

THE INFLUENCE OF ETHNIC NEWSPAPER CONSUMPTION
ON CANCER PREVENTION BEHAVIORS:
A TEST OF THE COGNITIVE
MEDIATION MODEL

by

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ABSTRACT

This study offers a test of the cognitive mediation model (CMM) within a low-income, Spanish-speaking population in the state of Indiana. A survey study was conducted to test whether participants ($N = 150$) who consumed ethnic newspapers, namely *La Raza*, were more likely to have greater cancer prevention knowledge and more likely to comply with cancer prevention behaviors. The interaction between *La Raza* readership and health motivation was not significantly related to either screening or knowledge; however, individuals with high health motivation were more likely to report screening. Notably, two of the relationships posited by the CMM were absent, surveillance motivation and elaboration were not related to knowledge. Further, our test of the model did not yield any significant results in its original form or the modified version used to test an ethnic subsample in a health news learning context. However, once elaboration was removed from the model, there was an indirect relationship between surveillance motivation and cancer prevention knowledge through attention. Future research should focus on finding ways in which models such as the CMM can be modified to explain news learning in ethnic and linguistic subpopulations.

Para la mamá, Luis, y la mana.

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INTRODUCTION

Learning from news media has long been a topic of research within communication. However, exposure to news media does not guarantee an increase in knowledge acquisition and behavioral change. In fact, research has found that exposure to information only results in change for a particularly engaged and attentive audience (Stryker, Moriarty, & Jensen, 2008). It seems that messages contained in news media need to be actively consumed by an audience in order to have an effect on their opinion and consequently on their behaviors. Furthermore, although direct-effect models of media effects have long been discredited, there are various theoretical frameworks that attempt to explain the ways in which exposure to news media affects audiences. One such model, and the subject of this test, is Eveland's cognitive mediation model (CMM) which stipulates that audiences require engaged consumption of a message and reflection upon the message in order to be affected by the message's content.

While the CMM initially tested the ways in which political information in the news leads to news learning (Eveland, 2001), different types of messages in the media can lead to news learning in similar ways. The CMM, therefore, can also provide insights into how health messages in the media can lead to health behavior knowledge and to healthy behaviors. Furthermore, research shows that news organizations are expanding their coverage of health-related news and specifically cancer information (Viswanath, 2005), and are thus becoming a useful channel for transmitting health campaigns. On the

other hand, researchers should also be aware that there are several limitations to health-related coverage in media. For instance, in their content analysis, Jensen, Moriarty, Hurley, and Stryker (2010) found that mainstream news media tend to overestimate the pervasiveness of certain types of cancer while underestimating other iterations of the disease. Furthermore, they found that the media's skewed representation of cancer caused the public to hold these same misconceptions. Thus, it becomes increasingly important to understand the ways in which exposure to news media, particularly health information, can lead to learning and behavioral change.

Moreover, while news media can be a valuable vessel for health campaigns and can have a strong impact on attentive audiences, the expansion of health news stories does not benefit everyone equally (Viswanath et al., 2006). For instance, underserved populations are harder to reach for the media than the general public, and thus benefit less from health-related news and campaigns. These gaps in knowledge might not only prevent certain populations from benefitting from health information, but also increase health disparities. However, there are ways in which media can help ameliorate these knowledge gaps. Specialized news media such as ethnic newspapers, which are low cost and are trusted means of communication for minorities in the United States (Wilkin & Ball-Rokeach, 2006), can become an effective vehicle for transmitting health messages and reaching populations that are missed by mainstream media.

There are several features that make ethnic news media an ideal vessel for health messages aimed at subpopulations. For example, ethnic news organizations tend to be smaller than their mainstream counterparts, they are locally managed, and are sustained through local advertising (Close, Ponce de Leon, & Schumacher, 2006); thus, they are

more likely to engage in community-building and promote protective behaviors (Viswanath & Arora, 2000). Furthermore, for linguistic minorities, newspapers written in the community's first language become a way of gathering important information that would be inaccessible otherwise. Thus, these types of media offer an opportunity to reduce knowledge gaps and ameliorating health disparities (Viswanath & Lee, 2007).

While the CMM has been tested in several contexts, there is a lack of research on the effects of exposure to ethnic news media on health-related knowledge and behaviors. To correct this, the present study follows Jensen, King, Guntzviller, Perez, and Krakow's (under review) test of the model with a sample of low-income, Spanish-speaking adults. In that study, the authors tested the relationship between consumption of ethnic newspapers and variables, including level of education, acculturation, and adherence to cancer screening behaviors. The authors found that there was a correlation between consumption of the newspapers and a likelihood of partaking in health behaviors for those individuals with high health motivation. These promising findings provide a justification for a second study to determine whether these results remain consistent with a different sample.

This follow-up study of the CMM explored the relationship between consumption of ethnic newspapers, namely *La Raza*, and the participants' cancer prevention knowledge and cancer screening behaviors. Following the CMM, I tested the roles of surveillance motivation and elaboration in this relationship. Furthermore, the CMM was adapted to explain news learning within an ethnic and linguistic subpopulation rather than a general population. This work has both practical and theoretical implications since it

not only provides valuable insights about news learning, but it also offers an opportunity for health communicators and practitioners to better target at risk populations.

Ethnic news media

Newspapers have long been regarded as ideal ways to convey information to mass audiences and transmit practical information to the public. Although these are the primary functions of any newspaper, specialized newspapers have become particularly valuable as channels of communication for underserved populations who might not have the access or ability to consume mainstream media. Populations who lack the resources or ability to engage with mainstream news media can benefit greatly from news sources that cater to their specific needs whether by culturally sensitive content, a different language, or a set of beliefs. For instance, Spanish-language newspapers provide useful information to recent immigrants and those who are not proficient in English, while at the same time offering news from a culturally congruent perspective. In fact, research has found that culturally specific news media can be more effective and persuasive for these populations (Hoffman-Goetz, 2006; Kreuter & McClure, 2004).

