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The Need for Cognition, Media Use, and Opinion Formation: How Does the Interplay of Media Use and the Need for Cognition Affect Opinion Formation?

Eunyi Kim

Department of Communication

Texas A & M University

4234 TAMU

College Station, TX 77843-4234

979-845-5178

eykim@tamu.edu

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Abstract

This study examined how the need for cognition affects opinion formation, and also how the need for cognition interacts with media-use patterns to affect opinions regarding possible influences on the news. The data was collected from a telephone survey of ~~369~~368 residents of Onondaga County, New York, from October 2 to October 15, 1998. The study found that people who have both a greater need for cognition and higher levels of newspaper exposure hold stronger opinions than others regarding influences on the news. The results offer empirical and theoretical contributions to the understanding of how media-use patterns and the need for cognition interact to affect opinion formation.

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Public opinion is a pervasive influence on American life, but studies of public opinion have reached contradictory conclusions about the nature and degree of its importance. Harsh skepticism about the importance of public opinion originated with Lippman (1925), and many later public-opinion scholars took up his argument. Converse (1964) argued that most members of the public do not have stable opinions on certain political issues, and therefore may be influenced by debates among elites. Some researchers have referred to people as "cognitive misers" because of their tendency to take shortcuts when processing information (Fiske & Taylor, 1984).

In contrast, other scholars have found that members of the public maintain true, overwhelmingly stable attitudes (Achen, 1975; Dean & Morgan, 1977; Kinder & Sears, 1985; Zaller, 1990). Since most of these studies have treated the public as an aggregate, analyses of individual differences within a given set of survey responses may help clarify some of the ongoing debates about the nature of public opinion. Underwood and Shaughnessy (1975) noted that certain questions allow individual differences to be integrated into theoretical thinking, and this capacity provides an important means of testing the adequacy of theoretical notions.

The purpose of the present study is to examine how the need for cognition affects opinion formation, and also how the need for cognition interacts with media-use patterns to influence opinion formation regarding possible influences on the news. The need for cognition (NFC) scale assesses the extent to which people tend to engage in and enjoy cognitive activity (Cacioppo & Petty, 1982). That is to say, some people enjoy thinking and problem solving, whereas others do not. Few studies in mass communication have

used the NFC scale to explore individuals' cognitive differences. However, by including a few items from the NFC scale in an opinion survey, researchers may be able to identify persons who report "no opinion" or "neutral" not, in fact, for those reasons, but simply because they do not spontaneously engage in evaluation. A closer look at how individual respondents make sense of the options put before them may reveal important differences obscured by identical survey responses.

Theory

The Need for Cognition

Cohen, Stotland, and Wolfe (1955) conceptualized the need for cognition as "a need to structure relevant situations in meaningful, integrated ways and a need to understand and make reasonable the experiential world" (p. 291). In their elaboration likelihood model (ELM) of persuasion, Petty and Cacioppo (1986) noted that people sometimes engage in laborious cognitive processing before rendering a judgment, and at other times render judgments without much thinking, such as when they agree with a communication simply because it is comes from an expert source. Researchers showed how various features of the situation, such as the presence of distraction (Petty, Wells, & Brock, 1976) or the personal relevance of the message (Petty & Cacioppo, 1976), could determine how much a person thought about a message. Cacioppo and Petty (1982) reasoned that just as certain situational factors could affect how much thinking occurred and, therefore, the manner of attitude formation and change, individual differences in intrinsic motivation to engage in effortful cognitive activity were also likely **to** influence attitude formation and change. In a series of studies, they developed and refined an eighteen-item inventory that possessed high internal consistency and test-retest reliability (Cacioppo, Petty, & Kao, 1984). They argued that people with a high need for cognition

(HNCs) think more about the substance of issues and are less influenced by peripheral cues. Their attitudes are more likely to be derived from their underlying beliefs, more stable over time, more resistant to counter-propaganda, and more predictive of their behavior than are the attitudes of people with a low need for cognition (LNCs).

The NFC concept has been studied in other communication disciplines. Heppner, Reeder, and Larson (1983) found that HNCs were more likely to engage in personal problem solving. Cacioppo, Petty, Kao, and Rodriguez (1986) found that HNCs' attitudes, which were obtained in a survey approximately eight weeks before the 1984 presidential election, were more predictive of behavioral intentions and reported voting behavior than were the attitudes of LNCs. Thompson (1995) found that HNCs are more likely to apply free-speech principles when forming opinions on specific issues. Zhang (1996), while examining how the NFC influenced the processing of humorous advertisements, found that people differ in their NFC and that such differences may influence purchase intention as well as the processing of humorous ads.

