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ABSTRACT

A study examined the shift of the United States public's primary news source from newspapers to radio and then to television between 1937 and 1987 to determine the validity of the generally accepted explanation that people have shifted media (displacement). Two alternative processes were discovered that could also account for this phenomenon: (1) the wording of the question has changed, and (2) people have grown up with different media--a "cohort" effect. A cohort analysis of the original Roper Poll data collected between 1937 and 1987 revealed that question wording differences, differences across cohorts, and displacement effects within cohorts were each responsible for some of this change in primary news source. The results also suggest that television has displaced radio more than newspapers, compatible with the concept of a functional equivalence between the two electronic media. (Five figures, 7 tables of data are included; 38 references are attached.) (Author/KEH)

Primary news source:
Question wording, cohort and displacement effects

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ABSTRACT

Primary news source:
Question wording, cohort, and displacement effects

Between 1937 and 1987 the U.S. public's primary news source shifted from newspapers to radio and then to television (Roper, 1983). The generally accepted explanation is that people have shifted media (displacement). However, two alternative processes could also account for this phenomenon: 1) the wording of the question has changed, and 2) people have grown up with different media--a "cohort" effect. A cohort analysis of the original Roper data reveals that question wording differences, differences across cohorts, and displacement effects within cohorts were each responsible for some of this change in primary news source. The results also suggest that television has displaced radio more than newspapers, compatible with the concept of a functional equivalence between the two electronic media.

Primary news source:
Question wording, cohort, and displacement effect

A widely reported finding in surveys since the 1930s is that the U.S. public's "primary source of news" has shifted from newspapers to radio and then to television (Broadcasting, 1985). This finding is based on questions similar to the following:

> I'd like to ask you where you usually get most of your information about what's going on in the world today--from the newspapers, or radio, or television, or magazine, or talking to people, or where?

For example, Roper reported that in 1937 the majority of the U.S. (51%) preferred newspapers, in 1945 most respondents picked radio (62%), and by 1972 the audience preferred television (60%). The Roper survey results can be seen in Figure 1.

INSERT FIGURE 1

The conventional wisdom regarding primary news source shifts is that when individuals are given a new medium, they often shift their loyalties (Miller, Singletary & Chen, 1988; Roper, 1983; Comstock, 1980: 47; Comstock, Chaffee, Katzman, McCombs, & Roberts, 1978:8, 140; Schramm, 1973: 186). The presumed causes of this "displacement" effect include faster reporting, greater levels of sensationalism, and greater ease (Schramm, 1973: 184) for radio and later for television.

However, some debate has raged over whether newer media actually do displace older media (Lazarsfeld, 1940; Chester, 1949; Belson, 1961, 1963; Parker, 1964; Parker & Paisley, 1966; Turpin, 1974; Lacy, 1987; Mutz, Roberts, & van Vuuren, 1988). Additionally, panel studies show that people's media use habits tend to be very stable over time (Chaffee & Schleuder, 1986). And question wording does seem to affect results (Carter & Greenberg, 1964). Before we can interpret the Roper question as indicating displacement, then, at least two alternative processes should be examined as possible rival explantations for the apparent changes in primary news source: variations in question wording and cohort effects. In both cases these alternative processes could masquerade as news source choices changing from newspapers to radio to television over time.

Question wording

The first alternative explanation for Roper's apparent primary news source shifts is that there is no real trend, but that shifts are artifacts of question wording changes that have taken place throughout the years. These changes have taken at least 3 forms. In some instances primary news source was asked as an open-ended question, with no alternatives provided. In cases where the alternatives were provided, the orders varied. And in some surveys, people were allowed to give multiple responses to the question (i.e., both newspapers and radio).

Each of these wording variations can significantly affect responses (Schuman & Presser, 1981; Dillman, 1974). The various question wordings are shown in Table 1.

In cases where questions are asked in open-ended form, respondents tend to give the most popular or socially acceptable responses (Sudman & Bradburn, 1974: 58, 142; Schuman & Presser, 1981: 79-112). This tends to make differences between the most and least frequent responses bigger in open ended questions that than they would be in a closed-ended form. In closed-ended questions, respondents are most likely to remember the first alternative, then the last one, and to forget alternatives given in the middle of the list (Schuman & Presser, 1981: 57-77). For the present question, since newspapers are generally listed first, this would inflate the rate for newspapers for many years. And when people are allowed to give multiple responses to questions (i.e., both newspapers and radio), it tends to benefit the middle positions (Bishop, 1987) and less popular alternatives (Schuman & Presser, 1981: 161-178). In sum, changes in question wording could appear to be a trend in news source.

