



# HHS Public Access

Author manuscript

*J Health Commun.* Author manuscript; available in PMC 2017 April 18.

Published in final edited form as:

*J Health Commun.* 2013 ; 18(10): 1256–1273. doi:10.1080/10810730.2013.778362.

## Effects of Ethnic Targeting on the Perceived Effectiveness of Cancer Prevention Messages among Latinas and Non-Hispanic White Women

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### Abstract

Efforts to target Latinos generally mean Spanish-language messages, yet 75% of U.S. Latinos are bilingual or English-dominant. Acculturation (adapting mainstream traits) is associated with increased lifestyle-related risk behaviors. Latinos maintain cultural traits and ethnic identification even as they appear to acculturate (e.g., through language). This raises questions about how to communicate health information to more-acculturated Latinos who are not reached by traditional Spanish outreach, yet may not identify with general-market messages. This study tested the relative efficacy of English-language messages targeted to Latinas, compared with general-market messages, among highly-acculturated Latinas and Non-Latina White women. In this pair of online experiments, Latinas (N=715) and Non-Latina White women (N=704) rated the perceived effectiveness of general-market versus Latina-targeted Pap smear and mammogram public service announcements. In one of two experiments ethnically-targeted messages were rated relatively more effective for the intended audience and equally effective for the general audience. Implications for how campaigns reach U.S. Latinos across the acculturation spectrum are discussed.

### Keywords

ethnic targeting; Latino; Hispanic; acculturation; message design

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Providing accurate, timely, and relevant information is one recommended path to improve health knowledge and behaviors, and perhaps reduce ethnic health disparities. Yet despite efforts to diffuse health information, information sometimes fails to reach Latinos (Institute of Medicine, 2002). Efforts to improve communication to eliminate health disparities are fraught with disparities of their own, in terms of access and attention to health information (Viswanath et al., 2006). More obviously, some Latinos live between two media worlds: there is a strong, if not diverse, Spanish-language broadcast presence potentially available to most Latinos (Constantakis-Valdés, 2008), and its content is somewhat different from the mainstream, English-language media (Wilkinson, 2008). Efforts to target Latinos are generally executed as Spanish-language programs. Yet just 25% of U.S. Latinos are Spanish-

dominant, while 25% are English-dominant and half are bilingual (U.S. Census, 2009). This last group may be substantially exposed to English language media fare, and this group may be a distinct audience. U.S. Latinos as a group may tend to hold particular beliefs, values and attitudes, and these may be related to the ways in which information is processed (Marín, 1989).

This study reports the results of two experiments that examined how ethnicity and acculturation interact with exposure to messages that differ in their ethnic targetedness in their effects on perceived effectiveness of the messages. The purpose of this study was to provide evidence about non-language-based ethnicity-based targeting of health messages. This study is particularly relevant given the growing interest in understanding how acculturation impacts health, particularly as it relates to the “Latino paradox”: that even though Latinos experience socioeconomic conditions which should lead to worse health outcomes, in some cases, they defy expectations (Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005). At the same time, as Latinos improve their economic circumstances, and become acculturated this advantage tends to be lost, especially with regards to lifestyle-related risk behaviors. It is argued that the protective influence associated with Latino ethnicity disappears as individuals become more acculturated (Abraído-Lanza, Chao, & Flórez, 2005; Amaro & de la Torre, 2002). This suggests that acculturating Latinos may be at particular risk and may demand that health communicators recognize that highly-acculturated Latinos may require distinct messages, both different from those of less acculturated Latinos and perhaps also from those in the non-Latino mainstream.

## Ethnic Targeting

Traditional targeting efforts to communicate health-related information to Latinos have been literal, using the definition of a Latino as one someone with ancestry from a Spanish-speaking country: translating mainstream campaigns into Spanish or creating exclusive Spanish-language campaigns and choosing Spanish-language channels for dissemination. Advocates of Latino outreach have logically argued that communicating with Latinos must include first and foremost use of Spanish, with appropriate cultural message tailoring (Huerta & Macario, 1999). An informal survey of literature on health communication programs to reach Latinos reveals that most have taken the translation approach, or, where the program was exclusively targeted to Latinos, produced materials in Spanish only (cf., Backman & Gonzaga, 2003; Alcalay, Alvarado, Balcazar, Newman, & Huerta, 1999; Huhman et al., 2008). A few exceptions illustrate concern about limiting Latino outreach to Spanish language, recognizing the need for different approaches to reach English-dominant Latinos, particularly youth (*Redes en Acción*, 2009; Marín, 1989; Williams & Flora, 1996).

