for these systematic differences, it is interesting to note that the "typical week" version also produced significantly higher mean rates of viewing "nighttime entertainment programs like comedies or dramas" on television -- a result opposite to that we would have predicted on the basis of social desirability expectations.

The two alternate time frames, then, clearly exert an influence on response patterns. The more critical issue, however, is whether these distributional differences affect the predictive validity of the items. In fact the two versions perform comparably in predicting actual reception of the news, the single best criterion available for validation. Relative performance was assessed by regressing (using a logistic model) several dichotomous news story recall measures (e.g., correct recall of Wright's resignation, of recent Supreme Court decisions, or of investigations into HUD activities) on the media exposure item in question, a dummy variable representing the wording form, and an interaction term (exposure measure x wording form) to test the differential impact of question wording. These tests indicated no substantive or significant interactions between wording form and the exposure variables in the prediction of actual news reception.

The overall pattern of findings bearing on this question is best summarized by the results presented in Table 2. Here, several dichotomous story recall items have been combined, for the sake of simplicity, into single additive measures of news reception for each wave (wave one news reception, $\text{Alpha} = .75$; wave two, $\text{Alpha} = .69$). These measures of news reception are then regressed, using ordinary least squares methods, on three independent variables: a wave one exposure measure, a dummy variable for wording form (0="past week," 1="typical week"), and an interaction term (wording form x media exposure measure). The coefficients for the interaction thus represent the estimated effects of the "typical week" form, over and above the "past week" version. As can be seen from the results in Table 2, these coefficients are relatively small and generally non-significant. Indeed the only statistically significant interaction term, which occurs in the anomalous case of talk radio listening,

Table 2
Effects of Media Exposure on News Reception
By Question Wording Form

Exposure Item ^b	Wave One ^a			Wave Two		
	"Past Week" Effect	"Typ. Week" Differential	N	"Past Week" Effect	"Typ. Week" Differential	N
Newspaper						
Daily Newspaper	.27** ^c	.06	590	.18**	.10	467
Attention to National News	.31**	.06	507	.28**	.09	407
Television						
News (non-specific)	.23**	.03	590	.13*	.04	467
Attention to National News	.38**	.06	537	.31**	.05	431
National Network News	.22**	.05	591	.14*	.05	468
Local and State News	.14*	-.01	589	.08	-.02	466
Morning News Programs	.08	.04	589	.14*	-.02	468
Nighttime Entertainment	-.01	-.01	586	-.05	.03	464
Radio						
Talk Radio	.24**	-.17**	589	.09	-.03	467
News Programs	.15*	-.01	589	.09	.03	467
News on the Hour	.14*	.07	586	.12	.05	464
Magazine						
News Magazines	.25**	-.04	594	.19*	.04	469

a News reception was measured at wave one by counting how many out of five major stories (Wright's resignation, North's sentencing, the Supreme Court's decisions on the death penalty and abortion, and HUD investigations) respondents were able to recall (Alpha = .75). Wave two news reception was based on a count of four stories (Jim Bakker's trial, HUD investigations, the Supreme Court's abortion decision, and North's sentence; Alpha = .69).

b All exposure items are from wave one.

c Effect estimates are OLS regression coefficients, generated by estimating the equation

$$\text{Reception} = \beta_0 + \beta_1(\text{Exposure Measure}) + \beta_2(\text{Wording Form}) + \beta_3(\text{Exposure Measure} \times \text{Wording Form}) + \epsilon$$

where Wording Form takes the values 0="past week" and 1="typical week" and where news reception and media exposure measures are standardized. The estimate of β_1 thus represents a baseline assessment of the relationship between news reception and exposure in the "past week" question form, and the additional impact of wording the question in the "typical week" form is assessed by the estimate of β_3 .

* Significant at level $p < .05$, two-tailed.

** Significant at level $p < .01$, two-tailed.

strongly favors the "past week" version.

Moreover, a comparison of the relationships between news reception and exposure measures gathered over three waves -- the pre-election wave of the 1988 NES and both waves of the Pilot -- demonstrates that worries about the typicality of sampled weeks affecting the performance of current NES questions are largely unfounded. Table 3 lists several exposure items that were carried at each of these three points in time, and displays their zero-order correlations with news reception (measured on each wave of the Pilot Study). Note that the pre-election exposure measures, all of which asked about media use during *particular* weeks between September and November of 1988, correlate just as strongly with news reception during the Pilot Study period as do the media use items carried on the Pilot itself. Likewise, exposure assessed in wave two of the Pilot relates well with news reception measured a month or more *earlier*, at wave one. Such findings corroborate and amplify other research that has found levels of self-reported media use to be highly stable over time (e.g., Allen & Taylor, 1985; Chaffee & Schleuder, 1986; Ritchie, Price & Roberts, 1987).