Cohort effects

The second potential reason for the apparent shift in primary news sources is cohort effects. Several studies have shown that cohort effects can appear to be change over time (Glenn, 1977: 12-13). Unlike wording effects, however, cohort effects imply that these net shifts are real, but that the

explanation is usually wrong. In a cohort effect, people, as a group or "cohort", become socialized in distinct circumstances. Increased mortality among the earlier-born cohorts insures that the composition of the population is consistently composed of newer and newer cohorts. So, as a larger percentage of the public is composed of newer cohorts, the habits and opinions of that cohort increase accordingly as a proportion of the whole. Thus, the proportion as an aggregate changes, even though no individuals are changing.

For example, in a study of political television exposure, Danowski and Ruchinskas (1983) attributed only 3% of the variance to aging, but 40% to cohort effects. That is, almost all of the change in political television exposure was due to new cohorts that had been socialized to television as they grew up, and not to changes within the cohorts over time. "The stage in life in which a cohort is located when a new communication technology becomes popular may lead to cohort effects" (Danowski and Ruchinskas, 1983: 81).

In the case of primary news source choice, as the general population is made up increasingly of people born after 1950, we would expect this newer cohort, raised with television, to be more likely to choose television as their primary news source. Here also, a cohort effect could appear as a trend toward greater use of television.

One important note is that news sources has shown strong correlations with level of education, and more specifically, the

number of potential news sources (Bogart, 1972); particularly, newspaper use is higher among persons with more education (Chaffee & Choe, 1981; Schramm, 1973: 180-182; Bogart, 1972: xxiv; Swinehart & McLeod, 1960: 587). And since the later born cohorts in this study tend to have the highest level of education, this would that would make them more likely to use more sources of news. They should, then, be more likely to use and cite newspapers. However, since we predict an effect in the opposite direction, that newspaper use is higher among earlier born cohorts, this education effect lessens the possibility of demonstrating a cohort effect. So if a cohort effect is found in the face of these demographic shifts in the opposite direction, we could infer that the effect of socialization of a cohort to particular media is very strong.

Displacement effects

If, however, people do change media as they age, what shifts should we expect? According to theories of functional equivalence, we should expect less shifting between more equivalent forms of the media (Brown, Cramond & Wilde, 1974). Specifically we would expect less shifting or displacement between the printed and electronic media (newspapers to radio or television) than there would be within electronic media (radio to television). This would be predicted not only on the basis of channel of transmission (printed versus broadcast), but also because of form, immediacy, style, pacing, and cognitive

processing similarities (Comstock, Chaffee, Katzman, McCombs, & Roberts, 1978: 161-168; Mutz, Roberts & van Vuuren, 1988; van Raaij, 1984). Evidence of functional equivalence was seen when, during a Philadelphia newspaper strike, readers switched to other newspapers and newsmagazines rather than the electronic media (Elliot & Rosenberg, 1987) and in televisions' intrusion into the radio audience (Bogart, 1972: 114-115) more than newspapers (Bogart, 1972: 151-153) or books (Schramm, Lyle & Parker, 1961).

In sum, we suggest that changes in news primary news source choices over time may be attributed to any or all of three causes. First, question wording effects. Second, cohort effects with older people preferring newspapers to radio and younger people television the most. Third, the shifts or displacement effects that occur within cohorts should occur between media that are similar, particularly switches from radio to television. The next sections will examine and test these alternative explanations.

Method

To examine whether question wording, cohort, and displacement effects appear in the trend data, we obtained the original data collected by the Roper organization in the form of Roper and NORC polls between 1937 and 1987. Altogether there were 19 polls with samples averaging about 2,300 people. The total sample over the 50-year period is 45,000.

For the analysis of question wording differences, three wording variants were coded: open/closed ended, the ordering of alternatives (newspapers or radio/television first?), and the acceptance/refusal of multiple responses (more than one answer). Each form of the question asked in the 50-year span between the year 1937 and 1987 was coded on each of these three variables. The codes are shown in Table 1.