Ethnic media, according to Viswanath and Arora (2000), act as a watchdog or sentinel against external threats by providing information on immigrants' rights, welfare, and other topics related to the wellbeing of the population that they serve. Health news coverage in these types of newspapers is common since they encourage the protection of the community through promotion of healthy behaviors. In fact, research has shown that ethnic news media are more likely to provide health-related news stories and promote healthy behaviors than their mainstream counterparts. Thus, it is possible that increased

exposure to ethnic news media can predict increased knowledge about disease prevention behaviors.

In their comparative study, Cohen et al. (2008) analyzed the differences in cancer coverage between media targeting African American audiences and general audiences. The authors found that ethnic media were more likely than mainstream media to present information on cancer prevention and education, hence supporting the notion of ethnic media as being particularly engaged with their community and providing health information. The authors also found that these newspapers do not exclusively cover cancer in the abstract, but engage with their communities and compel them to engage in healthy behaviors. Rather than adhering to the role of objective informer, ethnic news media offer an opportunity to provide didactic information to underserved populations that might help narrow knowledge gaps and health disparities.

Additionally, Stryker, Moriarty, and Jensen (2008) conducted a similar comparison of ethnic and mainstream cancer newspaper stories and found that ethnic newspapers provide more health-related information, namely cancer prevention information, and they presented the information in such a way that it required lower literacy levels than information presented in their mainstream counterparts. As such, these news sources tend to be more inclusive of less educated individuals with lower socioeconomic status, and those with limited English proficiency. Further, these media were more likely to include primary and secondary cancer prevention information, as well as information on awareness and education.

Taken together, these findings suggest that ethnic newspapers are a promising vehicle for transmitting health information (Stryker, Emmons, & Viswanath, 2007).

However, health communication practitioners should be wary of the possible implications of simplified health information. For instance, through a content analysis that compared ethnic and provincial newspapers in Canada, Donelle, Hoffman-Goetz, and Clarke (2008) found that while ethnic newspapers offer considerably more information regarding the genetic risks of breast cancer, the information was unclear and highly confusing.

Similarly, Stryker, Fishman, Emmons, and Viswanath (2009) found that, due in part to a lack of resources and a desire to accommodate traditionally undereducated minorities, ethnic newspapers were not able to communicate cancer risks accurately. Since these types of newspapers are small and sustained locally and thus have limited resources, they tend to present information in a decontextualized and nonnumeric fashion, further muddling relevant information. Lack of clear information becomes particularly troubling when communicating messages about health risks and cancer prevention, justifying an assessment and a drive towards a better understanding of news learning within ethnic subpopulations.

At the same time, there is a lack of research on the effects that news media have on news learning, especially for ethnic subpopulations. For instance, Stryker, Jensen, and Moriarty (2008) did not find a direct effect of exposure to news media on actual news learning, suggesting a complex relationship between exposure and learning. However, the authors found that attention to health news was positively related to knowledge about certain cancer risks such as those related to lack of healthy food consumption and smoking, but not to others like exercise, sun exposure, and alcohol consumption. These results support the notion that attention to health news story impacts gains in cancer information and, as a result, may also facilitate compliance with healthy behaviors.

These findings suggest that there is a need for a more thorough understanding of the effects of news media consumption on health knowledge acquisition, particularly for traditionally underserved populations. However, there are not enough studies examining this relationship. One example is the study by Jensen et al. (under review) that tried to explicate the relationships between motivations, surveillance, and news learning within an ethnic subpopulation. The authors tested whether exposure to ethnic news media predicted higher health knowledge and higher adherence to healthy behaviors. The authors found that the interaction between news consumption and health motivation predicted cancer screening behaviors. That is, participants who consumed ethnic news media regularly were more likely to report cancer screening behaviors. This study aims to test whether this relationship holds with a second, larger sample. Thus, the first hypothesis is articulated as follows:

H1a: The interaction between consumption of *La Raza* newspaper and health motivation will predict cancer screening.

However, the study by Jensen et al. (under review) examined the effects of news consumption exclusively on screening behaviors, the authors did not test whether ethnic news consumption increased cancer knowledge within the population. This study included a test of whether news consumption is related to an increase in knowledge in order to have a better understanding of whether news consumption has an impact on knowledge acquisition as well as behaviors. Thus, the second part of this hypothesis is articulated as follows:

H1b: The interaction between consumption of *La Raza* newspaper and health motivation will predict cancer prevention knowledge.

These hypotheses are based on the notion that exposure to a certain type of news media, namely ethnic news media, will predict knowledge gain in a specific context, health (cancer screening behaviors and cancer prevention knowledge). However, there are several theoretical frameworks that attempt to explain the underlying mechanisms that might explain the relationship between news consumption and news learning. One such framework, and the subject of this test, is the cognitive mediation model (CMM), which includes the individual's level of attention to the news and his or her reflection upon the received information as variables that might affect news learning.

The cognitive mediation model

First articulated by Eveland (1998; 2001), the cognitive mediation model seeks to explain the relationship between the audience's motivations and engagement with the news contents, and news learning. This model states that news learning is predicted by three distinct elements: news surveillance motivation, attention, and elaboration. News surveillance motivation refers to scanning and searching information sources for potentially relevant material, and according to the model, this motivation is indirectly related to news learning by increasing an individual's attention to information as well as the amount of time that the individual will spend reflecting upon the message he or she received, referred to as elaboration. This model provides a useful theoretical framework for understanding the relationship between engagement with news stories, news learning, and finally, behavioral change. Furthermore, while the CMM has been tested in a variety of contexts and populations with various degrees of success (e.g., Eveland, 2002; 2004), there is still a need to clarify the relationships between these variables as well as the

moderators and mediators that affect these relationships, particularly for ethnic subpopulations.