Extensive social science research has revealed that the NFC forms a significant cognitive component of people's thought processes, including opinion formation, and that the NFC is a predictor of people's opinions. Hypothesis 1 was proposed to test the relationship between the need for cognition and the strength of opinions.

Hypothesis 1: The higher the level of the need for cognition, the stronger the opinion.

Media use, opinion formation, and cognition

The media help people construct an understanding of things outside their immediate environment. For example, in making social problems and political figures more salient, the media influence people's judgments about them (Iyengar, 1991). Research has

identified affective or cognitive processes that may be triggered by media messages (Millar & Tesser, 1992; McLeod, Kosicki, & Pan, 1991).

Ahlering and McClure (1985) reported that HNCs were more likely than LNCs to follow the 1984 presidential debates. Ahlering (1987) also found that HNCs were more likely to say that they intended to watch the debates, were more likely to actually watch the debates, and had more thoughts and concerns about the candidates. Ferguson, Chung, and Weigold (1985) found that a random sample of HNC residents of Gainesville reported that they usually relied on newspapers and magazines for news and watched less television than LNC residents. Based on previous studies, the following hypotheses are proposed:

Hypothesis 2: There is an interaction between media use and the need for cognition.

Hypothesis 3: There is an interaction among media use, the need for cognition, and the strength of an opinion.

Method

Procedure and Sample. The survey instrument was designed and implemented in the following way. The questions used in this study were part of a 134-question telephone survey designed primarily by graduate students at Syracuse University in Syracuse, New York. Thirty-eight graduate students studying research methods conducted the interviews after receiving in-class training.

From October 2 to October 15, 1998, the researchers interviewed ~~369~~368 people. The respondents were randomly selected from within Onondaga County, New York. A CD-ROM telephone directory (Selectphone, 2nd Edition, 1998) was used to develop the sampling frame and ensure the selection of a random sample. All telephone numbers

within the local calling area of Onondaga County were initially selected from the CD-ROM database. Eliminating all business listings left 160,033 residential telephone numbers in the sampling frame.

The survey team determined that a sample size of 2,000 would likely be needed to ensure 400 completed instruments. The team manually selected every 80th phone number from the database in order to generate 2,000 phone numbers. The 2,000 randomized phone numbers were each assigned a number from 1 to 2,000, then printed on 40 sheets, each containing 50. The Kish method was used to randomly select individual members of a household for inclusion in the study. Subsequent to the pretest, new codes were created based on respondents' answers to items that were open-ended or had an "other, specify" category. The survey produced 368 completed surveys from Onondaga County residents.

Before the survey was conducted, the American Association for Public Opinion Research changed its standards regarding the calculation of survey-response rates. According to this new formula, the response rate for this survey (0.36) was not good. The refusal rate (0.59) was high enough to account for most of the low response rate. For a variety of reasons, low response rates are an increasing problem for survey research (Frankel & Frankel, 1987; Steeh, 1981).

When compared to the 1990 census data for Onondaga County, the sample was only slightly biased: females were somewhat over-represented, and the higher-education and higher-income groups were slightly over-represented. The survey sample also differed slightly from the general population of Onondaga County by containing proportionately more people from racial and ethnic minorities.

Variable Operationalization

Need for cognition. The need for cognition was operationalized by asking respondents the following five Likert-scale questions: 1) I prefer complex to simple problems; 2) Thinking is not my idea of fun; 3) I really enjoy a task that involves coming up with new solutions to problems; 4) I prefer my life to be filled with puzzles that I must solve; 5) Learning new ways to think doesn't excite me very much. These five items are drawn from Cacioppo and Petty (1982).

Media use. Media use was determined by adding up the products of the number of days a week and the number of minutes a day that respondents spent on each medium, and then converting these products to a scale based on total hours of use. Newspaper use, television use, and radio use refer to the product of the number of days a week and the number of minutes a day that a person spent watching television, reading newspapers, or listening to the radio.

Strength of opinion. Eleven questions gauged opinions regarding possible influences on the news. Each question was coded into four categories: strongly disagree, strongly agree = 3; disagree, agree = 2; neutral = 1; don't know = 0. The strength-of-opinion index was constructed by summing the eleven-recorded answers.