For analysis of cohort effects, the data were examined relative to birth year. Because we expect that cohorts would be socialized with one of the 3 media, it seemed most logical to develop separate cohorts representing each of the three media: newspaper, radio, and television. Cohort divisions were developed from three pieces of knowledge. First, newspapers were the primary medium before radio. Second, radio reached 50% of U.S. homes for the first time in 1932 (De Fleur, 1966; Bogart, 1972: 10). Third, television reached the 50% level in 1952 (De Fleur, 1966; Bogart, 1972: 10). Based on this information, the newspaper era was identified as before 1932, the radio era between 1932 and 1952, and the television era after 1952. Individual differences in the exact date of exposure to a medium would weaken findings of cohort effects, so the roughness of these divisions provides a conservative test of the cohort effect.

In order to relate the 1932 and 1952 cohort divisions to individuals' birth year, we also used the knowledge that people usually establish familiarity with print media during adolescence. Therefore, their media use patterns should be established sometime between 18 and 30 years of age (Conway, Wyckoff, Feldbaum, & Ahern, 1981: 258-260; Anderson, 1979). So the 1932 newspaper/radio division corresponds to individuals' birth years an average of 24 years earlier--before 1908. And the 1952 radio/television division corresponds to birth years before 1928. Here also, any individual variations from this assumption reduces reliability and thus would lower the cohort effect.

Birth year data for the cohort analysis was limited. In the years in which respondents were asked their ages (1937, 1940, 1944, and 1960), respondents tended to round to the nearest 5 or 10. In other years, Roper coded subjects' ages into varying categories, for example, in 1938 and 1941, into "over or under 40;" in 1979, "18-29, 30-44, 45-64, and 65 and over." This innaccuracy of birth year measures also lowers the chance of finding clearcut cohort effects. Given these constraints, the most practical divisions occurred when the birth year divisions were made as nearly as possible to 1905 and 1924. Therefore, persons born before 1905 were assigned to the newspaper cohort, those born between 1905 and 1924 were assigned to the radio cohort, and those born after 1924 to the television cohort. These divisions correspond to an average age within the cohort in 1932 and 1942 of 27 years.

Preliminary analyses

Three analyses were conducted to test the viability of each explanation. This was done both to show how these alternatives might appear to be trends over time, and to estimate if each explanation is viable.

In the first analysis, the percentage of respondents citing radio and newspapers was significantly related to the form of the question. The t-tests are shown in Table 2. As expected, whether a question was asked as open- or closed-ended, the ordering of the responses, and the availability of a "both" response affected the rate at which different media were cited as an individual's primary news source.

Next, in order to examine what the response to Roper's news source question might have been without the differences in wording, that is to examine the potential displacement effects, three separate regression lines were plotted for each of the media -- newspaper, radio, and television. These analyses can be seen as averaging over question wording and sampling differences. The resulting trends are shown in Figure 2.

INSERT FIGURE 2

By inspection, there seem to be clear differences between the media. First, both the newspaper and radio lines appear to be decreasing while television is increasing. This suggests that television is displacing both newspapers and radio. Second, the

newspaper line seems to be flatter, suggesting that newspaper use decreased at a slower rate. This tends to suggest that newspapers are less displaced by television than is radio. But the slopes and the notion of functional equivalence between television and radio will be examined in later analyses.

Finally, to examine the viability of the second potential explanation, cohort effects, we must also analyse the question relative to birth year. In this way it is possible to compare changes within cohort (displacement effects over time) to changes across cohorts (cohort effects) (Danowski and Ruchinskas 1983; Mason, Winsborough, Mason and Poole 1973). In essence we are looking for birth year effects.

Using the cohort distinctions obtained above, (before 1905, 1905-1924, and after 1924) the percentages for each of these three cohorts in each survey are presented in Table 3.

INSERT TABLE 3

These data are also plotted in Figures 3, 4 and 5. Figure 3 presents the results for newspaper, Figure 4 for radio, and Figure 5 for television. In general the results do show preliminary evidence of a potential cohort effect: people born during a medium's "heyday" are more likely to cite that same medium as the source of "most of" their news.

INSERT FIGURES 3, 4 & 5

Additionally, the figures seem to indicate that the cohort effect is larger in the earlier years of a new medium's diffusion. The figures also appear to show that the primary news source choices of people raised with the electronic media--the radio and television cohorts--were quite similar. Newspaper use was lower among both the radio and television cohorts than in the newspaper cohort (Figure 3); television use was higher in both the radio and television cohorts (Figure 5). So there seems to be some preliminary evidence not only of cohort effects, but also of functional equivalence between the electronic media.

