Measure for Measure:

Comparing Methodologies for Determining Newspaper Exposure

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November 1997

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ABSTRACT

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Measuring media exposure requires careful consideration of both the reliability and validity of the operational definitions. This study compares two ways of measuring newspaper exposure — exposure to newspapers in general and exposure to specific sections of a newspaper. The study found that respondents report more time spent with the newspaper when measuring exposure to specific sections, rather than to the newspaper overall. Although the aggregated index of exposure to specific newspaper sections did not correlate with attitude measures, results did show correlations between specific newspaper sections and knowledge and attitudes.

Measure for Measure: Comparing Methodologies
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For most communication scholars, measuring exposure to a mass medium involves little more than asking how many days a week or minutes a day the respondent uses the medium. The alternative is to ask about exposure to specific parts of the medium, such as, in a newspaper, sections for world, national state and local news; business and sports news; feature sections and advertisements (Shoemaker & Reese, 1990).   This may result in a more precise operationalization of how much time a person spends with the media.

The purpose of this study is to compare the traditional general newspaper exposure measures with measures that ask respondents to report their exposure to specific sections of the newspaper.   Four dependent variables — election knowledge, interest in current events, likelihood to vote, and perceptions of crime victims — are used as comparison points for the two indexes and for the separate newspaper sections. We want to know whether the two ways of measuring newspaper exposure correlate equally well with the dependent measures and whether the exposure to individual newspaper sections correlate differently with the dependent measures.

THEORY

Why worry about measuring newspaper exposure? Newspapers have and continue to be an important force in educating the public about the news of the day. This remains true, even in the face of fewer newspapers, fewer readers and increased reliance on television as a primary news source (Simon, 1996), declining newspaper

readership (Mayer, 1993), and the perceived decline of the influence of newspapers on

public opinion.

Stone and Boudreau (1995) cite a number of studies which chart the decline in

newspaper readership. Their concern with declining readership among young adults

formed the basis for a study which found little support for the notion that younger

readers want to be entertained more than older readers, thus refuting the belief that

television has influenced how young readers want their information presented:

> The idea that *USA Today*-type presentations, both in graphics and substance,
> appeal more to young adult readers of the television generation, is probably
> erroneous. The consistency in content preferences over time suggests that all
> readers have adapted evenly to this decade's dramatic newspaper industry
> changes" (p. 26).

The increase in the use of computers has been suggested as another reason why

print media will become obsolete, but use of personal computers probably results in a

scaling back of activities other than consumption of traditional news media (Schweitzer,

1991).

But nontraditional media forms will not likely displace more traditional mass media:

> With respect to traditional media forms, we conclude they still have a potent
> influence on the campaign. Overall, their impact was greater than that of
> nontraditional media forms. Although the contribution of newspaper use was
> somewhat greater than that for television news, both media had distinctive and
> often unique relationships to campaign processes and outcomes. Their demise
> has been greatly exaggerated," (McLeod, et al., 1996, p. 413).

Therefore, while clear evidence exists for decline in newspaper circulation and

readership, it may well be premature to assume that newspapers will not continue to

play a major role in the lives of Americans well into the next century and beyond.

Evidence indicates that discounting the impact of newspaper reading on cognitive

processes (Perse, 1990a; Price & Zaller, 1993; and Fredin, Kosicki & Becker, 1996),

particularly when studying the area of political information, would be erroneous.
Newspapers have a clear impact on voter education, with those attending only to
newspapers showing superior issue discrimination (Hollander, 1993) and those reading
newspapers having increased confidence in their voting decisions (Choi & Becker,
1987) and more knowledge about public affairs (Hollander, 1993).   Robinson and Levy
(1996) note: "Despite dwindling readership, then, newspapers remain America's
premier source of public affairs information" (p. 135).

The Quandary of Measurement

    If we believe that newspapers are still a vital and vigorous part of the electoral
process, then the question becomes how to measure readership patterns and how to
determine their connection to voter opinion, voting behavior and information held by
voters on key issues.