In their test of the CMM, Eveland and Dunwoody (2010) compared web-based and traditional (print) media exposure, and found that both elaboration and selective scanning act as mediators in news learning. Using an experiment crafted to determine the difference between learning through print and digital media, the researchers found that on the one hand, web-based media encouraged higher levels of reflection upon the message, and on the other, that using digital media also decreased learning through increased selective scanning. Thus, elaboration mediated the interaction between exposure to the news and news learning, a valuable insight when determining the variables that impact how news are consumed by different populations, how they learn from the news, and also when trying to increase news learning among these groups.

Similarly, in his study of the CMM, Jensen (2011) found evidence supporting the model within the context of health, specifically cancer news coverage and learning. This experimental study utilized a virtual lab instead of a survey design allowing the researcher to determine causality and the direction of the relationships between the observed variables. Furthermore, in this study the author re-conceptualized attention as a moderator rather than a mediator. The author found that news surveillance motivation was positively related to story comprehension but was not related to fact recall, supporting the notion that being able to recall facts does not result in actual comprehension. The author also found that elaboration mediated the relationship between news surveillance motivation and story comprehension, thus providing evidence that surveillance motivation stimulates greater reflection (i.e., elaboration), which in turn

predicts story comprehension. Finally, the study also provided evidence that attention to health news stories acted as a moderator for the indirect relationships, that is, attention to health news stories affected how these relationships emerged. Taken together, these results justify and call for further research into the variables and interactions that constitute the CMM, specifically the role that motivation and attention play in news learning. Thus, our second hypothesis is articulated as follows:

H2: In line with the CMM, the relationship between news surveillance motivation and cancer prevention knowledge will be serially mediated by attention and elaboration.

Notably, the CMM was formulated to explicate the process of knowledge acquisition in general audiences exposed to mainstream media. However, this model might need refinement in order to explain the same process but in different target populations who are exposed to different types of media, for example, ethnic news media. With this in mind, a more refined and specific version of the model was tested by including variables that provide a tailored approach for this sample population.

First, as mentioned before, one of the main components of the cognitive mediation model is attention to news media, meaning that in order to learn by consuming news media, an individual is required to be interested in the information being presented. However, for linguistic subpopulations, attention to news in general might not adequately operationalize the concept since paying attention to mainstream news media, which they might not be able to access or understand, might not be common. Thus, a context-specific variable might be an optimal substitute for the general variable of attention. Further, attention is operationalized as how interested an individual is in news media, which might be substituted in the target population as attention with ethnic news media. For this target

population, readership of ethnic news sources, such as *La Raza*, which are specifically targeted at them, might provide a better approximation to the concept of attention to the news. Thus, the first research question for this study is formulated as follows:

RQ1: For the target readership, is a context-specific variable for attention such as consumption of *La Raza* an optimal substitute for news media attention in the CMM?

Furthermore, the CMM was created to explain news learning from general information rather than learning from information in a specific context. Thus, news surveillance motivation refers to an individual's interest in regularly scanning the news in order to gain general information; this, however, might not translate into surveillance motivation in other contexts. An interest in scanning for sports news stories might not translate into knowledge acquisition on another topic such as politics or health. For instance, in the context of health, it might be the case that people's interest in health-related information might not be accurately measured by a general motivation to scan the news. Rather, an interest in maintaining good health might be better able to reflect the surveillance motivation concept since individuals from the target population who are interested in having healthy lifestyles could be more likely to search for this type of information in ethnic news media (known for having health information). In addition, ethnic newspapers tend to provide more health information than mainstream media and as such would be a rich source of information for those wishing to maintain a healthy lifestyle. Thus, health motivation in the case of ethnic subpopulations could arguably substitute news surveillance motivation as a predictor for cancer prevention knowledge. Thus, the second research question for this study was formulated as follows:

RQ2: Is health motivation an optimal substitute for surveillance motivation in the CMM when predicting cancer prevention knowledge?

METHOD

Participants

Participants ($N = 150$) for this study were low-income, Spanish-speaking, Latino adults from a Northwestern Indiana county. All individuals participating in the program were at or below 200% of the poverty line, a threshold routinely utilized by the state of Indiana to identify individuals needing assistance.

Procedure

Two bilingual university extension employees, who routinely work with low-income Latino populations, assisted in identifying participants in Lake County, an impoverished county in the state of Indiana. Participants received \$10 in cash as compensation for their time.

Researchers provided a consent form (in Spanish) to participants. After gaining informed consent, the participants were given a four-page survey written in Spanish. A professional translation service, with certification for medical and legal translation, translated all documents and scales from English to Spanish. The university extension employees administered the survey. Participants were invited to ask the survey administrator to read any section of the questionnaire, as well as the response options.

Measures

Demographics. The sample consisted mostly of women ($n = 126$) with an average age of 38 years ($M = 38$, $SD = 13.08$) and ranging from 18 to 79. The average education completed was seventh or eighth grade ($M = 3.85$, $SD = 2.11$) and ranged from *no formal education* ($n = 12$) to *completed college* ($n = 7$). Most of the participants reported not having health insurance ($n = 90$).

Ethnic newspaper consumption. Participants reported whether they read two ethnic newspapers available in Indiana: *La Raza* (published in Chicago, IL) and *La Viva* (published in Hammond, IN). Participants reported *having seen it = 1*, *having read it sometimes = 2*, or *having read it a lot = 3* for each of the newspapers. They were then asked their opinions on *La Raza* as an open question. The average participant reported having seen the newspaper ($M = 1.03$, $SD = .99$). As not many of the participants reported knowing *La Viva*, the study focused on variables pertaining to *La Raza*.