Translation is critical to reach those who speak only Spanish. However, the role of the Spanish language in defining the modern U.S. Latino population is intensely debated. While 31 million U.S. residents age five and older speak Spanish at home (U.S. Bureau of the Census, 2003), many Latinos do not speak Spanish at all. A 2004 Pew Hispanic Center and Kaiser Family Foundation study found that while nearly half (47%) of U.S. Latinos are more comfortable speaking Spanish, more than one-quarter (28%) consider themselves bilingual and twenty-five percent are English-dominant.

From the perspective of many who adopt the translation approach to communication efforts, those Latinos who can speak English (considered more acculturated) will be reached through mainstream campaigns. However, even if reach is attained in such a case (an empirical question), it is difficult to ensure attention to and further processing of a message (Cappella, 2006). Gaining attention to and processing of a message may be particularly difficult when viewers do not feel themselves to be the targets of a message.

The argument for understanding media influence on Latinos incorporates the concept of acculturation as an overarching dimension of the diversity in the Latino population that is relevant to media. I argue that ethnicity may influence message processing, such that highly-acculturated Latinos (e.g., those who speak English) and non-Latino Whites will not respond similarly to the same stimulus, even if exposure is equal. This is the premise that undergirds ethnicity-based tailoring and segmentation approaches, despite the lack of evidence that such an approach is warranted (Hornik & Ramírez, 2006).

## Identification and Media Effects

One class of explanations for why ethnicity may moderate the influence of media has to do with the extent to which individuals perceive messages as relevant to them. Important to the determination of relevance is one's sense of identification with the message. Social cognitive theory (Bandura, 2002) posits that similarity and identification with the model facilitate attention to the message, which is the first step to learning and other persuasive outcomes from media exposure (McGuire, 1986). Additionally, distinctiveness theory (McGuire, 1984; McGuire, McGuire, Child & Fujioka, 1978) suggests that the traits that identify minorities as such are more salient to minorities compared with their salience among members of the majority. For example, in the U.S., ethnic minority members including Latinos are more likely be conscious of ethnicity than are non-Latino Whites.

Latinos are poorly represented across the board in mainstream entertainment and news media (Greenberg, Mastro, & Brand, 2002): Latinos make up less than three percent of the characters on primetime, English-language television (Mastro & Behm-Morawitz, 2005). Latinos as a group and generally across levels of acculturation actively look for information that is perceived as relevant to "some aspect of their Latino identity..." (Subervi-Vélez, 2008, p. 11). Failing to find information that matches their Latino identity, Latinos may not engage in further processing of the message. That is, they are likely to engage in selective inattention (e.g., Knobloch-Westerwick et al., 2008).

Identification with the message to attract attention and further message processing is the underlying logic for targeting on race/ethnicity (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008; Huhman et al., 2008; Kreuter, Farrell, Olevitch, & Brennan, 2000), in which visual and verbal appeals and models who look and sound like the target audience are used to induce identification. The literature considering the effects of messages targeted to Latinos on Latinos' sense of identification is woefully sparse (cf., Borrayo, 2004, Schneider et al., 2001). However, several studies have found that media effects, including identification, likeability, ad evaluation, source credibility, and attitudes, are stronger among

African-Americans when the media contain Black characters (e.g., Appiah, 2001; Wang & Arpan, 2008).

## Hypotheses

Two related sets of hypotheses about message effectiveness were tested. First, the relative effectiveness of general-market and Latino-targeted messages between Non-Latina Whites (NLW) and Highly-Acculturated Latinas (HAL) was tested.

H1: The general-market message will be perceived as more effective for NLW than for HAL.

H2: The Latino-targeted message in English will be perceived as more effective for HAL than for NLW.

This analysis is crucial for establishing that a general-market approach to communicating health information is differentially effective for NLW and Latinos.