The questions were phrased as follows: "Some people think that the news may be shaped by the interests of different people and groups. I am going to read you a list of possible influences on the news. For each, please tell me whether you strongly agree, agree, are neutral, disagree, or strongly disagree that it has an important influence on the news." The list was as follows: 1) our capitalist economic system; 2) reporters' personal attitudes; 3) the owner of a news company; 4) assigning a reporter to cover the same government office for a long time; 5) advertisers; 6) the culture we live in; 7) journalistic

ethics; 8) the news company's need to make a profit; 9) editors' and producers' decisions about what's news; 10) the audience; and 11) special interest groups.

Results

This study tested three hypotheses concerning the relationships among the need for cognition, media use, and the strength of opinion. Pearson correlation coefficients (see Table 1) revealed that a respondent's strength of opinion showed a significant association with three out of five indicators of the need for cognition, namely, "I prefer complex to simple problems" ($r = .18$, $p < .001$), "Thinking is not my idea of fun" ($r = .19$, $p < .001$), and "I prefer my life to be filled with puzzles that I must solve" ($r = .15$, $p < .01$). Partial correlation coefficients (see Table 2) suggested that these three indicators correlated with the strength of opinion even after controlling for age, education, and income. However, the magnitude of significance for the three correlation coefficients was small, ranging from .12 to .17. Therefore, hypothesis 1 was partially supported.

Among media-use variables, only television viewing was found to be significantly related to the strength of opinion (see Table 3). The correlation was negative ($r = -.18$, $p < .01$), which might imply that television viewers are somewhat passive.

Table 3about here

Hypotheses 2 and 3 deal with the interaction between the need for cognition and various media-use variables. Two-way analyses of variance showed significant interactions only between three sets of variables: newspaper reading versus "I prefer my life to be filled with puzzles that I must solve"(F 1); newspaper reading versus "I prefer complex to simple problems"(F 2); and radio listening versus "Thinking is not my idea of fun" (F 3). People who agreed more strongly with the statement "I prefer my life to be filled with

puzzles that I must solve" and showed a higher level of newspaper exposure tended to demonstrate the strongest opinions. The same pattern held for the interaction between radio listening and the indicator "Thinking is not my idea of fun": people who agreed less strongly with the statement "Thinking is not my idea of fun" and had a lower level of exposure to radio were more likely to show weaker opinions. Other interaction terms were more complex. Thus, the data partially supported hypotheses 2 and 3.

Discussion

This study examined how the need for cognition might interact with media exposure to affect opinion formation. Three hypotheses were proposed regarding the relationships among the need for cognition, media use, and the strength of opinion. Through a survey of 368 residents in Onondaga County, New York, from October 2 to October 15, 1998, the study provided some evidence to partially support the hypotheses.

Research has shown that those with a high need for cognition (HNCs) and those with a low need for cognition (LNCs) tend to form and change their attitudes differently (Cacioppo & Petty, 1982; Cohen, Stotland, & Wolfe, 1955; Cohen, 1957; Ferguson, Chung, & Weigold, 1985). In particular, HNCs tend to seek out more information and to think about it carefully before making an evaluation, suggesting that HNCs' attitudes more accurately represent their true feelings than do those of LNCs. As predicted in hypothesis 1, this study confirmed that the need for cognition had a significant impact on people's opinion formation. The study also found that the need for cognition interacted with media exposure--in particular, newspaper reading--to affect opinion formation.

The way in which the need for cognition and newspaper reading interact to affect the strength of opinion deserves closer consideration. The results (Figure 2) show a significant interaction between those characterized as "neutral" in their need for cognition

and those rated low on newspaper use. A 1991 study showed that providing optimal responses to surveys often requires considerable cognitive effort and that LNCs may therefore be more likely to engage in lower-effort strategies than HNCs (Krosnick, 1991). That is, if "don't know" or "no opinion" items are provided in a survey, LNCs may tend to select those responses rather than engage in the cognitive effort to think. When "no opinion" is not an option, people who have no opinion on the issue find it easier to choose a middle alternative, such as "neutral" (Schuman & Presser, 1996). These findings suggest a plausible explanation for why those who are "neutral" in their need for cognition and register low newspaper use express the lowest strength of opinion about influences on the news. The results of this study have important implications for the methods used in future studies. For example, researchers should be more careful when interpreting answers such as "neutral" that fall along the midpoint of a scale.