Health motivation. For this measure, Champion's (1993) health belief sub-scale was used to examine the participants' health motivation, or how important health beliefs and activities are for the individual. This scale is composed of seven statements requiring the participant to answer on a scale from *strongly disagree = 1* to *strongly agree = 2*. The mean for health motivation was 4.02 ($M = 4.02$, $SD = .72$).

Attention to health news. Attention specifically to health news was measured using an 8-item scale (Jensen, 2011) in which participants state with what frequency they read different types of news ranging from local news to sports and entertainment. The respondents answer in a 4-point scale from *never read* to *always read* ($M = 2.20$, $SD = .71$).

Elaboration. Elaboration or reflecting on information gathered from the media, and whether the individual will remember and recall it was measured using a 3-item scale developed by Beadoin and Thorson (2004) on their test of CMM, the mean for this scale was 2.95 ($SD = .78$).

Cancer prevention knowledge. This variable was measured using 2 different scales: the 10-item Michigan Cancer Prevention Test (Zazove, Meador, Reed, Sen, & Gorenflo, 2009) measured through five questions with 7 options, and 9 items from the Cancer Prevention Knowledge Test (Chamberlain et al., 1995), which consist of 9 questions that are subsequently coded as *correct* (1) or *incorrect* (2), ($M = 1.13$, $SD = 1.34$).

Surveillance motivation. This scale measures the respondents' drive to regularly remain informed through reading newspapers and asks questions such as: "*I follow the news because I like to get the news first so I can pass it on to other people*" with options from *strongly disagree* to *strongly agree*, ($M = 2.76$, $SD = .88$).

Cancer prevention and screening behaviors. Following Jensen et al. (under review), I measured health behaviors using single items adapted from the General Health Survey (Nigg et al., 1999). These items asked participants about regular habits such as "*I exercise for a minimum of 20 minutes, three times a week*", using a 5-point scale with options ranging from "*Yes, I have been for more than six months*" =5 to "*No, and I do NOT intend to in the next six months*" =1. Since this study focused on screening behaviors, the variables used were cancer screening behaviors ($M = 3.24$, $SD = 1.36$) and routine screening behaviors ($M = 2.76$, $SD = 1.36$).

RESULTS

Bivariate correlations

Bivariate correlations were calculated between all variables (see Table 1). Cancer prevention knowledge was positively related to cancer screening, health motivation, attention, insurance status, gender (with women reporting having greater knowledge), and education. Cancer screening was positively related to attention, insurance status, age, and gender. Consumption of *La Raza* was positively related to education and negatively related to elaboration. Health motivation was positively related to surveillance motivation, elaboration, and age. Surveillance motivation was positively related to attention, elaboration, and age. Attention and elaboration were positively related. Two relationships postulated by the CMM were notably absent, as neither surveillance motivation nor elaboration were significantly related to knowledge.

Test of the *La Raza* x health motivation interaction

H1a and H1b postulated that the interaction of *La Raza* consumption and health motivation would be significantly related to cancer screening and cancer prevention knowledge. Hierarchical regression was employed to test both hypotheses with cancer screening/cancer prevention knowledge as the dependent variables and the other variables were blocked as follows: age, sex, education, citizenship, and insurance status (block 1), health motivation (block 2), consumption of *La Raza* (block 3), and the *La Raza* × health

motivation interaction (block 4). The variables were blocked in this manner to isolate variance explained by each block. This enables researchers to examine the amount of variance explained by the demographic controls (block 1), the two predictors (block 2 and 3), and the interaction (block 4).

For cancer screening, the regression was only significant at block 1: $r = .38$, R^2 change = .147, $F(5, 133) = 4.58$, $p = .001$ (see Table 2). Within that block, both age and sex were positively related to cancer screening. The interaction was not statistically significant at block 4: $r = .41$, R^2 change = .015, $F(1, 130) = 2.35$, $p = .128$. Thus, H1a was not supported; however, it is worth noting that the interaction accounted for the same variance in cancer screening as previously observed (1.5%) by Jensen and colleagues (under review), and that the pattern of the interaction was also identical (readers with higher health motivation were more likely to report screening).

For cancer knowledge, the regression was only significant at block 1: $r = .38$, R^2 change = .147, $F(5, 133) = 4.58$, $p = .001$ (see Table 2). Within that block, both sex and education were positively related to cancer prevention knowledge. No other block was significant. H1b was not supported.

Test of the original CMM

The CMM posits that the relationship between news surveillance motivation and cancer prevention knowledge will be serially mediated attention and elaboration (see Figure 1). PROCESS was utilized to test a serial mediation model with news surveillance as the independent variable, cancer prevention as the dependent variable, and attention and elaboration as mediators. The serial mediation model was not significant, $r = .00$

(.01), 95% CI: -.0019, .1596. An examination of the model revealed that neither attention nor elaboration were significantly related to knowledge (see Figure 2). Thus, H2 was not supported.

It is worth noting that there was a significant indirect effect through attention when elaboration was removed from the model, $r = .06$ (.04), 95% CI: .0019, .1499 (see Figure 3). News surveillance increased attention, which was positively related to cancer prevention knowledge.

Test of the modified CMM

Though the original CMM was not supported, RQ1 and RQ2 queried whether more context specific variables (i.e., consumption of *La Raza*, health motivation) would be optimal replacements of attention and news surveillance given the population and outcome of interest. To examine these possibilities, three serial mediation models were tested. The first modified model examined whether consumption of *La Raza* was an optimal replacement for attention. The second modified model examined whether health motivation was an optimal replacement for surveillance motivation. The third model tested whether replacing both attention and surveillance with consumption of *La Raza* and health motivation was optimal. None of those modified models yielded significant mediation: $r = .00$ (.01), 95% CI: -.0014, .0154 (see Figure 4), $r = -.008$ (.01), 95% CI: -.0179, .0081 (see Figure 5), and $r = -.0021$ (.01), 95% CI: -.0184, .0032 (see Figure 6).