    Measurement of mass media use is a challenging proposition; the imprecision of
measurements can greatly affect the information gained from studies which examine
patterns of mass media consumption (Price & Zaller, 1993). But as Mayer (1993)
posits, asking questions in mass media sample surveys may not be enough to explain
what is a complex process of selectivity, information-seeking, uses and gratifications
and perhaps a host of other factors.

        John Robinson (1977) is well known for his work in trying to determine optimal
measurement devices. Robinson has found that measurement methods, particularly in
television audience measurement, may account for a great deal of the variation in
viewing time estimates. He discusses the dilemma of overestimation of television
viewing when self-reports of viewing time are the measurement; in-home camera

studies, he notes, indicate that actual time spent viewing is less than that found in self-report data (Rubinstein, Comstock, & Murray, 1972).

Recency of experience is a key determinant of more precise viewing recall. Questions asking about viewing "on an average day" will result in higher self-reports than will questions which ask about viewing "yesterday" or "last night," for example (Rubinstein, Comstock & Murray, 1972). Diary reports versus people meters result in overrepresentation in the former measure.

Social desirability may also play a role in measurement of media use. Despite popular notions that people are ashamed or embarrassed about television viewing and despite the assumed cultural sanctions against those who may watch excessive amounts of television, people are forthcoming about revealing television habits,and self-report data do not reflect deliberate underestimation of time spent watching television (Comstock, 1991).

One could speculate that the social desirability of newspaper reading is greater than that for viewing television, but data to test this hypothesis might be harder to come by. Theories related to media use might offer some explanation for why mass media consumption patterns develop for certain information-seeking situations.

Much of the research conducted in newspaper readership deals with political decision making and election information. Choi and Becker (1987) found that voters who read newspapers were better able to discern between the issues and images of gubernatorial candidates, thereby increasing the confidence they had in their own voting decisions. They also concluded that those people who actually vote attend to campaign information, "consciously and habitually" (p. 281).

Voting behavior (Simon, 1996; Emig, 1995), interest and motivation and information seeking (Gandy, Matabane & Omachonu, 1987; Gantz, Fitzmaurice & Fink, 1991), issue relevance (Chew, 1994), electability of the candidates, selectivity (Perse, 1990b), attention and perceived social interaction (Pettey, 1988), involvement (Perse, 1990a) and pre-existing political knowledge (Price & Zaller, 1993) are examined in these studies.

Issue-oriented voters tend to rely on newspapers, while image-oriented voters rely on television (Lowden, Andersen, Dozier & Lauzen, 1994). The researchers cite these two media as predominant for those seeking political information, although their findings clearly indicate that television is "the major source of political information for most voters" (p. 301).

Examining why people would turn to newspapers has provided the basis for studies which examine the application of information seeking (Pettey, 1988), media dependency (Elliot & Rosenberg, 1987), knowledge gap (Price & Zaller, 1993) and uses and gratifications theories (Canary & Spitzberg, 1993; Perse & Courtright, 1993; and McDonald, 1990). McDonald states that, since people may use different media for different reasons, comparing the use of one medium with another may be inappropriate (p. 20). Underlying these various communications theories is the notion that the audience is active (Morley, 1993), an assumption which may or may not be shared by all communications researchers today. And, as Pettey (1988) points out, the reasons why the audience attends to mass media are difficult to determine.

