DOCUMENT RESUME

ED 233 363 CS 207 767

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TITLE A Test of the Cumulative Acquisition Model of Adolescent News Media Use.
PUB DATE Aug 83
NOTE 20p.; Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (66th, Corvallis, OR, August 6-9, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Adolescent Development; *Adolescents; Cognitive Processes; Developmental Stages; Family Role; Longitudinal Studies; *Media Research; *Models; *News Media; Political Attitudes; *Political Socialization; Politics; State Surveys; Validity
IDENTIFIERS *Media Use

ABSTRACT

A study tested the cumulative acquisition model proposed by S. H. Chaffee and A. R. Tims to explain the development of adolescent patterns of news media use. The Guttman scale procedure was used to analyze patterns of news media use across a three-wave panel survey of 366 parent-child pairs over a 2-year period. In each wave, interviewers talked first to the child, then to the parent concerning a wide range of topics dealing with the 1980 presidential campaign, perceptions of the candidates, attitudes toward the government and social institutions, interpersonal communication about politics, mass media usage, partisan political orientations, political beliefs, and social values. Longitudinal patterns of news media use showed that the only evidence of a cumulative growth in usage was for children in the fourth through sixth grades at the outset of the study. The developmental patterns were not consistent with the requirements of a Guttman scale at two of the three measurement points. Generally, television news exposure did not emerge prior to the regular use of print media, and the acquisition of print media use did not take place at the expense of television news viewing. This pattern is substantially consistent with the notion of a cumulative process. (Author/FL)

A TEST OF THE CUMULATIVE ACQUISITION MODEL OF ADOLESCENT NEWS MEDIA USE

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Paper presented to the Theory and Methodology Division of the Association for Education in Journalism and Mass Communication Annaul Conference, August, 1983, Corvallis, Oregon.

ABSTRACT

A TEST OF THE CUMULATIVE ACQUISITION MODEL

OF ADOLESCENT NEWS MEDIA USE

This study tests the cumulative acquisition model proposed by Chaffee and Tims (1982) to explain the development of adolescent patterns of news media use. Using the same Guttman scale procedure as employed in the Chaffee and Tims analysis patterns of news media use are analyzed across a three wave panel survey covering a two year period. The sample consists of 366 respondents. It was found that evidence for a cumulative progression in the development of news media use is restricted to the early adolescent period. The findings are discussed in terms of socialization consequences.

A Test of the Cumulative Acquisition Model of Adolescent News Media Use[1]

In the early 1940s Meine (1941) gave us one of the first systematic looks at the news media use patterns of junior and senior high school age children. This study predated the emergence of television as a mass medium but was, nevertheless, concerned with the impact of broadcasting, that is radio broadcasting, on the print media. The concerns about the impact of radio on the then emerging generation who had grown up with this new medium of communication at their disposal (Eisenberg, 1936) are not very different from those voiced today about the now emerging generations who have grown up with television at their disposal (Schramm, Lyle, & Parker, 1961; Comstock, Chaffee, Katzman, McCombs, & Roberts, 1978). As Meine puts it, "It has been feared that people accepting radio as part of their environment will never again place the same reliance on the printed word . . . that the new generation will be one of listeners and that reading will become a lost art" (p. 189). Meine found that radio was the most frequently used source of information among the young people surveyed, but that it was not simply replacing print news media as the source of public affairs information. He reported that 70 percent of the youngsters he defined as "good" newspaper readers also listened to the radio news at least once a day. Moreover, he found a systematic progression in the number of news sources mentioned and in the use of the print media with increasing age. More importantly, he reported that the percentage of children reading serious news items, that is foreign news, politics, editorials,

columnists, and book reviews increased from 53 percent among 7th and 8th grade children to 71 percent among 9th and 10th grade children to 82 percent among 11th and 12th grade children. Meine makes no attempt to discuss these findings in terms of developmental or socialization processes beyond the observation that the news media use behavior of the young person undergoes considerable change during the adolescent years.