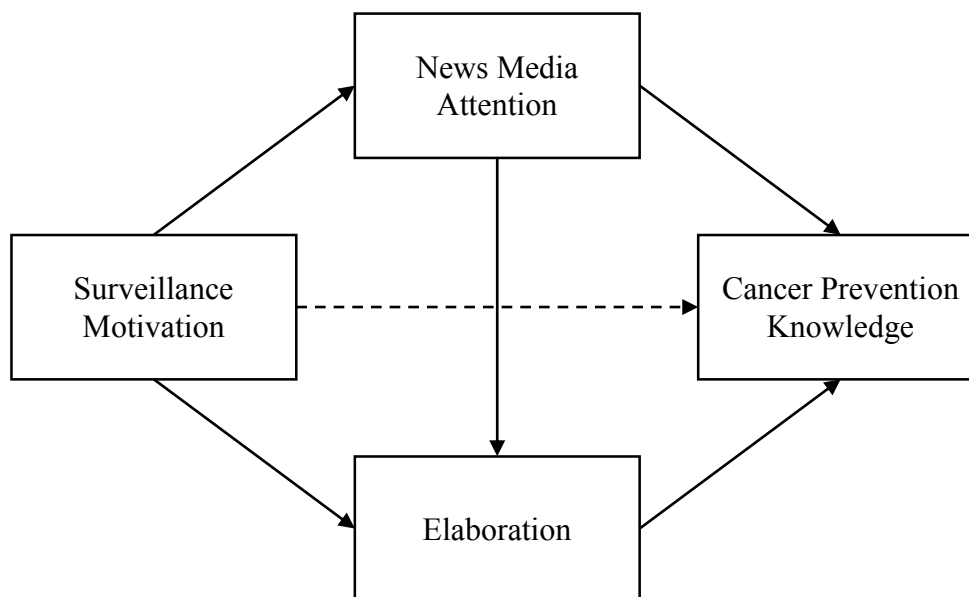


Figure 1. Original cognitive mediation model.

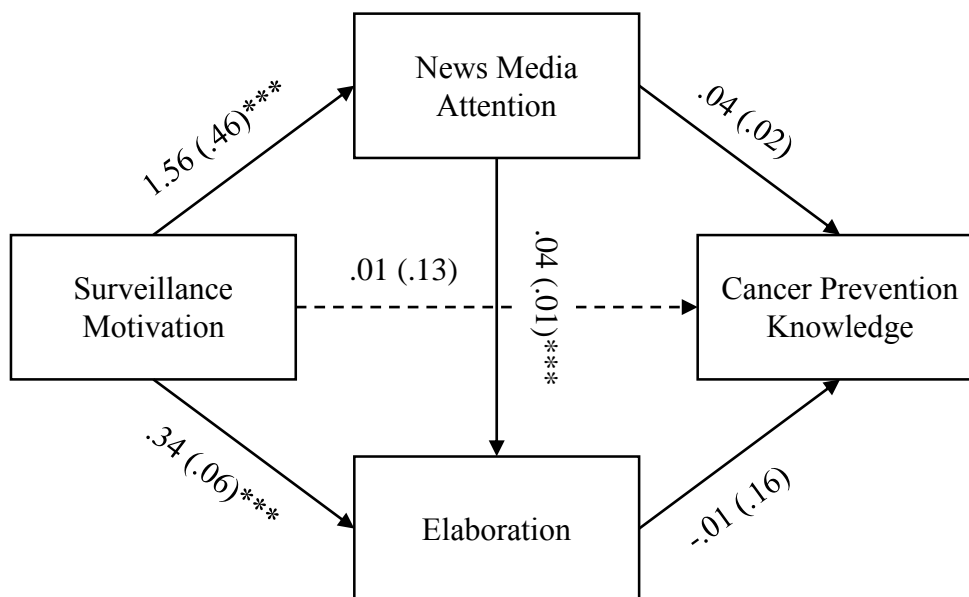


Figure 2. Test of the original cognitive mediation model. Note: indirect $r = .00 (.01)$, 95% CI: $-.0019, .1596$.

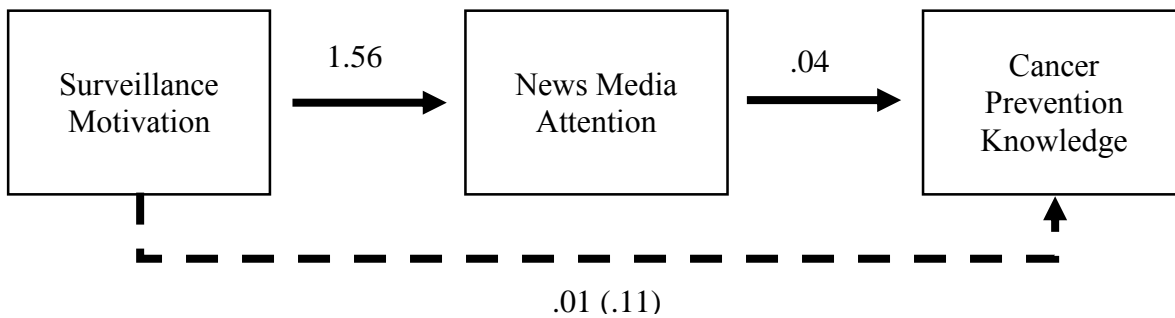


Figure 3. Effect of surveillance motivation on cancer prevention knowledge. Note: mediation: $r = .06 (.04)$, 95% CI: .0019, .1499