Because all of these potential explanations appear as gross changes in news source, multiple regression analyses were used to compare simultaneously the effects of question wording, cohort influences, and displacement effects. These analyses use a procedure developed by Mason, Winsborough, Mason and Poole (1973) which "follows" these cohorts over time and examines changes in media primary news source choice to determine how much of the shift in primary news source is attributable to differences across cohorts versus displacement effects within cohorts. In these analyses the regressions will also measure the influence of question wording effects.

Arc sine transformations of the square root of the percentages were used in all regression analyses to correct for the fact that the standard deviation is a function of the percentage figures (Alder & Roessler, 1968: 281-283; Guilford,

1954: 574).

As in the previous analysis, question wording differences were measured by using three dummy variables for each of the variants--open/closed ended, ordering of alternatives (newspapers before television), and the acceptance/refusal of a multiple ("both") responses. For the cohort analysis, three cohort dummy variables were created--one for each of the three birth year cohorts, before 1905, 1905 to 1924, and after 1924 (Danowski and Ruchinskas 1983; Mason, Winsborough, Mason and Poole, 1973). To check for curvilinear effects, especially the temporary acceptance of a particular medium, year squared was also included in these analyses. Separate analyses were run for each of the three news sources.

Results

The analysis of the percentage of the public relying on newspapers is shown in Table 4. Unstandardized regression coefficients based on the arc sine are reported. The results show that the percent of the public citing newspapers was not significantly affected by question wording. However, the percentage of the public citing newspaper reflected a cohort effect in the predicted direction ($B=.064$, $p < .001$); that is, people raised in the newspaper era tend to remain with that medium at a difference of approximately 6 percentage points higher (in 1987, 40% versus 34%). Also, newspaper as a news source reflected a negative quadratic trend over time. (B=-

.00096, p<.001). The quadratic trend here is evidence of the rise and fall of the medium as a primary news source. The combination of a cohort effect and a quadratic trend suggests that although the medium gained and lost popularity, people raised in the newspapers only era use them as their primary news source in a higher proportion than the rest of the public.

For radio, shown in Table 5, the model indicates an effect of question wording due to the "both newspapers and radio" response option (B=-.102, p <.001). The regression analysis also demonstrated a decreasing linear trend over time (B=-.008, p<.001) and a cohort difference (B=.049 p<.05). Therefore, although radio as primary news source seems to be be decreasing over time, people raised in the heyday of radio also rely on it as their primary news source in a higher proportion than do other cohorts.

The television model, shown in Table 6, reflects two question order effects, one for order of choices (B=-.076, p <.001), and one for the "both" category (B=.082, p<.001). Additionally, there was an increasing linear trend (B=.011 p<.001) and a strong cohort effect of 12 percentage points (B=.124, p< .001). Therefore, television shows strong evidence of having caught on quickly as primary news source, especially by attracting young people born during the "television age" than by converting older people from their older media as the displacement explanation suggests.

In combination, these analyses indicated that all three predictors -- question wording, cohort effects, and displacement effects--significantly affected primary news media choice trends. Summarized in Table 7, these finding suggest that each of these factors play some role in the historical trends in primary news source choices. Also, while newspapers seems to have risen and fallen as a primary news source, radio's linear decrease relates closely to the linear increase in television.

Discussion

Although Roper's survey question: "Where do you get most of your news?" is generally interpreted as if persons changed from one medium to another over time, our analysis reveals that question wording differences and cohort effects also account for some of the changes in surveys over the past 50 years.

First, some of the variance in news source preference is due to question wording. In fact, question wording was a large predictor of results, affecting net results by 8 to 10 percentage points. This instability in the wording of the "Roper question" should suggest caution in its use and interpretation.

Second, with question wording controlled for, we examined the possibility of birth era cohort effects. Since cohort effects were found in all three regressions, some of the trends in primary news source is surely attributable to cohort effects: there seems to be a strong tendency for an individual raised with newspapers, radio, or television to prefer that medium to which

they originally became accustomed. Older people rely on the oldest medium, newspapers, as their primary source of news in 6% higher proportion than do later cohorts; the radio cohort averages a 5% higher figure; and the television cohort relies on that medium to an even greater extent, 12% higher. Because of inaccuracy in the birth year measures as an indicator of one's cohort, the cohort effect is probably even stronger than these data show.