Additionally, I considered the relative perceived effectiveness of differently-targeted messages within each of the stratification groups.

H3: Among HAL, the Latino-targeted message will be perceived to be more effective than the general-market message.

H4: NLW will perceive the general-market message to be more effective than the Latino-targeted message.

I expected identification to mediate the relationship between message targetedness and perceived effectiveness, such that:

H5: NLW will identify more with the general-market message than will HAL.

H6: HAL will identify more with the Latino-targeted message than will NLW.

H7: HAL will identify more with the Latino-targeted message than with the general-market message.

H8: NLW will identify more with the general-market message than with the Latino-targeted message.

Hypotheses five through eight are necessary to establish the mediation path; however, by themselves, they are not particularly instructive, as the PSAs were pre-selected to be perceived as targeted or not targeted. Expectations regarding mediation effects are stated as follows:

H9: The relationship between exposure and PE is mediated (at least in part) by identification with the message.

It is possible that ethnic identification matters only for minority groups because ethnicity is felt more acutely by members of minority cultures than of majority cultures (McGuire, 1984; McGuire, McGuire, Child & Fujioka, 1978). If this is the case, hypotheses about NLW's reactions to Latino-targeted messages will not be supported (i.e., H2, H4), nor will H9 as it applies to NLW. Such a pattern of effects would not undermine the central argument

of this study: that Latinos and NLW are not equally responsive to the same messages. Rather, these results would underscore the argument that Latinos are a unique group with a distinct lived experience of ethnicity compared to NLW (Phinney, 1992).

## Design and Procedure

The study was a 2(ethnicity) × 2(message targetedness) between-subjects design, replicated in two experiments for two topics (Pap test and breast cancer). To control for the possible effects of gender, and because the stimuli were focused on women's health, the sample was limited to females only. The study was hosted and administered online using Survey Gizmo software ([www.surveygizmo.com](http://www.surveygizmo.com)), in English, with samples of NLW and HAL respondents. The two experiments were run simultaneously such that within stratification groups (NLW and HAL), subjects were randomly assigned to one of four message conditions: general-market Pap test (n=360), general-market breast cancer (n=353), Latina-targeted (English-language) Pap test (n=333), or Latina-targeted (English-language) breast cancer (n=373).

Subjects were exposed to a message consisting of a public service announcement (PSA) embedded in a newscast. The newscast was selected from local newscasts uploaded to the video-sharing site YouTube ([www.youtube.com](http://www.youtube.com)). Two separate news stories were shown, one before the PSA (older Caucasian male discussing nutrition, shown behind a news desk), and one after the PSA (young female African-American reporter discussing heart disease). Identification (mediator) and perceived effectiveness (outcome) were assessed immediately following exposure, in that order. Subjects were then asked about general and health-specific information exposure and personal lifestyle and cancer prevention behavior questions. Demographic information was collected last.

## Sample

Participants were drawn from a national opt-in online sample panel maintained by Survey Sampling International (SSI). SSI provides affordable access to a reasonably diverse sample of U.S. residents. The samples are not representative of the US population for NLW or HAL, but the procedure provides access to a wider range of respondents than might be found with other convenience sampling approaches, improving generalizability of findings. Random assignment to the experimental condition supports internal validity. Given administration of the study in English, Latinas lower on the acculturation scale are excluded, as intended. The final analyzed sample included a total of 1,419 subjects, 728 HAL and 691 NLW.

## Measures

### Dependent Variable

**Perceived effectiveness:** Perceived effectiveness (PE) was the outcome measure assessed, rather than a behavior or a behavioral intention, because PE can be assessed after a single exposure. Perceived effectiveness predicts actual effectiveness (Dillard, Weber & Vail, 2007), and is thus a useful measure to identify whether the PSAs were likely to be effective. A three-item scale measuring PE was used (Dillard & Ye, 2008): (1) This ad was convincing; (2) This ad got my attention; (3) This ad said something to me. Respondents were asked, "Please indicate how much you agree or disagree with the following

statements.” A five-point scale anchored with “Strongly Agree” and “Strongly Disagree” was provided for each item, and the answers for the individual items were summed to create a scale with a range of three to fifteen. This scale had a mean Cronbach’s alpha of 0.90 across the four PSAs.