Measures used to describe newspaper readership have varied widely. Some studies name individual newspapers and ask which newspapers are read, "most days,

a few days a week, once a week or so, Sunday edition only, never" (Choi & Becker, 1987, p. 276). How much attention readers pay to particular types of stories has been measured by, "regularly, often, from time to time or just once in a great while," (Mayer, 1993, p. 608) or by "close attention, some attention, little attention" (Drew & Weaver, 1990, p. 743). Drew and Weaver contend that simple measurement of exposure is not sufficient; they advocate for measurement of attention, as well, saying while exposure is necessary for message reception and understanding, it is not assured unless it is combined with attention (Price & Zaller, 1993). The measures used in these studies are generally more global. They look at readership in a "typical" week or the past week (Price, 1993); Price believes the latter measurement elicits a more accurate response: "The evidence here indicates clearly that questions inquiring about media use during the immediate past, in spite of their narrow reference periods, tap general patterns of media exposure and attention quite successfully" (p. 624).

Only a handful of studies (Pettey, 1988; McDonald, 1990; Gantz, Fitzmaurice & Fink, 1991; and Stone & Boudreau, 1995) seem to have explored the possibility that breaking the newspaper apart into smaller sections or topics and analyzing readership in a more segmented way can result in different and more accurate measurements of newspaper readership.

The Stone and Boudreau study did not, however, correlate newspaper section readership to specific election issues. The present study attempts to examine the difference in measurement methods (self-reports of daily and weekly newspaper readership with self-reports of time spent with individual sections of the newspaper) and their relationship to election and crime knowledge, interest in voting and current events.

<u>Hypotheses</u>

For all of these hypotheses, the concept *general newspaper exposure* is defined as time spent reading one or more sections of a daily newspaper. *Specific newspaper exposure* is defined as the aggregate time spent reading each of the sections of a daily newspaper.

H1. *When asked about exposure to specific parts of the newspaper, people report spending more time with the newspaper than when asked about general exposure.* Does either operationalization tap the respondent's "true" exposure to newspapers? Probably not, since undoubtedly social desirability tends to inflate self-reporting of newspaper use on questionnaires. If true, then the specific way of measuring exposure will result in even more inflation, because social desirability errors for the measurement of exposure to each section will aggregate in a summative index. An alternative explanation, however, is that respondents can make more accurate estimates of their time spent with individual newspaper sections and would underestimate exposure to the "whole" as opposed to the sum of the "parts."

H2. *The relationship between specific newspaper exposure and the dependent variables will be stronger than that with general newspaper exposure.*   The dependent variables include

- *Election knowledge* — amount of correct information a person has about the upcoming U.S. presidential election.

- *Victim familiarity* — a person's estimation of the extent to which victims of crimes know the criminal.

- *Vote likelihood* — extent to which a person thinks he/she will vote in the

  upcoming election.

- *Current events interest* — how important a person thinks it is to keep up with

  current events.

If measuring exposure to specific sections of the newspaper and aggregating them

provides a more precise measure of newspaper exposure, then we should expect that

the more specific index would be better at explaining knowledge and attitudes that are

often related to newspaper exposure.

H3. *Exposure to sections of the newspaper will not correlate in the same way*

with the four dependent variables. The dependent variables are outlined in Hypothesis

2. Newspaper sections include world, national, state, local, sports, and business news;

comics, editorials and opinions, home information, arts and entertainment; and

advertisements. For example, there is more reason to think that exposure to national

news will correlate more with knowledge about a national election than would exposure

to local news. If all parts of the newspaper are not equally related to the dependent

measures, then we may question whether they have construct validity as an index.

Newspapers include varied information, and there is no reason to think that exposure to

each section would have the same effect.

METHOD

A telephone survey was conducted by trained graduate student interviewers in

the _____ metropolitan area. Interviewers worked in a centralized

telephone facility. The study was in the field for two weeks and was completed about one month before the November 1996 U.S. presidential election. To generate the random sample of telephone numbers, the SelectPhone, Northeast, 1997, first quarter, CD-ROM directory was used as the sampling frame. A household listing method was used to yield a probability sample of adult respondents (18 and older) from among household residents. There were 402 completed and 11 partial interviews, with a procedural response rate of .79.

Comparisons of the sample demographics with Census statistics revealed that the sample fairly well represented the population, with the exception that the sample was more educated.