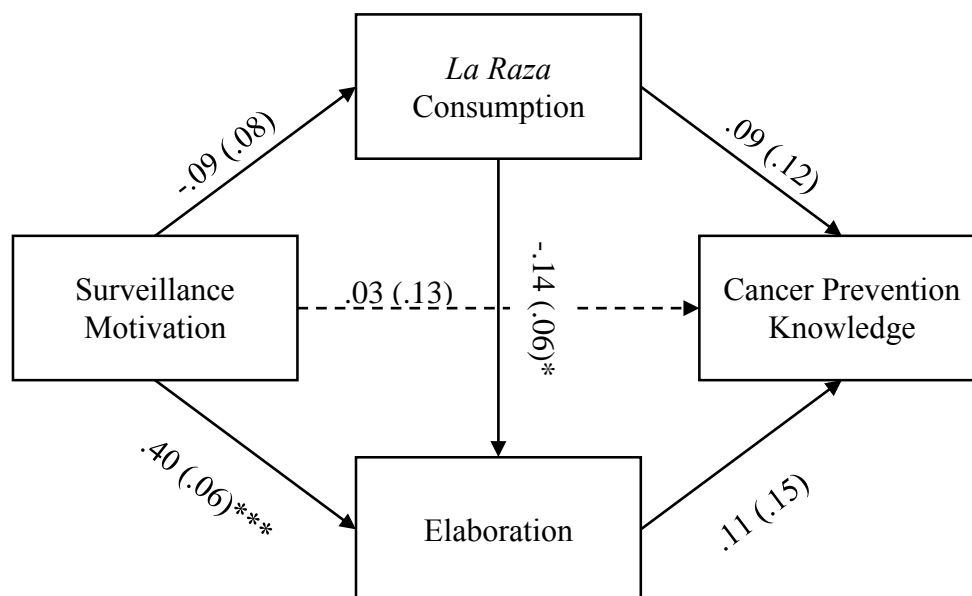


Figure 4. Test with *La Raza* consumption substituting attention. Note: $r = .00 (.01)$, 95% CI: -.0014, .0154

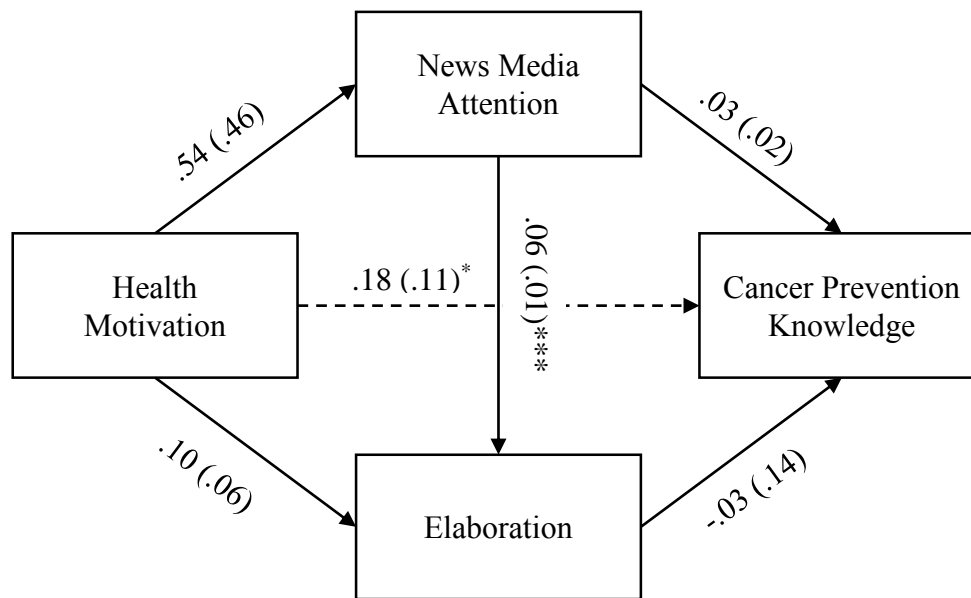


Figure 5. Test with health motivation substituting surveillance motivation. Note: $r = -.008$ (.01), 95% CI: $-.0179, .0081$

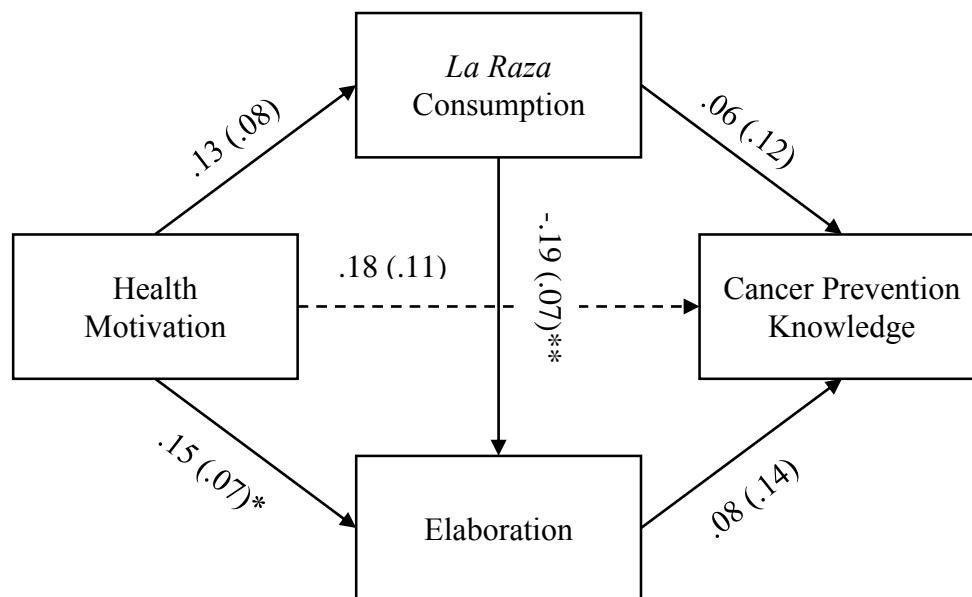


Figure 6. Test with both substitutions. Note: $r = -.0021$ (.01), 95% CI: $-.0184, .0032$