For the most part, television has replaced radio as the chief competitor to the newspaper as a source for public affairs information, but the basic question of how the young person comes to use the news media remains essentially unanswered. Chaffee and Tims (1982) have recently offered some initial empirical support for the notion that news media use follows a systematic developmental progression between the ages of 10 and 17. Much like Meine, they report finding that print news media use does not replace broadcast news media use as the youngster moves through adolescence. Rather, the evidence suggests that print news media use is adopted as an additional news media use behavior. Their argument for a cumulative progression from broadcast news media use to print news media use was supported by a scalogram analysis which successfully classified 86 percent of the 718 10 to 17 year olds in their sample, as well as 88 percent of their parents, on a four-level Guttman scale. Moreover, segmenting the youngsters by grade in school, a strong linear relationship was shown between grade level and public affairs news media use as defined by the Guttman scale. Broadcast news media use, acquired at a rather early age, persists at a relatively stable, or at best slightly increasing level through adolescence while print news media use develops rather slowly and, to the extent that it does develop, get added to the already estab-

lished broadcast news media use behavior. The findings reported by Chaffee and Tims (1982) also tell us that not everyone eventually progresses to the top level of the news media use scale; well over one-quarter (28%) of the parents in their study had patterns of use below the "print" news media levels on the Guttman scale.

Atkin (1978) provides a comprehensive profile of the development of broadcast news exposure patterns of younger children (kindergarten through fifth grade). In general, his findings tend to confirm the notion that regular exposure to public affairs programming on television and radio begins at a rather early age. Using self-report measures, he found that 24 percent of the children in kindergarten and the first grade reported watching national news programs (like Walter Cronkite or John Chancellor) almost every day. This exposure increased to 36 percent among children in the fourth and the fifth grades. Overall, he reported a moderate correlation between grade in school and national television news exposure ($r = .15$, $p < .05$). Atkin also reports rather extensive exposure to radio news programs, increasing from 24 percent for the kindergarten and first graders to 40 percent for the second and third graders to 58 percent for the fourth and fifth graders. Viewing and listening diaries kept by a subsample of the survey respondents yielded substantially lower exposure figures. Gollin and Anderson (1980) also report systematic increases in exposure to television network news between the early elementary school (13%) and junior high school (40%), but not between junior and senior high school. They report, however, that exposure to newspapers shows consistent increases from early elementary school through high school. Drew and Reeves (1980a) found a significant positive relationship between newspaper

reading and grade in school for children in the third through seventh grades (r = .22, $p < .001$). Rubin (1978) found a highly significant positive relationship between age and public affairs television viewing (r = .15, $p < .001$), despite an even stronger negative relationship between age and overall television viewing (r = .31, $p < .001$) for a sample of 401 9, 13, and 17 year olds.

A number of factors such as response scaling, method of interviewing, sample selection, and the like can be pointed to as confounding factors in any direct comparison of the absolute levels of news media use reported in these studies. Such limitations do not, however, diminish the importance of these studies in mapping what seem to be consistent developmental patterns in the acquisition of news media use behaviors. In a recent review of this literature, Atkin (1981) concluded that:

> The young child is typically introduced to news via television, beginning with child-oriented newscasts on Saturday morning and the sports and weather portions of adult news programs. Superficial exposure to hard news on local and national newscasts occurs fairly regularly among one-third of elementary school children; however, daily exposure and attentive viewing are rare, and public affairs content is not popular. National and local news viewership doubles during the junior and senior high school years, including two-fifths who watch almost every day.
>
> Newspaper reading begins later in elementary school ... Frequent newspaper exposure increases from one-sixth of elementary school children to one-half of high school students (p. 304).

The present study is designed to test the cumulative acquisition model proposed by Chaffee and Tims (1982). The approach taken by Chaffee and Tims was to systematically examine the inter-individual differences in the media use "levels" of children and adolescents at different grades in school. Given the fact that their findings were based on a single cross-

sectional sample the inferences drawn about the developmental character of the age-related differences observed are necessarily tentative. A more adequate test of the cumulative acquisition model requires that the patterns of news media use be followed over a significant developmental period. The model leads us to predict a detectable movement up the news media use "ladder" as the young person moves into and through adolescence.