Operational definitions for all variables used in the survey are outlined on Tables 1 and 2.

RESULTS

As Table 1 shows, respondents reported reading the local, national, and world news sections the most, with more than 60 minutes per week devoted to each section. The least amount of time was devoted to comics, advertisements, arts and entertainment, and the home. The general newspaper exposure index estimated that respondents spend on average 200 minutes per week reading a newspaper, whereas the specific exposure index estimated nearly twice that -- 382 minutes. This supports Hypothesis 1, as shown by the paired t-test in Table 3. Respondents do report more time spent with the newspaper when measuring exposure to specific sections than to the newspaper overall.

As for the dependent variables, Table 2 shows that respondents' knowledge varied from 76% being able to name Perot as the third-party candidate to only 11% being able to name his party. On average, respondents got 3 of 6 knowledge items correct. Just over half of respondents thought that victims know their criminals for murders, rapes and violent attacks. Respondents reported that they were likely to vote and agree that it is important to keep up with current events.

Hypothesis 2 predicted that the specific newspaper index would be more strongly related to the knowledge and attitude measures than the general exposure index. As Table 4 shows, this is not supported. Neither exposure index was related to the victim familiarity index, but the general exposure index was related with the other three dependent variables. The specific exposure index was related only to the *importance of keeping up with current events*. Although the correlation coefficient for the general index was larger than for the specific index, a test comparing the two coefficients found no statistically significant difference between them.

There was support for Hypothesis 3, in that the 11 newspaper sections correlated differently with the knowledge and attitude measures (Table 5).

- Election knowledge correlated *negatively* with exposure to world news and advertisements and *positively* with exposure to national news, sports news, and opinions or editorials.

- Interest in current events correlated positively with exposure to world, national, and business news and with exposure to opinions and editorials and with information about the arts and entertainment.

- Likelihood to vote was positively related to exposure to world, sports, and business news.

- The more local news and information about the home respondents were exposed to, the less likely they were to think that victims know their attackers.

This shows that all sections of the newspaper are not equal in terms of their relationships with various measures of knowledge and attitudes, perhaps also with behaviors.   Although the additive index of exposure to all sections of the newspaper was largely unrelated to the dependent variables, there are clearly many, potentially important, relationships between the dependent variables and individual section exposure. Some of these are quite logical: Exposure to national news correlates positively with knowledge about a national election. The importance of current events correlates positively with world, national and business news. Others are more difficult to explain: Why should exposure to sports news be positively related with likelihood to vote and election knowledge? Perhaps because exposure to sports knowledge is itself correlated with exposure to national news.   Clearly, more research needs to be done to investigate the interrelationships among exposure to newspaper sections and to various measures of knowledge, attitudes and behaviors.

DISCUSSION

This study investigates three methodological hypotheses about how best to measure newspaper exposure. As questions about newspaper readership and

effects on individuals and society arise due to declining numbers of newspapers and circulation, having accurate ways of measuring individuals' exposure to newspapers — and to all mass media — becomes more important.

At issue here is whether the traditionally used, efficient operational definition — here, represented by two telephone survey questions — is better, the same, or worse than a lengthy, 22-question alternative. The traditional operationalization generally asks for time spent reading "the newspaper," perhaps days/week, minutes/day or both. This operationalization has within it an assumption that the newspaper is a homogeneous body of content and advertisements and that it matters little whether a person is exposed to world news or the home section. Similarly, there is an assumption either than everyone reads some of everything in the paper, or that it doesn't matter what they read. This seems a very imprecise way of measuring exposure, and, depending on the nature and topic of the dependent measures, could very much affect whether a relationship between newspaper exposure and the dependent measure exists and whether it is positive or negative.

The alternative operationalization is to measure exposure to all parts of the newspaper and to either sum the parts into a new whole — an overall newspaper exposure index built from exposure to specific sections — or, second, use exposure to the individual sections as separate variables.