We conclude from these analyses that there is little cause to worry that the current questions using a "days in the past week" reference period fail to reflect general patterns of media use. Although we lack any conclusive empirical evidence favoring one of the alternate wordings over the other, we recommend retaining the current "past week" approach. Consistently worded questions across NES surveys will maintain maximum comparability of data over time, and we have uncovered no persuasive evidence suggesting that the current wording is problematic. Also, the use of a narrower time frame follows recommended survey practice (e.g., Converse & Presser, 1986), seems intuitively more likely to reduce respondent burden, and may help to counter potential over-reporting.

THE PREDICTIVE VALIDITY OF SELF-REPORTED EXPOSURE

The most distinctive feature of the 1989 Pilot Study, with reference to the measurement of media exposure, was the fact that it carried a series of questions that directly assessed the acquisition of information relayed by the mass media. Eight paired recognition and recall questions on each wave of the Pilot determined whether respondents could correctly remember the basic details of recent and prominent news events. The CATI design of the study permitted us to substitute new questions in the

Table 3

Correlations between Media Exposure and News Reception^a

Exposure Item	Wave 1 Reception		Wave 2 Reception	
	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>
Pre-Election Wave				
Daily Newspaper	.28**	593	.24**	470
Newspaper: Attention to Campaign News ^b	.39**	469	.36**	469
TV News (non-specific)	.21**	592	.15**	469
TV News: Attention to Campaign News	.35**	592	.27**	469
News Magazines	.28**	592	.24**	469
Pilot Study Wave One				
Daily Newspaper	.31**	591	.22**	468
Newspaper: Attention to National News	.35**	593	.31**	470
TV News (non-specific)	.25**	591	.14**	486
TV News: Attention to National News	.38**	591	.25**	470
News Magazines	.22**	593	.20**	470
Pilot Study Wave Two				
Daily Newspaper	.29**	476	.25**	470
News Magazines	.32**	475	.28**	469

a News reception was measured at wave one by counting how many out of five major stories (Wright's resignation, North's sentencing, the Supreme Court's decisions on the death penalty and abortion, and HUD investigations) respondents were able to recall (Alpha = .75). Wave two news reception was based on a count of four stories (Jim Bakker's trial, HUD investigations, the Supreme Court's abortion decision, and North's sentence; Alpha = .69).

b Attention measures have a response scale from 0="none" to 5="a great deal." Respondents were coded as 0 on these attention measures if they reported no newspaper reading or television news viewing. News magazine reading is coded 0=non-reader and 1=reader of at least one magazine. All other questions coded in days per week.

* Significant at level $p < .05$, two-tailed.

** Significant at level $p < .01$, two-tailed.

survey on an on-going basis as fresh news broke, giving us the flexibility to select a wide range of stories for investigation. We chose many news items that would capture the recall of standard impersonal political news: for example, an arms-reduction initiative by Michail Gorbachev, the resignation of House Speaker Jim Wright, and House investigations into possible HUD improprieties. We also selected a number of stories with more dramatic, human-interest qualities: the crash of a DC-10 airliner, former President Reagan's surgery to relieve fluid build-up on his brain, and the trials of TV evangelist Jim Bakker and actress Zsa Zsa Gabor. (For more information concerning these items, see Table 2 of the attached paper on measuring news reception, which we have prepared for presentation at the 1990 APSA conference.)

These direct measures of news reception provide us with an excellent set of criterion variables for assessing the validity of the media exposure measures. They also give us an opportunity to evaluate the utility of some alternative approaches to the survey measurement of media exposure.

One key problem faced in the measurement of media exposure, for example, is the tremendous variety of ways people may choose to stay informed on matter of public affairs. The current NES exposure questions ask respondents about their use of several broad types of media: television news, newspapers, radio, and news magazines. Yet there are enormous variations within as well as between these media. Indeed, differences in exposure to content within-media may be even larger than across-media differences. Thus, even if respondents answer the current media exposure questions accurately, they could still be reporting qualitatively different forms of experience. How does one judiciously assess the most effective forms of exposure, given this substantial variety?