### **Mediating and Control Variables**

**Mediating Variable:** Identification with the message was measured using a two-item scale of validated measures of similarity and identification (Slater, Rouner & Long, 2006). Similarity: “How similar do you think you are to the characters in the ad?” Identification: “How much do you identify with the characters in the ad?” The two questions were assessed in a grid format using a five-point scale anchored with “Not at all” and “Very Much.” The order of the questions was rotated randomly so as to minimize order effects. The mean correlation between the items was 0.85 across the four PSAs.

**Demographic Controls:** Age, education, and income were considered potential confounders despite the randomization because the samples reflected the population differences between Latinas and NLW. Respondents were pre-selected to be between the ages of 29 and 49 years to ensure that the messages would be relevant.

**Stimuli—**Television public service announcements (PSAs) that were created for use by real campaigns were selected. Message pairs were selected because they were about the same general topic (e.g., Pap tests), even if they featured slightly different kinds of appeals and were created by different organizations. The lack of exact similarity may not preclude claims about the influence of ethnicity on relative responsiveness. Hypotheses 3 and 4 are a paired set of hypotheses making opposite predictions about relative responsiveness as a function of ethnic group. Given that the selected messages were substantially similar in the focal behavior and appeal, there is a reasonable argument that it is the targeted nature of the ads, rather than some other differences between them, which would account for the hypothesized reversal in expected results. In addition, analyses control for overall message perceived effectiveness, in the event that one message is perceived as more effective than the other. Three matched message pairs were pre-tested for selection into the experiment as described below.

1. *Pre-testing for targetedness (manipulation check) and perceived effectiveness.* The aims of the pre-testing were to establish that the Latino-targeted message is perceived as targeted to Latinos by both Latinos and NLW, and that both messages in a pair (Latina-targeted and mainstream) were perceived as relatively effective. Analyses of the pre-tests demonstrated that the best pair of messages was on the topic of knowing one’s family history about breast cancer (data not shown). A second pair of messages, on the topic of annual Pap tests, was selected for the second experiment in order to minimize concerns about the case control confound, which is further discussed in the limitations. This message pair also performed relatively well in the pre-tests. Table 1 summarizes the content of the messages.

2. *Pilot test with final messages for perceived effectiveness (manipulation check).* A manipulation check in the experimental conditions was conducted to ensure that respondents could distinguish between the news stories and the PSA (the manipulation). Subjects accurately distinguished the PSAs from the news segments (data not shown).

## Analysis

Experimental studies necessarily sacrifice external validity in exchange for strong internal validity. As such, I sought to maximize external validity to be able to generalize claims about observed effects to broader populations of Latinas and NLW (Shadish, Cook, & Campbell, 2005). Since the two samples to some extent reflected the populations from which they were drawn, and the two groups are different from each other (Table 2), it was important to control for these demographic differences when considering differences across ethnicities (H1 and H2) to ensure that observed differences in perceived effectiveness are not a function of age, education, or income.

The hypotheses proposed in this study were tested using two OLS regression equations. I illustrate these results in more detail by hypothesis below, using t-tests of the raw means. However, because of the redundancy of that analysis, the formal tests of the overarching hypotheses (that ethnic targeting of messages is more effective for Latinas, and this effect is mediated by identification) are the controlled regression equations, which are presented at the end of this section to summarize the set of individual hypothesis tests.

## Results

The covariate-adjusted means for each cell for both experiments are presented in Table 3, and results are discussed in detail by hypothesis. Given the comparative nature of the hypotheses, the specific means are not described in detail; they are relevant for this study only in relation to each other.

### **Are general-market messages perceived less effective by highly-acculturated Latinas compared with NLW? (H1, H2)**

I first compared the perceived effectiveness (PE) of general-market messages and Latina-targeted messages among Latinas and NLW. First, I considered the mean PE of general-market messages among Latinas and NLW (H1). I then tested the mean PE of Latina-targeted messages among Latinas and NLW (H2).