This study shows that, when the individual section exposure variables are aggregated, they do not correlate with the knowledge and attitude variables. This is hardly surprising, given the other results which show that exposure to the individual

sections do correlate with the knowledge and attitude measures, but in different ways. The individual newspaper sections are apples, oranges, limes, lemons, and so on. To add them together makes little sense, thus calling the validity of a summative index into question. Although Cronbach's alpha showed the index to be reliable, we now question whether it is valid. The varying correlations with the dependent variables leads us to conclude that exposure to world news is indeed something different from exposure to arts and entertainment information. It makes sense to treat these as separate concepts and not as equivalent indicators of the same construct.

But what about the validity of the general exposure index? We suggest that it has the same problem with validity.   While it may also be a reliable measure of newspaper exposure, is it valid? What is being measured when one asks "how many days a week do you read a newspaper?"   It clearly measures the number of days that a person picks up the physical object and directs her/his eyes toward one or more pages. But this is generally not the theoretical definition we are trying to operationalize — we want to know about information gleaned from the newspaper, about attitudes that may have been influenced.

With much mass communication scholarship depending on mass media exposure operational definitions, it is in our collective interest to investigate improvements in how to improve these measures. We do not offer our specific exposure index here as an ideal alternative to the traditional general exposure operationalization. (For one thing, interviewers felt that respondents tired of the long series of questions.) But we have demonstrated that there is reason to believe that

the newspaper does not have homogeneous content and that reading one section is

not equivalent to reading another. Clearly more research needs to be done to

discover new and improved operationalizations of media exposure.

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Table 1. Means and standard deviations for media exposure variables.

Variables	Mean	Standard deviation	N
Days/week read a newspaper	4.70	2.66	397
Minutes/day read a newspaper	38.88	32.46	393
General newspaper exposure index (min/wk)*	*200.07*	*194.90*	*393*
Days/week read world news	3.80	2.89	391
Minutes/day read world news	12.93	17.87	381
Minutes/week read world news*	*61.67*	*89.93*	*381*
Days/week read national news	4.09	2.83	390
Minutes/day read national news	13.14	17.75	383
Minutes/week read national news*	*63.25*	*98.85*	*382*
Days/week read state news	3.98	2.85	385
Minutes/day read state news	9.75	11.53	388
Minutes/week read state news*	*47.23*	*68.88*	*382*
Days/week read local news	4.51	2.71	387
Minutes/day read local news	13.93	15.26	380
Minutes/week read local news*	*68.47*	*89.05*	*379*
Days/week read sports news	2.31	2.94	388
Minutes/day read sports news	6.04	14.18	381
Minutes/week read sports news*	*31.01*	*90.94*	*381*
Days/week read business news	2.21	2.73	390
Minutes/day read business news	5.45	10.02	384
Minutes/week read business news*	*22.02*	*47.43*	*386*
Days/week read comics	1.89	2.86	389
Minutes/day read comics	2.95	5.75	387
Minutes/week read comics*	*13.36*	*31.54*	*387*
Days/week read editorials/opinions	2.74	2.84	385
Minutes/day read editorials/opinions	6.38	9.61	381
Minutes/week read editorials/opinions*	*27.07*	*51.25*	*379*
Days/week read news about the home	1.77	2.47	386
Minutes/day read news about the home	5.73	10.74	385
Minutes/week read news about the home*	*17.61*	*46.51*	*384*
Days/week read arts/entertainment	2.12	5.59	388
Minutes/day read arts/entertainment	5.56	8.01	385
Minutes/week read arts/entertainment*	*16.54*	*30.80*	*385*

Days/week read advertisements	1.65	2.49	389
Minutes/day read advertisements	5.86	13.85	385
*Minutes/week read advertisement*s*	*15.61*	*41.81*	*385*
Specific newspaper exposure index (min/wk)*	***382.32***	***470.76***	***362***

* The variable was created by multiplying the "days/week" and "minutes/day" variables.
** The index summed the "minutes/week" variables from *world* through *advertisements*. Cronbach's alpha = .85.