Some limitations of the present study are related to operationalization of the NFC. First, the five indicators from Cacioppo and Petty's scale failed to construct a valid index (Cronbach alpha = .53). A factor analysis suggested that the five indicators may have measured more than just the need for cognition[1]. Future studies should include as many as indicators as the surveys will allow.

There may also be some question-wording problems in the indicators. Statements such as "Thinking is not my idea of fun" or "Learning new ways to think doesn't excite me very much" may elicit rejection when asked. The negative tone of such statements may lead people to deny agreeing with them, even if they do.

Causal relationships were difficult to establish because of "survey effects" arising from the survey setting (Schuman & Presser, 1996). Survey respondents may yield to

social-desirability biases and conceal their honest responses to questions. Even though previous studies using similar experimental designs have found significant results regarding the subject survey effects, it is questionable to what extent the NFC results generalize to the more standard survey context.

Despite its limitations, this study contributes empirically and theoretically to the understanding of how media-use patterns interact with the need for cognition to affect opinion formation. The results clearly suggest that some people who are cognitively involved form strong opinions about certain issues, and people's level of cognitive activity interacts with their media environment to affect their opinions. The study also suggests that measures for the need for cognition should be included in survey instruments as a way to help interpret individual differences among identical survey responses.

[1] Two factors were suggested.

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Table 1. Pearson correlation coefficients for the strength of opinion and the need for cognition

Variables	2	3	4	5	6
1. The strength of opinion	.18[c]	.19[c]	.06	.15[b]	.03
	(366)	(366)	(366)	(365)	(363)
	----	.20[c]	.11[a]	.43[c]	.07
2. Thinking is not my idea of fun.		(366)	(366)	(365)	(363)
		----	.23[c]	.21[c]	.15[b]
3. I really enjoy a task that involves coming up with new solutions to problems.			(367)	(366)	(363).
			----	.23[c]	.28[c]
4. I prefer my life to be filled with puzzles that I must solve.				(366)	(363)
				----	.50
5. Learning new ways to think doesn't excite me very much.					(362)
					----
6. I prefer complex to simple problems.					

Table 2. Partial correlation coefficients for the strength of opinion by need for cognition, controlling for age, income, and education, N = 299.

Variables correlated with the strength of opinion	Control variables	Zero-order correlation coefficient	Partial correlation coefficient
Thinking is not my idea of fun.		.18c	
	Age*		.17c
	Education**		15b
	Income***		.16b
	Age, Education and Income		.14a
I really enjoy a task that involves coming up with new solutions to problems.		.19c	
	Age*		.19c
	Education**		.18b
	Income***		.13a
	Age, Education and Income		.13a
I prefer my life to be filled with puzzles that I must solve.		.06	
	Age*		.04
	Education**		.05
	Income***		.05
	Age, Education and Income		.05
Learning new ways to think doesn't excite me very much.		.15b	
	Age*		.14b
	Education**		.12b
	Income***		.13a
	Age, Education and Income		.11
I prefer complex to simple problems.		.03	
	Age*		.02
	Education**		.03
	Income***		.03
	Age, Education and Income		.03