Third, the traditional explanation of displacement effects still remains viable. Survey year is a significant predictor of media choice even when question wording and cohort effects are controlled for statistically, this demonstrates that some people have changes their primary news sources --displacement. Newspaper use has risen and fallen in a quadratic relationship. Because radio has shown a linear decrease while television experienced a linear increase, it appears that radio's decline is largely explained by television's gain. This concurs with a similar finding in general media use that was reported by Schramm (1973: 267) and Bogart, 1972: 114-115).

Taken together, these results suggest that although people have been partly displaced from newspapers by television as a news source, radio listeners have been displaced to a larger extent. That is, there is a greater shift from radio to television. It suggests a greater interchangeability among the electronic media as a primary news source due to greater functional equivalence of the two electronic media.

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FIGURE 1:
Primary News Source
1937-1987

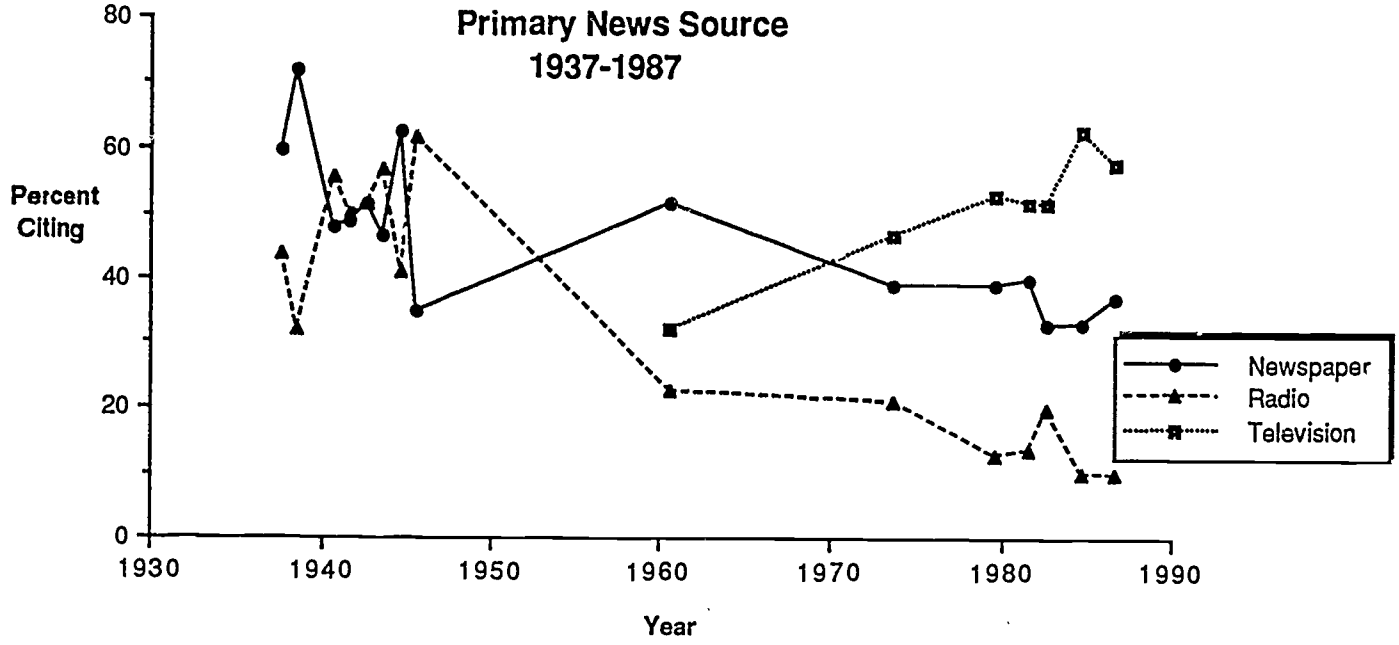

FIGURE 2:
Primary News Source Trends
1937-1987

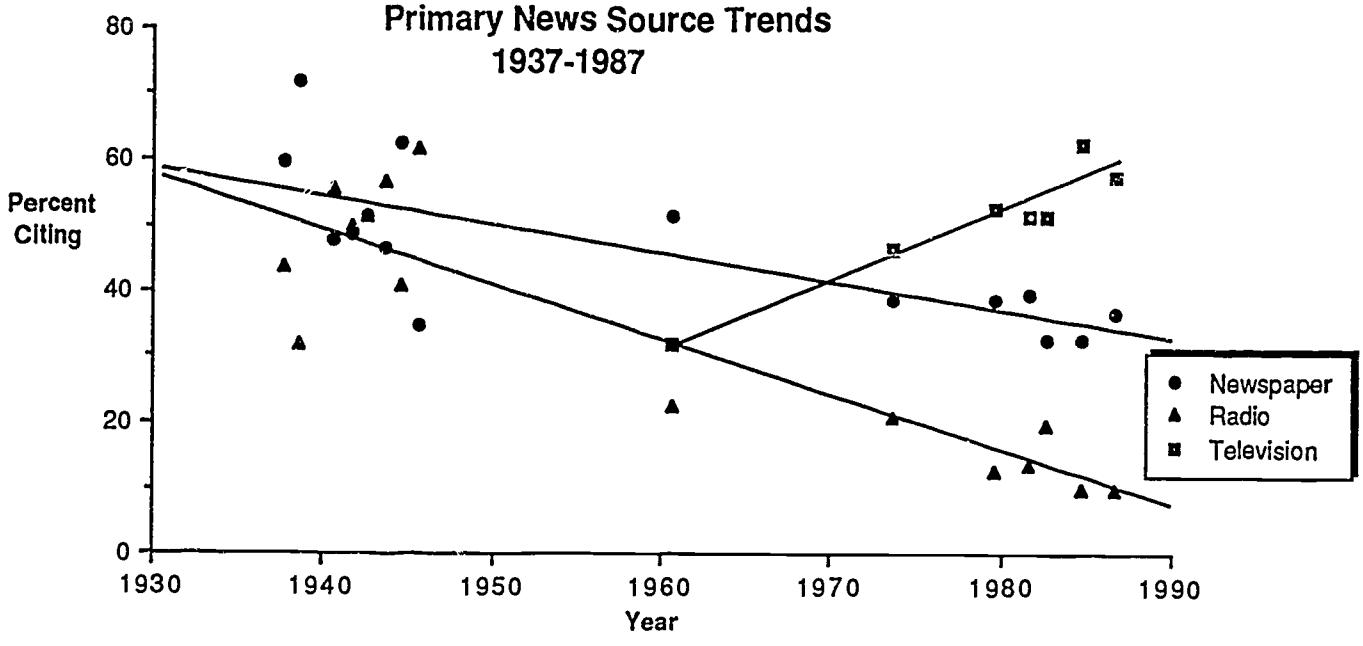