To address this question, we included in the Pilot Study a broad collection of exposure measures that distinguish between both content (e.g., entertainment news, local news, national and foreign news) as well as form (e.g., radio, television, newspapers). In particular, we focused on questions that would distinguish

- a) *locally-oriented* media which, although they carry national and international news, carry it in an abbreviated fashion, and which also tend to focus on crime, human interest, sports, and celebrity events; and
- b) *Nationally-oriented* or "high-brow" outlets which, although they carry crime and human interest stories, focus more on matters of national politics and international affairs.

Measures of media exposure that make no such distinction may leave these important differences completely confounded. One of our goals in the Pilot Study was to determine whether the current NES exposure measures could be improved upon through attempts to assess, not simply the frequency of reading the newspaper or watching the news on TV, but also -- much more specifically -- the frequency of reading newspaper stories about international, national, local and state news; listening to "spot news," full-length news programs, or talk-shows on the radio; and watching local "action" news or national network news on television. Our expectation was that only people attending to nationally-oriented media outlets would be heavily exposed to standard, impersonal political news, but that persons would learn about human interest stories through either nationally-oriented or locally-oriented media.

Results. The results of our analyses are reported in detail in the attached APSA paper. We regressed each of 16 different dichotomous news reception measures (coded 1 if the respondent recalled a particular story, 0 if he or she failed to recall it) on our set of wave one media exposure measures. Briefly, we found that measures of national news media exposure (days in the past week reported viewing national TV news broadcasts, and reported frequency of reading stories about national and international news in the newspaper) were the most consistent predictors of news reception, across 15 different stories (see attached Price & Zaller paper, Table 3). As expected, items measuring exposure to news through locally-oriented outlets generally failed to predict whether respondents acquired the fundamental details of prominent news stories -- even, somewhat surprisingly, in the case of stories (such as Zsa Zsa Gabor's trial for slapping a Beverly Hills police officer) that received heavier coverage in these outlets than in most national news outlets.

But even in the case of national and international news media exposure, the magnitude of the relationships between reported exposure and actual news reception is relatively weak overall, and the pattern of significant effects obtained across various measures is not clearly interpretable. Foreign news exposure, for example, predicts knowledge of Wright's resignation and the Supreme Court's decision on the death penalty (both domestic events), but *not* recall of Gorbachev's peace initiative or Bush's trip to the economic summit meetings in France. And although local TV news viewing was expected to predict knowledge of more vivid stories (such as Zsa Zsa Gabor's trial), it proved to be a significant predictor of only one story -- the Congressional debate over repeal of the government's Catastrophic Health

Insurance Plan.