Table 1. Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11	12
Cancer Prevention Knowledge Test	1											
Cancer Screening	.216**	1										
Raza Readership	.114	-.004	1									
Health Insurance	-.174*	-.226**	-.033	1								
Surveillance Motivation	.057	.100	-.114	-.159	1							
Health Motivation	.174*	.102	.124	-.099	.327**	1						
News Attention	.168*	.184*	.066	-.096	.280**	.123	1					
Elaboration	.064	-.039	-.197*	-.100	.477**	.165*	.413**	1				
Age	.076	.185*	-.094	-.204*	.221**	.173*	.149	.056	1			
Gender	.193*	.273**	.082	-.134	.060	.009	-.092	-.084	.046	1		
Education	.220**	.078	.225**	-.180*	-.101	.027	.152	.015	-.112	.014	1	
Citizenship	-.021	-.113	-.044	.369**	-.141	-.044	-.153	-.037	-.162*	.045	-.284**	1

Note. Bivariate correlation matrix. * $p < .05$ ** $p < .01$

Table 2. Hierarchical Regression with Cancer Screening as the Outcome.

	β	t	p	$R^2 \Delta$
Block 1				.147
Age	.18	2.13	.035	
Gender	.24	2.95	.004	
Education	.08	.90	.372	
Citizenship	-.05	-.61	.544	
Health Insurance	-.10	-1.15	.251	
Block 2				.003
Health Motivation	.05	.64	.524	
Block 3				.003
La Raza Readership	-.06	-.70	.487	
Block 4				.015
La Raza Readership \times Health Insurance	.16	1.53	.128	

DISCUSSION

The hypotheses for the study posited that individuals who regularly consume ethnic news media and are motivated to maintain good health would be more likely to screen for cancer and have higher cancer prevention knowledge. It tested whether the interaction between consumption of *La Raza* newspaper and health motivation was related to cancer prevention knowledge and screening. These interactions did not yield significant results; however, the interaction between readership and health motivation accounted for 1.5% of the variance in cancer screening, the same percentage previously observed by Jensen et al. (under review). Future research could focus on finding whether other types of ethnic news media, combined with health motivation, might increase cancer prevention knowledge and screening.

Further, this study sought to serve as a test for the CMM, and to extend its uses to ethnic subpopulations in the United States as well as to specific news contexts, namely health information. This model has long been regarded as a possible way to explain how news media can result in knowledge acquisition and behavioral change, and although past studies have found general support, more research is needed to understand how this model can function within a specific news context and for specific target audiences. The present study sought to explain news learning in the context of health utilizing a sample of low-income, Spanish-speaking adults in the state of Indiana and while the test of the

CMM failed to yield significant results, this might be due to the fact that linguistic subpopulations engage with news media in different ways, or that attention to information in general is not equal to attention to health information. Remarkably however, correlations between two of the main components of the model, news surveillance motivation and elaboration, and knowledge, were not significantly related. These two variables did not act as mediators in the relationship between surveillance motivation and knowledge as the model predicts. Perhaps further research should be done regarding the generalizability of this model for other linguistic and ethnic subgroups.

Notably, when the concept of elaboration was removed from the model, there was a significant relationship. There was a significant indirect relationship between news surveillance motivation and cancer prevention knowledge through attention, that is, news surveillance increased attention which in turn was positively related to cancer prevention knowledge. Perhaps having high surveillance motivation is enough to elicit attention and have an effect on knowledge, without requiring elaboration about the information presented. Or this might be the result of the operationalization of the concept of elaboration, since it is a particularly ambiguous concept within cognitive mediation model research (Jensen, 2011) and has not been clearly explicated in the literature. Future research should focus on determining both the theoretical underpinnings of the concept as well as finding a way to operationalize and measure it.

While the CMM did not yield significant results in its original form, it was hypothesized that this might be because the model was created to understand the relationship between news consumption and news learning for general information and a general audience. This study attempted to find optimal substitutes for these variables. The

model was modified by substituting surveillance motivation to news in general with health motivation, and rather than measuring attention to mainstream media, the model was modified to include consumption of an ethnic newspaper, namely *La Raza*, which are known to contain a wealth of health information. These modifications did not yield significant results, suggesting that there might be other better substitutes or other ways of modifying the model for ethnic and linguistic subpopulations. Future research should seek optimal substitutes for the variables in the model to explicate news learning for linguistic minorities rather than general audiences, and focusing on ethnic news media rather than mainstream news media.

Conclusion

News media have become a rich source of health information; however, research shows that some groups benefit more from increase coverage than others (Viswanath et al., 2006). Thus, understanding the ways in which target populations consume, process, and engage with health information is essential to promoting healthy behaviors within these populations. By testing the CMM within a health news context and with a linguistic and ethnic minority sample, this work sought to extend the generalizability of the model. Further research should focus on trying to understand how these populations consume news and the ways in which media consumption can promote healthy behaviors.

If researchers and practitioners want to communicate effectively with diverse populations, more research should be conducted in order to understand the relationship between consumption of news media and news learning. Furthermore, in the context of health, it is essential to understand the ways in which individuals can learn from ethnic

news media since these sources offer an opportunity to address traditionally underserved populations. Health communicators and practitioners should understand how individuals learn from the news in order to encourage healthy behaviors and transmit valuable health information, thus helping to ameliorate health disparities and knowledge gaps between ethnic and linguistic populations and the general public.

Limitations

One of the limitations of this study was the operationalization of elaboration; past research has identified it as an ambiguous concept (Jensen, 2011) and although I used Beaudoin and Thorson's (2004) 3-item scale, it might not be able to aptly capture the concept. Furthermore, since this study focused on Spanish-speaking, low-income Latinos, the generalizability of our results is limited. Other ethnic and linguistic minorities within the United States might process and engage with ethnic news media differently. For this test, the CMM was modified to explain the ways in which health information in news media can affect health behaviors and knowledge, specifically those relating to cancer; as such, these results cannot be generalized to include other types of behaviors and information.