Study Design and Sample

The present study is based on a three-wave statewide survey of adolescents (age 10 to 17) and their parents in the state of Wisconsin. In two-parent families, one parent was selected through a systematic selection procedure to be interviewed along with the child. The data collection was funded by a grant (#SES-7913435) from the National Science Foundation to study the 1980 presidential election campaign and preadult political socialization. The sample was obtained through a random digit dialing sampling technique developed by the Wisconsin Survey Research Laboratory. The first wave of interviews was conducted between January 29 and March 18, 1980 with a total of 718 matched parent-child pairs represented. This interview period encompassed the pre-primary and early primary phases of the election campaign.

The second wave of interviews was conducted between October 1 and November 3, 1980. Of the 718 matched parent-child pairs in the first wave of interviews, 501 complete sets of interviews were completed. The third wave of interviews was conducted approximately one year later. The number of complete parent-child pairs across all three waves totaled 366. This sample mortality was due in part to the requirement that both the parent (determined during the first interview) and the child in each pair complete the interview at all three time points.

Interviews were conducted with the child and then with the parent in each household by professional telephone interviewers trained and supervised by the WSRL. The interviews covered a wide range of topics dealing with the 1980 presidential election campaign, perceptions of the candidates, attitudes toward government and social institutions, interpersonal communication about politics, mass media use, partisan political orientations, political beliefs, and social values. Questions asked of the adolescent and parent sub-samples were, insofar as possible, worded identically to permit parallel data analysis.

Guttman Scale Analysis of News Media Use Patterns

The present analysis used the same scaling procedure employed by Chaffee and Tims (1982). To develop the four level Guttman scale of news media use three measures of news media exposure were used: the number of days within the past week that a person had watched network evening news on television, or had read a daily newspaper; and the number of magazine articles about national politics the person had read in the past week. Again consistent with the original Chaffee and Tims procedure, the cut points used for the scale were set at two days per week watching TV news, three days per week reading a newspaper, and three magazine articles read. Chaffee and Tims provide useful labels for each of the four steps in the Guttman scale that correspond to the medium thought to characterize the general level of news media consumption for the individual. These are: radio (0), television (1), newspaper (2), and magazine (3). Chaffee and Tims (1982) use the radio label for the first step in the Guttman scale progression because the plurality of individuals at this "level" on the Guttman scale say they, in fact, get most of their news from the radio.

Since the original Chaffee and Tims study was based on the first wave of interviews of the three wave panel study reported here it was generally expected that the scalogram analysis of news media use for the first wave of measures would replicate the findings reported in the original study. Keep in mind, however, that the sample size for the present analysis is only 366 as compared to 718 in the original analysis. Table 1 shows the scale properties for the analysis at each of the three measurement points and the distribution of scale types broken down by grade in school at each of the measurement points. It can be seen that the proposed Guttman scale exceeds minimum standards of reproducibility (.90) and scalability (.60) only for the wave one measures. In fact, the scale becomes progressively less satisfactory. This fact casts some doubt on the systematic character of news media use patterns, but not necessarily on the notion of a cumulative acquisition process. The real test of this proposal lies in the evidence that youngsters move up the scale during the two year period between the first and third wave of interviews. The distribution of scale types broken down by grade in school and the distribution of scale types for the total sample show little evidence of movement up the scale with the passage of time. The only evidence of a distribution shift that could be characterized as progression up the scale is found for the 4th through 6th grade children. The percentage at the newspaper or magazine levels of the scale shifts from 33 percent at wave one, to 40 percent at wave two, to 48 percent at wave three. This distribution shift brings these youngsters roughly in-line with those in the upper grades. These data tend to suggest that the development of news media use behaviors does not occur uniformly across adolescence. Rather, it seems that the acquisition process may be concentrated primarily in early adolescence. The critical behavior acquired during this period seems

to be regular patterns of print news media use.