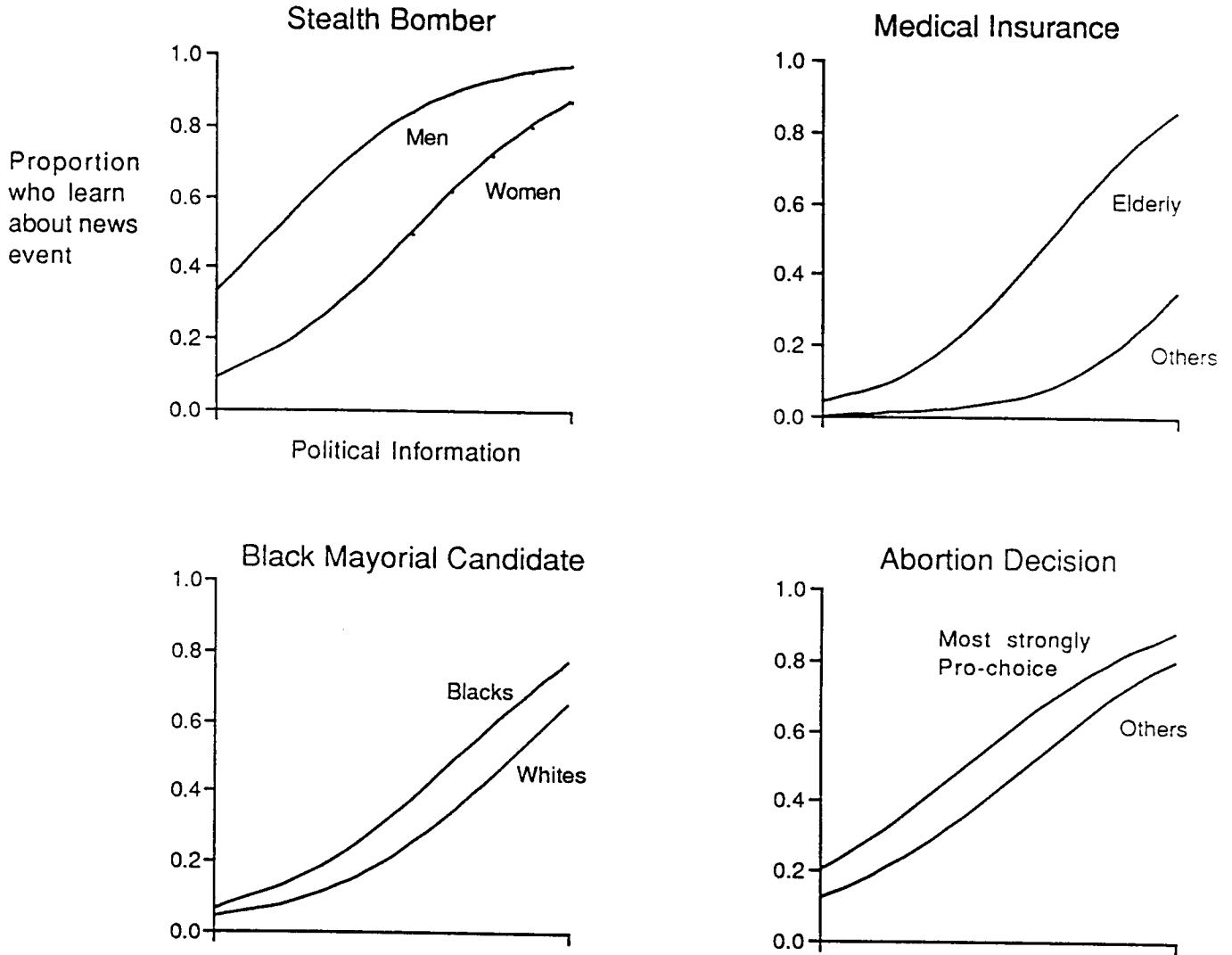
What's more, when a measure of general political information is included in the model, many of the significant coefficients obtained for the media exposure items disappear (see Table 4 in our APSA paper). In all cases information far outperforms the media exposure items, and in several cases it is the *only* predictor with a statistically significant coefficient. Information even has strong effects on learning about Zsa Zsa Gabor's trial and the crash of a DC-10 in Iowa, events which had nothing to do with politics per se. Although some of the media exposure items (particularly national TV news viewing) do have important effects in some cases, it is again quite difficult to discern any clear patterns. We also investigated several possible interactions between information and media exposure -- such as the possibility that information multiplies the effect of media exposure -- but we found no evidence to support our expectations.

We conclude from these findings that self-reports of media exposure are rather poor indicators of news reception -- a criterion which they should in theory predict relatively well. In fact, if a researcher wishes to determine which respondents to a survey are most likely to have received any particular news story, the preferred indicator would *not* be self-reported media exposure, but rather levels of general political information.

In our attached APSA paper, we deal at length with two possible objections to our conclusion that general political information can be used to measure the likelihood of news reception. One is the contention, advanced by Iyengar (1985) and others, that people acquire information largely on a domain-specific basis. Our analyses did indeed uncover several important instances of domain-specific learning from the news. Men were more likely, for example, to learn about the maiden flight of the stealth bomber than were women; blacks were more likely than whites to know of David Dinkins's victory over Ed Koch in the New York mayoral primary; and the elderly were far more likely than others to learn about the debate over catastrophic health insurance (see plotted data displayed in Figure 1). But in each of these cases, the domain-specific effects supplement rather than override the effects associated with general political information; and there were more cases where we failed to find any evidence of hypothesized domain-specific effects or found only small effects.