REFERENCES

- Beaudoin, C. E., & Thorson, E. (2004). Testing the cognitive mediation model: The roles of news reliance and three gratifications sought. *Communication Research, 31*, 446-471.
- Champion, V. L. (1993). Instrument refinement for breast cancer screening behaviors. *Nursing Research, 42*, 139-143.
- Chamberlain, R. M., Smith, D. W., Zhang, J. J., Sider, J. G., Philips, B. U., & Spitz, M. R. (1995). Improving residents' knowledge of cancer prevention: Are physicians prepared for prevention? *Journal of Cancer Education, 10*(1), 9-13.
- Close, S., Do, A., Ponce de Leon, J., & Schumacher, E. (2006). *What's next for the ethnic media? A Pew Research Center Project for Excellence in Journalism Roundtable*. Retrieved from <http://www.journalism.org/node/1479>
- Cohen, E. L., Caburnay, C. A., Luke, D., Rodgers, S., Cameron, G. T., & Kreuter, M. W. (2008). Cancer coverage in general-audience and Black newspapers. *Health Communication, 23*, 423-435.
- Donelle, L., Hoffman-Goetz, L., & Clarke, J. N. (2008). Portrayal of genetic risk for breast cancer in ethnic and non-ethnic newspapers. *Women & Health, 40*(4), 93-111.
- Eveland, W. P., Jr. (1998). *The cognitive mediation model: A framework for studying learning from the news with survey methods*. Paper presented at the annual meeting of the Association for Education in Journalism & Mass Communication, Baltimore, MD.
- Eveland, W. P., Jr. (2001). The cognitive mediation model of learning from the news: Evidence from non-election, off-year election, and presidential election contexts. *Communication Research, 28*, 571-601.
- Eveland, W. P., Jr. (2002). News information processing as mediator of the relationship between motivations and political knowledge. *Journalism Quarterly, 79*(1), 26-40.

- Eveland, W. P., Jr. (2004). The effect of political discussion in producing informed citizens: The roles of information, motivation, and elaboration. *Political Communication*, 21(2), 177-193.
- Eveland, W. P., Jr., & Dunwoody, S. (2010). An investigation on elaboration and selective scanning as mediators of learning from the web versus print. *Journal of Broadcasting & Electronic Media* 46(1), 34-53.
- Friedman, D. B., & Hoffman-Goetz, L. (2006). Assessment of cultural sensitivity of cancer information in ethnic print media. *Journal of Health Communication*, 11(4), 425-447.
- Hoffman-Goetz, L., & Friedman, D. B. (2005). Disparities in coverage of cancer information in ethnic minority and mainstream print media. *Ethnicity & Disease*, 15, 332-340.
- Jeffres, L. W. (2000). Ethnicity and ethnic media use: A panel study. *Communication Research*, 27(4), 496-535.
- Jensen, J. D. (2011). Knowledge acquisition following exposure to cancer news articles: A test of the cognitive mediation model. *Journal of Communication*, 61, 514-534.
- Jensen, J. D., King, A. J., Guntzviller, L. M., Perez, D., & Krakow, M. (under review). Ethnic newspapers and low-income Spanish-speaking adults: Influence of news consumption and health motivation on cancer prevention behaviors.
- Jensen, J. D., Moriarty, C. M., Hurley, R. J., & Stryker, J. E. (2010). Making sense of cancer news coverage trends: A comparison of three comprehensive content analyses. *Journal of Health Communication*, 15, 136-151.
- Kreuter, M. W., & McClure, S. (2004). The role of culture in health communication. *Annual Review of Public Health*, 25, 439-455.
- Nigg, C. R., Burbank, P. M., Padula, C., Dufresne, R., Rossi, J. S., Velicer, W. F., . . . Prochaska, J. O. (1999). Stages of change across ten health risk behaviors for older adults. *The Gerontologist*, 39, 473-482.
- Stryker, J. E., Emmons, K. M., & Viswanath, K. (2007). Uncovering differences across the cancer control continuum: A comparison of ethnic and mainstream cancer newspaper stories. *Preventive Medicine*, 44, 20-25.
- Stryker, J. E., Fishman, J., Emmons, K. M., & Viswanath, K. (2009). Cancer risk communication in mainstream and ethnic newspapers. *Preventing Chronic Disease*, 6, A23.

- Stryker, J. E., Moriarty, C. M., & Jensen, J. D. (2008). Effects of newspaper coverage on public knowledge about modifiable cancer risks. *Health Communication, 23*, 380-390.
- Viswanath, K. (2005). The communications revolution and cancer control. *Nature Reviews, 5*, 828-835.
- Viswanath, K., & Arora, P. (2000). Ethnic media in the United States: An essay on their role in integration, assimilation, and social control. *Mass Communication & Society, 3*(1), 39-56.
- Viswanath, K., Breen, N., Meissner, H., Moser, R. P., Hesse, B., Steele, W. R., & Rakowski, W. (2006). Cancer knowledge and disparities in the information age. *Journal of Health Communication, 11*(S1), 1-17.
- Viswanath, K., & Lee, K. K. (2007). Ethnic media in the United States. In M. C. Waters & R. Ueda (Eds.), *The new Americans* (pp. 202-213). Cambridge, MA: Harvard University Press.
- Wilkin, H. A., & Ball-Rokeach, S. J. (2006). Reaching at risk groups: The importance of health storytelling in Los Angeles Latino media. *Journalism, 7*, 299-320.
- Zazove, P., Meador, H.E., Reed, B.D., Sen, A., & Gorenflo, D.W. (2009). Cancer prevention knowledge of people with profound hearing loss. *Journal of General Internal Medicine, 24*(3), 320-326.