The first experiment, the breast cancer message, does not support the first hypothesis. The general-market breast cancer message is perceived equally effective for NLW ( $m=11.55$ ,  $SD=2.49$ ) and for Latinas ( $m=11.38$ ,  $SD=2.49$ ;  $t(351)=0.52$ , n.s.). Moreover, the hypothesis was refuted in the second experiment, the Pap test message: the general-market message is perceived to be more effective by Latinas ( $m=12.10$ ,  $SD=2.13$ ) than by NLW ( $m=11.48$ ,  $SD=2.24$ ;  $t(358)=-2.68$ ,  $p<0.01$ ). Results for both experiments are presented visually in Figure 1.

The second hypothesis was supported by both experiments. The targeted breast cancer message was perceived as more effective by Latinas ( $m=12.13$ ,  $SD=2.39$ ) than by NLW ( $m=11.56$ ,  $SD=2.35$ ;  $t(371)=-2.28$ ,  $p<0.05$ ). The targeted Pap test message also was more perceived as effective by Latinas ( $m=11.86$ ,  $SD=2.46$ ) than by NLW ( $m=10.95$ ,  $SD=2.41$ ;  $t(331)=-3.39$ ,  $p<0.001$ ). Results are presented visually in Figure 2.

### **Are ethnically-targeted messages perceived more effective than general-market messages by highly-acculturated U.S. Latinas? (H3, H4)**

I next considered the relative effectiveness of differently-targeted messages within each of the stratification groups. These analyses use the same information as was used for H1/H2 but organized differently. Latinas perceived the ethnically-targeted breast cancer message as more effective ( $m=12.13$ ,  $SD=2.39$ ) than the general-market message ( $m=11.38$ ,  $SD=2.49$ ;  $t(375)=-2.94$ ,  $p<0.01$ ). While the opposite appeared to be true for the Pap test messages (experiment 2), this difference was not statistically significant (general-market message  $m=12.10$ ,  $SD=2.13$ ; targeted message  $m=11.86$ ,  $SD=2.46$ ;  $t(336)=0.96$ , n.s.) (Figure 3).

The general-market and targeted breast cancer messages were perceived as equally effective by NLW ( $t(347)=-0.03$ , n.s.). The general-market Pap test message was perceived as more effective ( $m=11.48$ ,  $SD=2.24$ ) than the targeted message ( $m=10.95$ ,  $SD=2.41$ ), as hypothesized ( $t(353)=2.13$ ,  $p<0.05$ ). The results are presented visually in Figure 4.

### **Does ethnicity interact with message targeting in its effects on perceived effectiveness? (H1–H4)**

The results presented above to answer hypotheses one through four relied on the same information, raw mean perceived effectiveness scores. The results were presented as above for the sake of clarity. However, given the redundancy that such an approach necessitates, I now present the demographics-controlled regression results. The formal test of hypotheses 1 through 4, then, is the interaction between ethnicity and message targetedness.

In the first experiment (breast cancer PSAs), the coefficient of the interaction term was significant ( $\beta=0.14$ ,  $p<0.05$ , Table 4), demonstrating support for the hypothesis. The uncontrolled means comparison test showed the same pattern but the difference did not reach statistical significance.

The coefficient of the interaction term was not significant for Experiment 2 (Pap test PSAs) (Table 4). However, the main effects of ethnicity and message targetedness were significant. Thus, although the means comparison tests described above supported the hypothesis that the targeted message would be perceived as more effective by Latinas versus NLW, the definitive test of the hypothesis (the coefficient of the interaction term in a controlled regression model) indicates a failure to support this hypothesis.

### **Identification as a Mediator of Message Effects (H5–H9)**

To establish the mediation path, I first sought to establish that Latinas identified more with the targeted messages (H6, H7) and that NLW identified more with the general-market message (H5, H8). Using the same procedure as for the first four hypothesis tests, I show the



raw means for each cell in Table 3. However, for this analysis, I do not compare the means because what I seek to establish is that overall, Latinas identify relatively more with the targeted message compared with NLW. Identification substituted for PE as the outcome variable and was regressed on ethnicity, message targetedness, their interaction, and demographic controls<sup>1</sup>. Since I cannot ensure that the intrinsic identifiability of each PSA is the same, nor that Latinas and NLW are comparable in their likelihood to identify (indeed, it may be expected that Latinas more readily identify, given identity theory), the identification comparison necessary to establish a mediation path can only be established by looking at the coefficient of the interaction of targetedness and ethnicity in the regression analysis. The coefficient is not significant in either experiment (Table 5). There is no evidence for moderated mediation (Baron & Kenny, 1986).