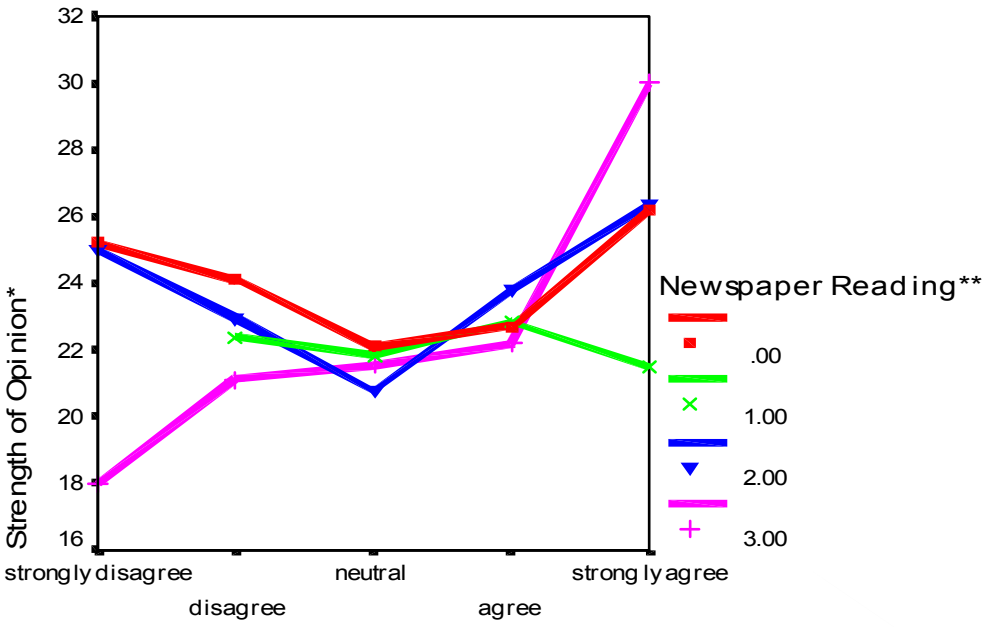
* Age: In years
** Education: In years
***Responses were coded: 1 = $10,000 or less, 2 = $10,001 to $ 20,000, 3 = $20,001 to $ 30,000, 4 = $ 30,001 to 40,000, 5 = 40,001 to 50,000, 6 = 50,001 to 60,000, 7 = 60,001 to 70,000, 8 = 70,001 to 80,000, 9 = 80,001 or more.

Table 3. Pearson correlation coefficients for media use and strength of opinion variables.

Variables	2.	3.	4.	5.	6.	7.
Strength of Opinion	-.09 (366)	-.18c (357)	.19c (367)	-.04 (335)	.10 (367)	.01 (340)
How many days per week do you watch television?	----	.24c (357)	-.02 (367)	.10 (355)	.19 (367)	.03 (340)
On the days that you do watch television, how much time do you spend watching?		----	-.27c (358)	.13a (329)	-.03 (358)	.10 (334)
How many days per week do you listen to the radio?			----	.19c (336)	.08 (368)	-.04 (341)
On the days that you do listen to the radio, how much time do you spend listening?				----	-.04 (336)	.06 (315)
How many days per week do you read newspapers?					----	-.07 (341)
On the days that you do read newspapers, how much time do you spend reading?						----

a. P < .05
b. P < .001
c. P < .001

Figure 1. Two-way analysis of variance between "I prefer my life to be filled with puzzles that I must solve" and newspaper reading on the strength of opinion.



Main effect of "I prefer my life to be filled with puzzles that I must solve": F = 2.01, ns
Main effect of newspaper reading: F = 1.826, ns
Interaction of "I prefer my life to be filled with puzzles that I must solve" by newspaper reading: F = 1.88, $p < .05$

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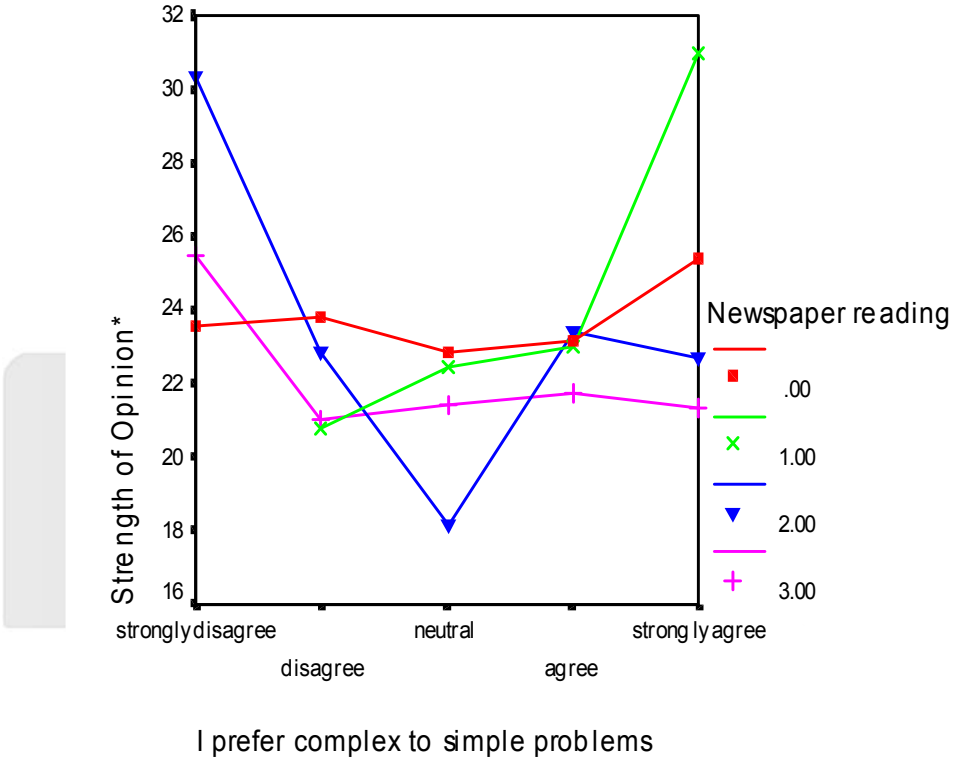
* Eleven issues were indexed into the strength of opinion.
** Newspaper reading was recorded as 0 = lowest through 7 hrs, 1 = 7.5 hrs through 12.5 hrs, 2 = 14 hrs through 21 hrs, 3 = 24.5 hrs through highest.