The failure of the Guttman scale to perform satisfactorily across the three waves of measures may be attributable either to the fact that the process is not truely hierarchical in nature or to the inadequacy of the scale as a measure of the behavioral patterns. Given three measurement points Wiley and Wiley (1970) have developed a technique for the estimation of measurement error in panel data. Before rejecting the cumulative acquisition model of news media use development it is reasonable for us to address the possibility of poor measurement. Using the Wiley and Wiley decomposition equations, estimates of the reliability of the Guttman scale were obtained for each of the three measurement points. These estimates varied between .31 (Wave 1), .38 (Wave 2), and .30 (Wave 3). The autocorrelations between the measures across the three measurement points ranged between .39 and .41 ($p < .01$). These findings strongly suggest that the three item Guttman scale is actually a very poor measure (in terms of reliability) of news media use behavior. Examination of these reliabilities within the specific grade in school sub-groups shown in Table 1 revealed little to suggest that the reliability of the indicator improves with the development of the child. The average reliability across the three measurement points ranged from .26 (4-6 grade), to .33 (6-10 grade), to .25 (10-12 grade).

Given this rather bleak diagnosis of the Guttman scale it seems appropriate to examine the three exposure measures used in the development of the scale a bit more closely. Table 2 shows the mean levels of exposure to each of the three news sources for each of the grade in school groups at each of the three measurement points. The mean level of exposure to television and to magazine articles does not significantly differ among the three sub-groups at any of the measurement points. On the other hand, newspaper exposure does

increase substantially across the grade in school groups during the first two measurements. The pattern of means strongly suggests that the younger children are developing news reading behavior while the older children appear to have reached a plateau in their reading levels. For example, the 4th throuth 6th grade children report reading the newspaper an average of 2.14 days per week at the first interview, 2.58 days per week at the second interview, and 3.30 days per week at the third. In contrast, the 10th through 12th grade children report reading the newspaper an average of 4.45 days per week at the first interview, 4.12 days per week at the second interview, and 4.00 days per week at the third. By time of the third interview the younger children have developed this behavior to a point not significantly different from that exhibited by the oldest children. Consistent with the general notion of a cumulative acquisition model is the fact that the development of newspaper reading does not accompany a decline in television news exposure.

Although these simple exposure measures have excellent face validity, analysis of their reliabilities using the Wiley and Wiley technique suggests subtantial measurement error (see Table 3). The reliability of newspaper exposure measures for the 4th through 6th grade sub-sample is considerably lower than for the older groups. The findings suggest that the reliability of this measure gets progressively better as the child matures. Even among the oldest group the reliability of the measure fails to reach .70. The reliability of the television news exposure measure seems anomalous given the pattern of findings for the newspaper exposure measure. The reliability of the measure consistently decreases as the developmental level of the sample increases (as indicated by grade in school). As the youngster gets older estimates of exposure to television news get worse while estimates

of exposure to the newspaper get better. This may be due, at least in part, to the greater variability in viewing patterns for the older adolescent who has many competing activities to deal with on a day-to-day basis. The older adolescent simply may not be able to accurately estimate how much time he or she devotes to watching television news. Finally, the reliability of the magazine exposure measure is generally low and not systematically related to the time of measurement or the grade in school of the youngsters. The generally low reliabilities associated with these indicators gives us a better basis for understanding the inadequacy of the Guttman scale and for understanding what often seems like instability in media use behavior.

In terms of the patterns of development revealed in these data a key point of differentiation appears to be the dividing line between readers and non-readers of the news. A distinction of this type is not categorical, of course, as there are many levels of reading skill and of news consumption. However, to the extent that a youngster fails to develop news reading patterns during early adolescence it is very likely that he or she will end up at a considerable disadvantage in terms of the opportunity to acquire political knowledge and other related political socialization processes. This is not to say that once past this point other factors might not emerge to stimulate the growth of news media use, but that early adolescence is a critical period. Indeed, the development of news reading is a necessary and critical factor in political socialization that needs to be in place prior to the age at which the youngster becomes cognizant of public affairs and politics in substantial ways.

Conclusions

This study was designed to test the cumulative acquisition model of the development of public affairs media use proposed by Chaffee and Tims

Longitudinal patterns of news media use showed that the only evidence of a cumulative growth in usage was for youngsters in the 4th through 6th grades at the outset of the study. The developmental patterns are not consistent with the requirements of a Guttman scale at two of the three measurement points. Generally, television news exposure does emerge prior to the regular use of the print media and the acquisition of print news media use does not take place at the expense of television news viewing. This pattern is substantially consistent with the notion of a cumulative process.