A second possible objection to the use of general information as a measure of news reception is

Figure 1
 Domain Specific Influences on
 Learning about the News*



* These plots represent fitted data, using coefficients estimated by logistical regressions (see attached APSA paper for details). Information levels depicted on the horizontal of each plot run from roughly the 5th percentile to the 95th percentile. The effect of race on recall of Dinkins' victory over Koch in the New York mayoral primary (the lower left-hand plot) is not statistically significant. All other effects displayed are significant at level $p < .05$.

that *attitudinal* effects of news exposure can occur, even though the details of the news are very quickly forgotten. In this case, measures of media exposure may capture these attitudinal effects better than a measure of political information. But an investigation of attitude change in response to news of the Iran-Contra scandal illustrates that this is not the case: The likelihood of news reception does affect attitude change, but the effect is again better specified by political information than by reported media exposure (see Figure 2 of the attached paper on news reception).

ALTERNATIVE MEASURES OF MEDIA EXPOSURE

As we note in the accompanying APSA paper, some of the unevenness in the performance of media exposure measures in our analyses must be attributed to multicollinearity. Many of the exposure measures are moderately inter-correlated, and most exhibit similar modest correlations with the news reception items (see, for example, the coefficients in Tables 2 and 3 above). Given this situation, which particular exposure measure achieves a significant coefficient in our regression analyses is largely a matter of chance.

It would therefore be useful to find a way of combining exposure items into a composite scale (or scales) to eliminate this problem and to improve their reliability. Unfortunately, there are several impediments to these efforts. First, as noted above, there are considerable differences in both form and content across various media outlets. Many individuals rank very highly on one or two measures and very low on some others (e.g., someone can be in the top quartile of national newspaper exposure and in the bottom quartile of national network news viewing). To average such respondents' scores would give them "intermediate" values on an exposure scale, thereby obscuring the fact that they may be quite efficient and effective in their chosen method of news exposure. How, then, are we to combine separate exposure items? The wide variety of items on the Pilot gave us an opportunity to explore this problem, and to attempt several solutions.

Results. Our efforts along these line are essentially for naught. The fundamental problem is well illustrated by Table 4, which presents the results of a series of confirmatory factor analyses performed on a subset of wave one media exposure questions (for the sake of clarity, only television and newspaper items have been included). From left to right, Table 4 displays the results of fitting several different

Table 4

Confirmatory Factor Analysis of Selected Exposure Items

Exposure Item ^a	1 Factor	2 Factor		2 Factor		4 Factor			
	Exposure	Nat'l	Loc'l	NP	TV	NP Nat'l	NP Loc'l	TV Nat'l	TV Loc'l
Daily Newspaper (non-specific)	.48	.38	.19	.46		.05	.65		
Newspaper: Attention to National News	.77	.78		.71		.73			
Newspaper International News	.77	.80		.82		.82			
Newspaper National News	.79	.82		.88		.87			
Newspaper Local and State News	.33		.25	.34			.51		
Television News (non-specific)	.41	.08	.77		.89			.06	.85
TV News: Attention to National News	.65	.63			.44			.59	
Television National News	.47	.41			.74			.75	
Television Local and State News	.39		.95		.83				.84
Chi-Square	801.70	451.55		319.05				192.20	
(df)	(27)	(24)		(26)				(19)	
p	.00	.00		.00				.00	
Adjusted Goodnes of Fit Index	.27	.62		.70				.87	

a All media exposure measures are from wave one. Listwise deletion of cases resulted in an *N* of 476 for the analysis, owing to the fewer cases available on the two attention measures.

b Column entries are factor loadings estimated by maximum likelihood method through LISREL.

measurement models: first, a single-factor "exposure" model; second, a 2-factor "content" model, which distinguishes between national and local news exposure; third, a 2-factor "form" model, which distinguishes between newspapers and television; and finally, a 4-factor model that accommodates differences in both form and content. In estimating the models that included national and local news factors, the two measures that were non-specific in this regard (the current NES standard newspaper and TV news questions) were allowed to load on both content factors.

As indicated by the goodness-of-fit measures associated with each solution in Table 4, the most parsimonious measurement models do not fit the data well at all. Clearly, the analyst who decides simply to sum scores across these measures would be venturing onto shaky ground. By allowing additional factors, we achieve significantly better fits to the data (i.e., the difference Chi-squares obtained for successive model fits, moving from left to right across the table, are each statistically significant at level $p < .01$). But even the best-fitting factor model does not fit the data extremely well.