## Limitations

The nature of this experiment and of experimental methods in general warrants some discussion about potential limitations. First, like all experiments, the manipulation described herein is an artificial setting and as such sacrifices some external validity (Shadish et al., 2002). Care was taken to disguise the purpose of the study and the real manipulation (e.g., the PSA) by embedding it within a clip from a real newscast, with instructions that respondents would be asked about the news stories and/or format. This procedure was useful in two ways: first, embedding the PSA within a news story provided a more naturalistic environment: PSAs (like other kinds of advertisements) are likely to be viewed unintentionally, in the context of some other content; the experiment simulated that experience. This structure helped to ensure that individuals are potentially distracted during the airing of the PSA (or not), as they might be if they were watching the news at home as usual. A newscast was selected over other kinds of content because it is relatively easy to clip a short amount that is nevertheless a complete story (or stories), and it is quite reasonable to interrupt the series of stories with advertisements. The external validity of this study also was strengthened through the use of real messages, both the newscasts and the PSAs, which have the high production values that made the manipulation seem more “real.”

Another kind of limitation relates to the nature of the effects that are expected given the kind of manipulated exposure. It is clearly unreasonable to expect that individuals will change their behaviors (or even behavioral intentions) following a single exposure to a message. Media affects behavior through a complex process of repeated exposures from multiple sources, over time, not through a single thirty-second PSA (Hornik, 2002). As such, this study did not attempt to assess or claim behavioral change. Rather, the outcome measured in this study was limited to perceived effectiveness, which can be assessed after a single exposure; however, although PE is predictive of actual effectiveness (Dillard, Weber and Vail, 2007), it nonetheless falls short of establishing behavioral change effects.

An additional concern with this particular design – showing a single exposure to a message – is the case-control confound (Cox & Reid, 2000): that is, claiming that a single stimulus

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<sup>1</sup>I conducted these analyses even where the initial hypothesis (H1–H4) was not supported in order to consider possible evidence of suppression effects.

used for exposure will be exemplary of an entire category of messages (targeted versus not targeted). In fact, it is possible that any observed effects may be attributable to some unique feature of the PSA that is selected. To avoid this confound, experiments often use multiple stimuli for each condition (Jackson, 1992). In this case, to show multiple exposures of the same underlying manipulation to the same subjects may have sensitized subjects to the purpose of the experiment. Since the logic of this experiment is that individuals will not pay attention to materials that are not relevant for them, exposing subjects to multiple PSAs would increase the chances that they begin to pay attention to messages that they otherwise would not. Despite this logic, it was important to control for this potential confound by thorough pre-testing of the messages that were ultimately selected, such that they are both effective and perceived as targeted to Latinos or the general market (see discussion above). Additionally, the design is strengthened by its inclusion of two examples of each type of message (on the topics of breast cancer and Pap tests). Controlling for the overall PE, and considering differences across the two replications, further strengthened this design.

Mediation tests are particularly sensitive to measurement error in the hypothesized mediator. In this experiment, the hypothesized mediator, identification, was operationalized as a two-item scale measuring similarity and identification. That the scale demonstrated high internal reliability ( $r=0.85$ ) in this study and has been validated extensively in the literature (Slater et al., 2006) serve to minimize concerns about measurement error. However, it is possible that the outcome variable in this experiment was too similar to the hypothesized mediator, explaining the null mediation effects found. It is also possible that non-null mediating effects may have been found using a less-conservative statistical approach than the Baron and Kenny approach that was selected *a priori* (cf. Zhao, Lynch, & Chen, 2010). Implications of the study's results are discussed in the following section.