Table 2. Means and standard deviations for dependent variables.

Variables	Mean	Standard deviation	N
Election knowledge index*	3.01	1.68	413
• Name of third-party candidate	.76	.43	413
• Name of Perot's party	.11	.31	413
• Name of Republican VP candidate	.59	.49	413
• Who next in line after Pres and VP	.40	.49	413
• Party that supports gun control	.58	.49	413
• Party against regulation of business	.57	.50	413
Victim familiarity index**	169.11	59.99	351
If 100 _____ were committed in the US this month, how many victims do you think knew their _____?			
• Murders . . . killers	54.25	25.18	367
• Rapes . . . rapist	59.03	24.19	374
• Violent attacks . . . attacker	51.54	24.43	376
Likelihood to vote in November election***	1.50	1.16	396
Importance of keeping up with current events****	4.35	.68	412

_____

* The index was created by summing the number of correct answers to the following six questions, possible range 0 to 6 correct. For individual items, correct = 1; not correct = 0. The mean can be interpreted as the percentage correct. Cronbach's alpha = .67.

** The index was created by summing the responses to the three questions, possible range 0 to 300.   Cronbach's alpha = .67.

*** An index composed of four variables was calculated to measure voting, but it was unreliable. Therefore this one variable is used as an indicator of voting in this study: 1 = very likely to vote, 2 = somewhat likely, 3 = neither likely nor unlikely, 4 = somewhat unlikely; 5 = very unlikely.

**** 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Table 3. Paired t-test for the two newspaper exposure indexes.

Variables	Mean	SD	t value	df	sig.
Exposure to newspaper in general, minutes/week	198.02	197.88			
			-10.05	360	.000
Exposure to specific sections of newspaper, minutes/week	382.76	471.333			

Table 4. Pearson correlation coefficients for dependent variables with two newspaper exposure indexes.

Dependent variables	Exposure to general newspaper (Index #1)	Exposure to specific newspaper sections (Index #2)
Importance of keeping up with current events	.20[c] (392)	.16[b] (361)
Likelihood to vote*	-.13[a] (379)	-.07 (350)
Election knowledge index	.19[a] (393)	.10 (361)
Victim familiarity index	-.04 (348)	-.10 (326)

a p<.05
b p<.01
c p<.001

* The variable is coded so that a small number indicates a large likelihood to vote.

Table 5. Pearson correlation coefficients for dependent variables with variables measuring exposure to specific sections of the newspaper.

Newspaper sections	Current events importance	Likely to vote*	Victim index	Election knowledge index
World news	.18^c (380)	-.14^b (367)	-.10 (338)	-.10^b (381)
National news	.15^b (381)	-.10 (369)	-.04 (341)	.17^c (382)
State news	.07 (381)	-.02 (369)	-.06 (339)	.01 (382)
Local news	.03 (378)	.04 (367)	-.12^b (337)	-.05 (379)
Sports news	.04 (380)	-.10^a (369)	-.05 (340)	.14^b (381)
Business news	.16^b (385)	-.11^a (374)	-.08 (344)	.08 (386)
Comics	.03 (386)	.01 (375)	.03 (345)	-.02 (387)
Opinions/editorials	.11^b (383)	-.03 (367)	-.03 (341)	.15^b (384)
Home	.05 (383)	.01 (372)	-.12^b (341)	-.01 (384)
Arts/entertainment	.13^b (384)	-.05 (373)	-.03 (343)	.10 (385)
Advertisements	.05 (384)	.08 (373)	"-.10 (343)	-.10^a (385)

_____
a p<.05, b p<.01, c p<.001

* Note that *willingness to vote* was coded so that a small number indicated the greatest willingness to vote. Therefore, a negative correlation indicates *the more willing to more, the more _____*.