If one were to combine these items, then, the most defensible strategy is to build a three-item newspaper/national news scale (by combining the measure of "attention to national politics" in the newspaper, the reported frequency of reading newspaper stories about "national affairs and politics", and the frequency of reading newspaper stories about "international and world affairs") and a two-item television/national news scale (by combining the measure of "attention to national politics" on television and the days per week reported viewing "national news broadcasts"). The former has a scale reliability (Alpha) of .83, while the latter has a scale reliability of .64; the two scales are modestly intercorrelated ($r = .41, p < .01$). Combining these 5 items together into a single national media exposure scale results in a measure with a reliability coefficient of .73.

What is gained through the use of such scales in the prediction of news reception? In fact, rather little, as illustrated by Table 5. Although the media scales -- which are italicized in Table 5 -- show a slight improvement over single items in terms of their correlations with news reception, the gains in performance are substantively negligible. Actually, any *one* of the content-specific newspaper reading items (reported frequency of reading stories about national news, or about international news) or the attention measures (both for newspaper and for television) could substitute for the composite measures with very little loss. This pattern is observed, not just in correlations with news reception, but in

Table 5
Correlates of Media Exposure^a

Exposure Item ^b	Educ.	Pol. Info.	Age	White	Income	Wave 1 Recep.	Wave 2 Recep.
Newspapers							
Daily Newspaper (non-specific)	.13**	.31**	.29**	.14**	.14**	.31**	.22**
Attention to National News (1)	.21**	.40**	.18**	.10**	.13**	.35**	.31**
Newspaper International News (2)	.26**	.34**	.09*	.09*	.22*	.34**	.31**
Newspaper National News (3)	.27**	.45**	.09*	.10**	.22**	.37**	.32**
Newspaper Local News	.11**	.20**	.09*	.12**	.09*	.17**	.14**
<i>Nat'l Newspaper Exposure (1+2+3)</i>	.27**	.47**	.14**	.11**	.20**	.39**	.35**
Television							
Television News (non-specific)	.00	.18**	.31**	.01	-.07	.25**	.14**
Attention to National News (4)	.20**	.36**	.17**	.05	.06	.38**	.25**
Television National News (5)	.02	.17**	.29**	-.01	-.06	.26**	.17**
Television Local News	-.06	.05	.27**	.03	-.09*	.14*	.06
<i>Nat'l TV News Exposure (4+5)</i>	.09	.33**	.28**	.01	-.02	.33**	.22**
<i>Nat'l Media Exposure (1+2+3+4+5)</i>	.21**	.43**	.25**	.06	.10**	.43**	.33**

a All column entries are zero-order correlations.

b All exposure items are from wave one. Italicized measures are scales, built from adding together the items included in parentheses (Alpha levels reported in text).

c News reception was measured at wave one by counting how many out of five major stories (Wright's resignation, North's sentencing, the Supreme Court's decisions on the death penalty and abortion, and HUD investigations) respondents were able to recall (Alpha = .75). Wave two news reception was based on a count of four stories (Jim Bakker's trial, HUD investigations, the Supreme Court's abortion decision, and North's sentence; Alpha = .69).

* Significant at level $p < .05$, two-tailed.

** Significant at level $p < .01$, two-tailed.

correlations with socio-demographic variables as well. We attempted other measures of media exposure -- for example, counting across the number of "high-brow" media sources respondents reported using at wave two -- with similar disappointing results.

We conclude from our investigations that the current, short battery of NES media exposure questions, although problematic on a number of fronts, is about as useful as any of the alternatives we have examined. The current NES approach allocates one question to each of four media (thus capturing between-media differences) with follow-up "attention" measures that capture differential exposure to content within-media to some extent. Unfortunately, as we note above, these items are difficult to reduce or combine in any theoretically justifiable or empirically satisfying fashion, leaving us essentially with single questionnaire items or simple two-item (e.g., exposure + attention) combinations for analytical purposes.³ On the other hand, the present NES questions do seem to tap very stable individual differences. The fact that exposure items from the 1988 NES pre-election survey, which were gathered nearly one full year before the Pilot Study, are related to news reception during the Pilot interviewing periods just as strongly as the various measures carried on the Pilot itself (recall Table 3 above) makes the point all too eloquently.

DIRECT MONITORING OF NEWS RECEPTION

Although we were frustrated in our attempts to improve significantly upon the current NES media exposure items, the diffusion model we developed to validate these measures (as outlined in detail in the two accompanying papers) produced a number of significant empirical rewards. Moreover, our Pilot Study investigation demonstrated the feasibility of directly assessing the acquisition of information disseminated by the mass media, through a series of brief questions asking respondents whether they can recall the fundamental details of major stories in the news.