## Discussion

The overall conclusion to draw from this study is that ethnically-targeted messages are more effective for Latinas, and may not be less effective for NLW. However, identification with the message was not supported as the causal mechanism for this association. Support for these findings was not universal; it varied somewhat by experiment. A summary of the hypothesis test results is provided in Table 6. Experiment one indicates support for all hypotheses except H4/H8: That NLW would perceive as more effective (would identify more strongly with) the general-market message more than the Latina-targeted message. Even though NLW did not perceive the general-market message as more effective than the Latina-targeted message, they also did not identify more with that message. This is consistent with the explanation that identification mediates the relationship between ethnicity/targetedness and perceived effectiveness, even though the formal mediation testing path did not show such an effect. In the same way, the lack of support for H1/H5 observed in experiment two does not indicate an overall lack of support for the model of effects. Here again, the general-market message failed to be more attractive to NLW, this time in comparison to Latinas. Yet overall, the model of effects was supported (for NLW only) in the Pap test experiment.

The lack of support for the hypotheses in experiment two may indicate an example of the case-control confound, as discussed earlier. It may also be that the two messages in the Pap test pair are simply not equally good. Although the comparison tests controlled for overall perceived effectiveness, the Pap test messages appear to be less equally matched than the breast cancer messages used in experiment one. That is one reason why the breast cancer message pair was ranked first in the pre-test.

What these results imply is that ethnic targeting may be useful, but if that message is not good enough, it will not be more effective than a non-targeted message. This is not the same as concluding that messages simply need to be good, and not targeted, in order to be effective. The remainder of the results clearly point to better results when ethnic targeting is done well, and in an overall good message. The point is also relative: it is not necessarily the case that the Latina-targeted message was not good, just that it was not better than its general-market comparison. It is also important to note that the details of the message matter: the general-market comparison PSA (“Happy Pap Day,” Table 1) can be considered a “rainbow” message. That is, the cast included a range of ethnicities and the central character could be considered ambiguously Latina (or NLW). It is true that Latinas identified more with the Latina-targeted PSA than with this one, but it is also telling that Latinas identified slightly more strongly than did NLW with the general-market Pap PSA (Table 3). In this case, it may be that the comparison was simply untenable.

These results are generally consistent with the literatures on ethnic targeting and message tailoring (cf., Appiah, 2001). Most of that literature, however, has focused on race- and gender-based targeting, ignoring or finding null effects for Latino ethnicity (cf., Hawkins, et al., 2008; Kreuter, et al., 2000; Pasick, D’Onofrio, & Otero-Sabogal, 1996; Schneider et al., 2001; Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). On the other hand, research about communicating with Latinos has tended to focus on the Spanish language, essentially ignoring the non-language-based component of ethnicity. This study provides some compelling evidence in support of ethnicity-based targeting that moves beyond language considerations to consider how to communicate health information more effectively to highly-aculturated Latinas.

## Acknowledgments

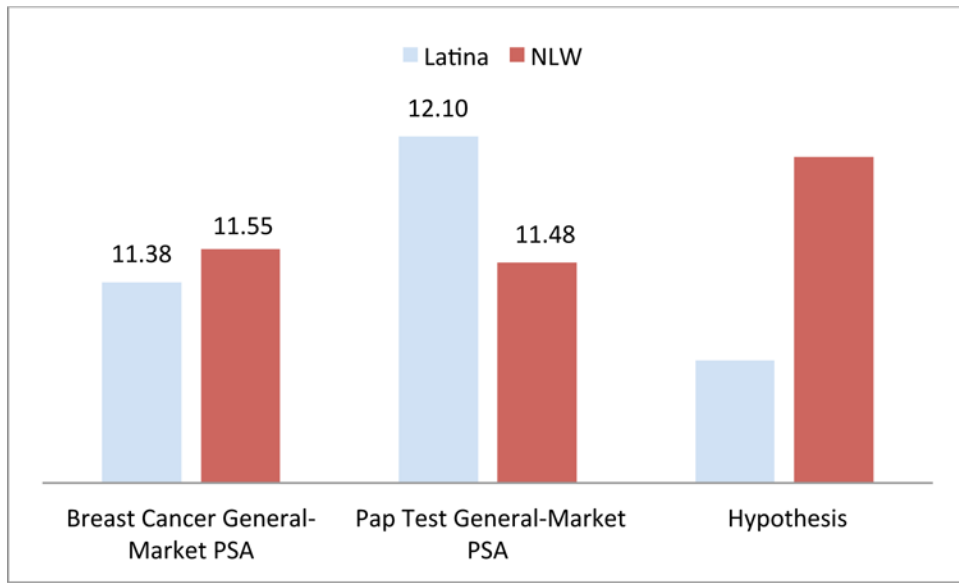
This study was supported by a pilot grant from the Center of Excellence in Cancer Communication (CECCR) located at the Annenberg School for Communication, University of Pennsylvania (P20-CA095856-06). The NCI does not bear any responsibility for the content reported in this paper. Latina-targeted public service announcements were provided by Amelie G. Ramirez and Kip Gallion and produced by Redes En Acción, the National Latino Cancer Research Network.