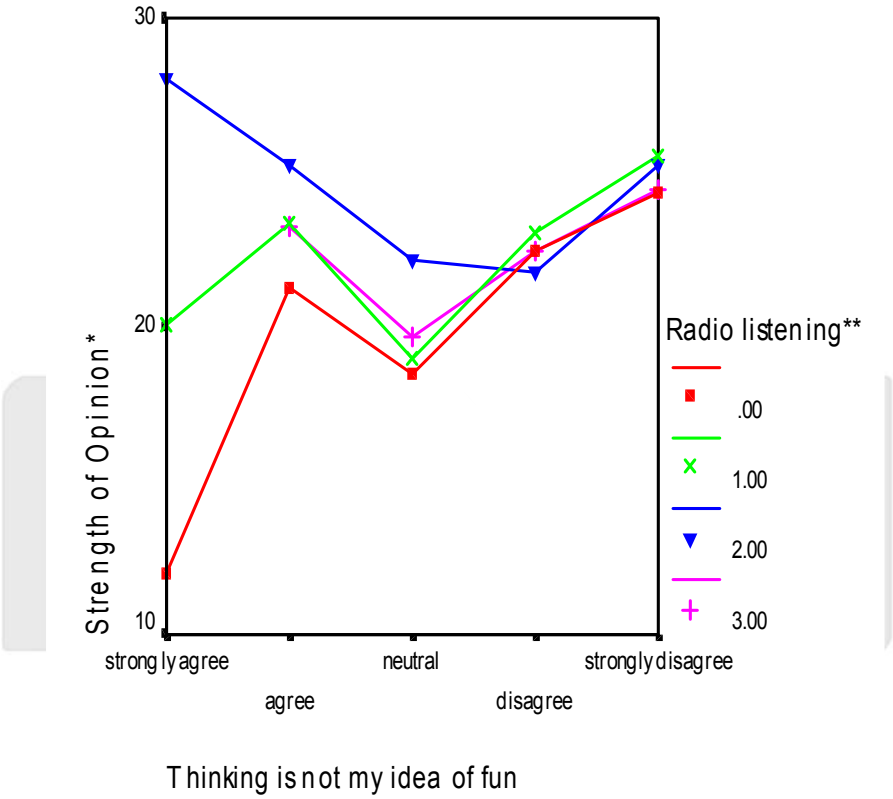
Figure 2. Two-way analysis of variance between "I prefer complex to simple problems" and newspaper reading on the strength of opinion.



Main effect of "I prefer complex to simple problems": F = 2.4, ns
Main effect of newspaper reading: F = 1.4, ns
Interaction of "I prefer complex to simple problems by newspaper reading": F = 3.06, $p < 0.01$

* Eleven issues were indexed into the strength of opinion.
** Newspaper reading was recorded as 0 = lowest through 7 hrs, 1 = 7.5 hrs through 12.5 hrs, 2 = 14 hrs through 21 hrs, 3 = 24.5 hrs through highest.

Figure 3. Two-way analysis of variance between "Thinking is not my idea of fun" and radio listening on the strength of opinion.



Main effect of "Thinking is not my idea of fun": $F = 5.35$, $p < .01$
Main effect of radio listening: $F = 4.21$, $P < .05$
Interaction of "Thinking is not my idea of fun" by radio listening: $F = 2.38$, $P < .01$