FIGURE 3:
Newspaper use by Cohort

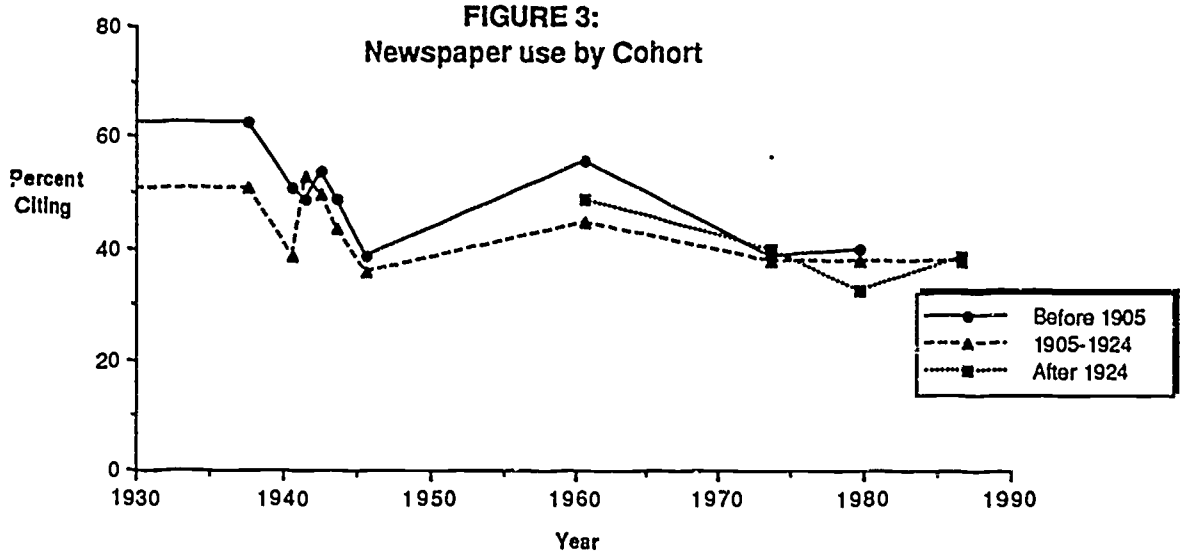

FIGURE 4:
Radio use by Cohort

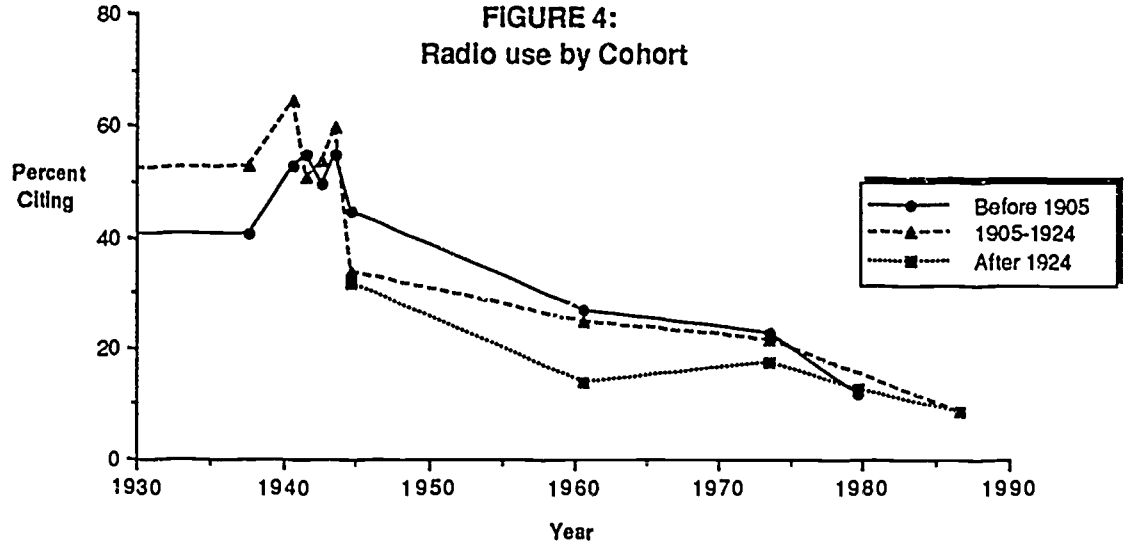

FIGURE 5:
Television use by Cohort

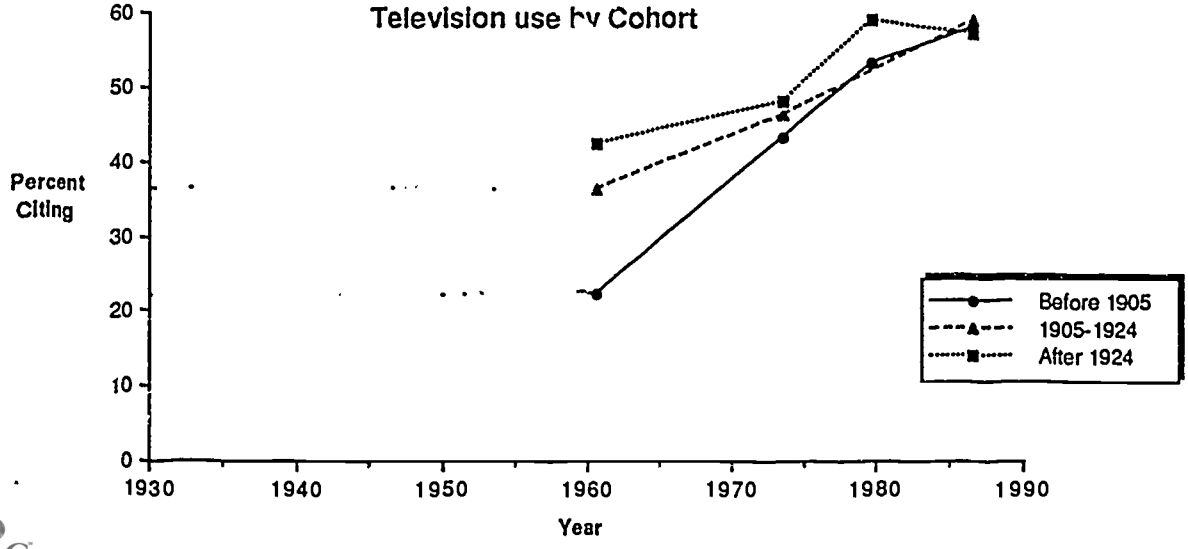

TABLE 1:
Question wording--1937-1987

Year		Exact wording	Open Ended	Order	"Both"
1937		Would you prefer to get national news from a daily newspaper, or from the radio?	0	1	1
1938		From which one source do you get most of your news about what is going on?	1	-	1
1940		Do you prefer to get national news from			
	A.	a daily newspaper, or from the radio?	0	2	0
	B.	the radio, or a daily newspaper?	0	1	0
1941 1942		Where do you get most of your news--from the radio or newspapers?	0	2	0
1945		From which one source do you get most of your news about what is going on?	1	-	1
1960		Where do you get most of your information about what's going on in the world--from magazines, TV, radio, or newspapers?	0	2	0
1973 to 1982		I'd like to ask you where you usually get most of your information about what's going on in the world today--from the newspapers, or radio, or television, or magazine, or talking to people, or where?	0	1	0
1984 1986		What would you say is your MAIN source of news about national and international events?	1	-	1