About 50 percent of the youngsters will "reach" this level of news media use by the end of early adolescence and will likely be in a position to develop a functional understanding of the political world. What about the other 50 percent? Are they doomed to a life of political and social incompetence simply because they didn't start reading the newspaper in junior high school? As Chaffee and Tims demonstrated, people at the top level of the Guttman scale are roughly twice as well informed as those at the bottom. The intermediate stage that made the greatest difference was adding newspaper use to television use. The probability that non-readers will fail to develop the necessary knowledge base and involvements for effective political participation is quite high. Following the news via television, but not reading about it, can be interpreted as a form of "satisficing" behavior; one gets enough information about current events from TV to get by, but perhaps not enough to participate actively in the political processes that determine "who gets what from whom" in society.

The findings from this study point to a critical period in the development of public affairs media use. The next step is to more fully explore the antecedents and the political consequences of the development of (or failure to develop) this basic behavioral pattern. In addition, much

greater attention needs to be devoted to the explication of the news reading concept and to the development of more reliable indicators.

Note

1. This research was supported by a grant from the National Science Foundations for data collection: "Election Campaigns and Preadult Political Socialization," NSF Grant No. SES-7913435. Co-principal investigatiors are Jack Dennis (Department of Political Science, University of Wisconsin-Madison), Steven H. Chaffee (Institute for Communication Research, Stanford University), and David O. Sears (Department of Psychology, University of California at Los Angeles).

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Table 1

Distribution of Guttman Scale Scores[1] by Time of Interview and by Grade in School of Respondent

Grade[2]	Scale Value	Wave 1	Wave 2	Wave 3
4-6	(0)	18%	19%	11%
(N = 108)	(1)	50	41	41
	(2)	30	31	38
	(3)	3	9	10
7-9	(0)	11%	13%	10%
(N = 136)	(1)	32	33	36
	(2)	47	45	44
	(3)	9	9	10
10-12	(0)	6%	13%	10%
(N = 122)	(1)	34	36	44
	(2)	47	41	48
	(3)	14	10	9
Total	(0)	12%	15%	10%
	(1)	38	36	40
(N = 366)	(2)	42	40	40
	(3)	9	9	10
Coefficient of Reproducibility		.92	.87	.84
Coefficient of Scalability		.69	.56	.44

[1] The scale score values can be labeled according to the medium presumed to predominate at that level: (0) radio, (1) television, (2) newspaper, (3) magazine.

[2] The grade in school is based on the respondent's grade at the time of the first interview.

Table 2

Mean Levels of Exposure to the News Media Measures Used in the Guttman Scale by Time of Interview and by Grade in School of Respondent

Medium	Wave of Measurement (N)	Grade in School 4 - 6 (108)	7 - 9 (136)	10 - 12 (122)	Prob. Level[1]
Newspaper	1	2.14	3.55	4.45	.001
	2	2.58	3.74	4.12	.001
	3	3.30	3.79	4.00	ns
Television	1	3.16	3.26	3.40	ns
	2	2.69	2.91	2.45	ns
	3	3.08	2.92	2.39	ns
Magazine	1	.60	.86	1.08	.10
	2	.97	.89	1.13	ns
	3	.84	1.21	1.18	ns

Note: The range of values for all items is between 0 and 7.

[1]Based on one-way analysis of variance tests of mean differences between grade in school sub-groups.

Table 3

Estimates of Indicator Reliability for News Media Exposure Measures[1]

Indicator	Wave of Measurement	Grade in School		
		4 - 6	7 - 9	10 - 12
Newspaper	1	.36	.66	.68
	2	.42	.62	.67
	3	.45	.58	.64
Television	1	.65	.50	.35
	2	.51	.54	.40
	3	.59	.48	.37
Magazine	1	.31	.11	.58
	2	.56	.38	.48
	3	.32	.53	.39

[1] Estimates of reliability are based on the decomposition technique proposed by Wiley and Wiley (1970). The measurement model is a lag-1 model with constant error variance