With the assistance of Santa Traugott of NES and Zoanne Blackburn of the Survey Research Center's telephone interviewing facility, we arranged a system for substituting questions about breaking news stories on a daily basis. The system was novel in several respects. It allowed us not only to alter

³ We should point out that we also tried another strategy, which involved multiplying exposure items by their counterpart attention items to produce "weighted" exposure measures. As with the other approaches outlined above, however, this technique produced negligible gains in predictive validity.

the CATI survey instrument repeatedly throughout the course of interviewing -- by adding and deleting questions in response to events in the news -- but also to monitor the responses to our open-ended questions a daily basis. This latter feature of the design was especially useful, as it permitted us to make informed decisions about selecting particular stories from the news stream.

Results. In general, the system put in place to accommodate our project worked extremely well. Very few administrative problems were encountered while the Pilot was in the field. The staff of the telephone interviewing facility found the procedures we established, although somewhat more complicated than usual, relatively easy to carry out. In short, the technique we developed in this Pilot Study to monitor news reception proved completely workable, and could easily be employed in future NES telephone surveys if so desired.

Although we were initially concerned that our potentially "quiz-like" questions about stories in the news might put off some our respondents, our worries proved to be groundless. In the post-study debriefing, the interviewers reported that respondents seemed to especially enjoy this portion of the study, and showed no reluctance whatsoever to answer the open-ended questions. What's more, the interviewers themselves indicated that they liked asking the questions and found this section of interview very engaging. Finally, coding of the open-ended recall questions turned out to be easier than anticipated, because we were able to devise and apply various codes to the data while the study was in progress.

But the true value of these questions, of course, lies in their analytical and empirical pay-off. As the two attached papers illustrate, we have found the pay-off to be considerable. The analytical method we have used to validate the media exposure items, for example, is actually a fairly elaborate model for assessing the diffusion of news stories throughout the public. The basic model takes as its dependent variable respondents' ability to recall particular news stories. The probability of recalling a story is modeled as the product of two functions -- a reception function and a decay (or remembering) function -- each of which is logistic in form in order to capture nonlinearities in the data. Thus, the probability that an individual will be able to recall a given story is

$$\Pr\{\text{Recall}\} = \Pr\{\text{Reception}\} \times \Pr\{\text{Remembering}\}$$

Our attached APSA paper takes as its primary focus the first component of the model. We

estimate the reception function for 16 of the news story recall items carried on the pilot. This function takes the following general form

$$\text{Pr}\{\text{Reception}\} = 1 / (1 + e^{-\beta_0 - \beta_1(\text{Information}) - \beta_2(\text{Newspaper Exposure}) - \beta_3(\text{Television Exposure}) \dots - \beta_n(\text{Media Exposure } n)})$$

where β_0 represents the effect of differential story intensity, β_1 the effect of general political information, and β_2 through β_n represent the effects of media exposure variables. To test various domain-specific effects, we include in the reception function variables that identify segments of the public that are theoretically most attentive to given stories (such as race in the case of David Dinkins' victory over Ed Koch in the New York mayoral primary, or gender in the case of news concerning the Supreme Court's abortion decision). As demonstrated in our attached paper on news reception, the model is an extremely useful tool both for analyzing the diffusion of news and for describing attitude change processes.

The paper we have drafted for the Midwest Political Science Association meetings, meanwhile, takes as its primary focus the *forgetting* of news. This is accomplished by adding to the model a decay function, similar in form to the reception function, which takes as its key variables political information (because more informed people are better able to integrate and retain information) and the number of days that have elapsed since a particular story broke. When applied to our data for the recall of Oliver North's sentencing and the Supreme Court's recent abortion decision, the exposure/decay model performs remarkably well (see attached Zaller & Price paper).

We conclude from our Pilot research that the direct assessment of news reception is both a practical and highly useful survey technique -- one that the Board may wish to consider employing in future studies as conditions permit. Our procedure would be difficult to adapt to studies employing face-to-face interviews, but is well-suited to telephone interviews. In studies of primary campaigns, for example, similar measures of news reception would allow us to better analyze the role of campaign news, including both strategic efforts on the part of candidates and various unplanned news events, in shaping candidate appraisals. We think that the ability to monitor the diffusion of news about particular campaign events would in this way significantly advance our understanding of campaign effects.

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