1987		I'd like to ask you where you usually get most of your information about what's going on in the world today --from the newspapers, or radio, or television, or magazine, or talking to people, or where?	0	1	0

TABLE 2:
Question wording effects--1937-1987

	Newspaper	Radio	Television
Open/Closed Ended	.14 +	.28 **	.41 **
Order	.01	.08 ***	.07 **
Multiple Response	.05 *	.24 ***	.27 ***

Note: Cell entries number represent mean differences, significance levels by t-test.

\+ p <.10

* p <.05

p 01

101

TABLE 3:
Newspapers as a primary news source by Birth-year Cohort

	Before 1905	1905 1924	After 1924
Survey:			
1937	.61	.49	
1940	.46	.49	
1941	.47	.51	
1942	.52	.48	
1943	.47	.42	
1944	.57	.68	.70
1945	.37	.34	
1960	.54	.43	.47
1973	.37	.36	.38
1979	.38		.31
1986	.36	.36	.37

Radio as a primary news source by Birth-year Cohort

	Before 1905	1905 1924	After 1924
Survey:			
1937	.39	.51	
1940	.51	.63	
1941	53	.49	
1942	.48	.52	
1943	.53	.58	
19 4	.43	.32	.30
1945	.63	.66	
1960	.25	.23	.12
1973	.21	.20	.16
1979	.10	.	.11
1986	.07	.07	.07

Television as a primary news source by Birth-year Cohort

	Before 1905	1905 1924	After 1924
Survey:			
1960	.21	.35	.40
1973	.42	.45	.47
1979	.52		.58
1986		.58	.56

TABLE 4:
Newspapers as primary news source (percent citing)
Regression of wording, cohort effects, and displacement trends

Type	Variable	B	Sig.
	Constant	.547	***
Wording			
	Open End	-.002	
	Order	.031	
	Multiple	-.021	
Cohort			
	Before 1905	.064	***
Displacement			
	Year	.00061	
	Year Sq	-.00096	***
	R Square=	.066	

* p <.05

** p <.01

*** p <.001

TABLE 5:
Radio as primary news source (percent citing)
Regression of wording, cohort effects, and displacement trends

Type	Variable	B	Sig
	Constant	.493	***
Wording			
	Open End	.441	
	Order	-.048	
	Multiple	-.102	***
Cohort			
	1905-1924	.049	*
Displacement			
	Year	-.008	***
	Year Sq	.0001	

R Square = .383

\+ p <.10

* p <.05

** p <.01

*** p <.001

TABLE 6:
Television as primary news source (percent citing)
Regression of wording, cohort effects, and displacement trends

Variable	B	Sig T
Constant	.011	***
Wording		
Open End	-.405	
Order	-.076	***
Multiple	.082	***
Cohort		
After 1924	.124	***
Displacement		
Year	.011	***
Year**2	-.0008	

R Square= .763

* p <.05

** p <.01

*** p <.001

TABLE 7:

Summary of significant Regression Findings:
Question wording, cohort effects, and displacement trends by medium

Variable	Medium		
	News-papers	Radio	TV
Wording			
Open Ended			
Order			-.076
Multiple		-.102	+.082
Cohort			
Bef. 1905	+.06		
1905-1924		+.05	
After 1924			+.13
Displacement			
Linear		-.008	+.011
Curved	-.001		