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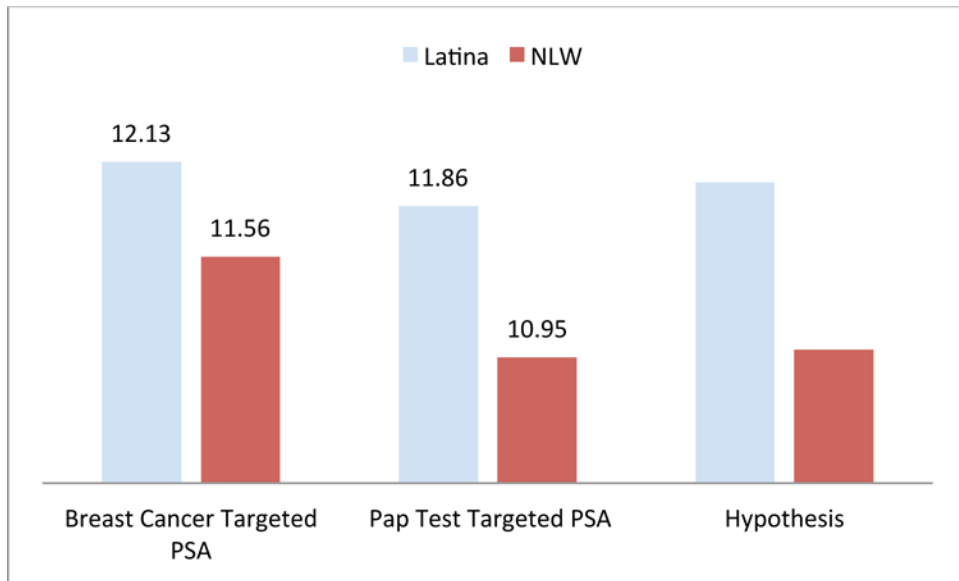
**Figure 1.**  
H1 Test Results: Perceived Effectiveness of the general-market PSAs by ethnicity.

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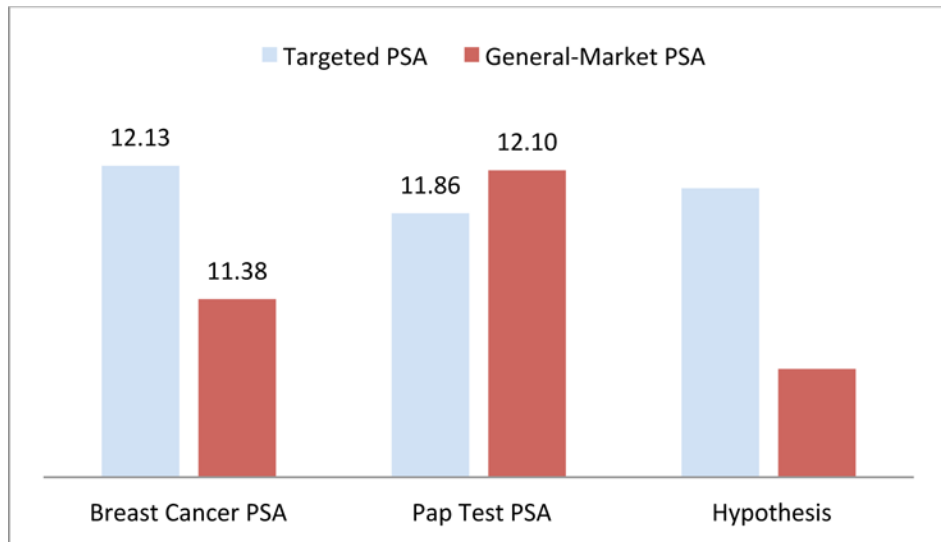
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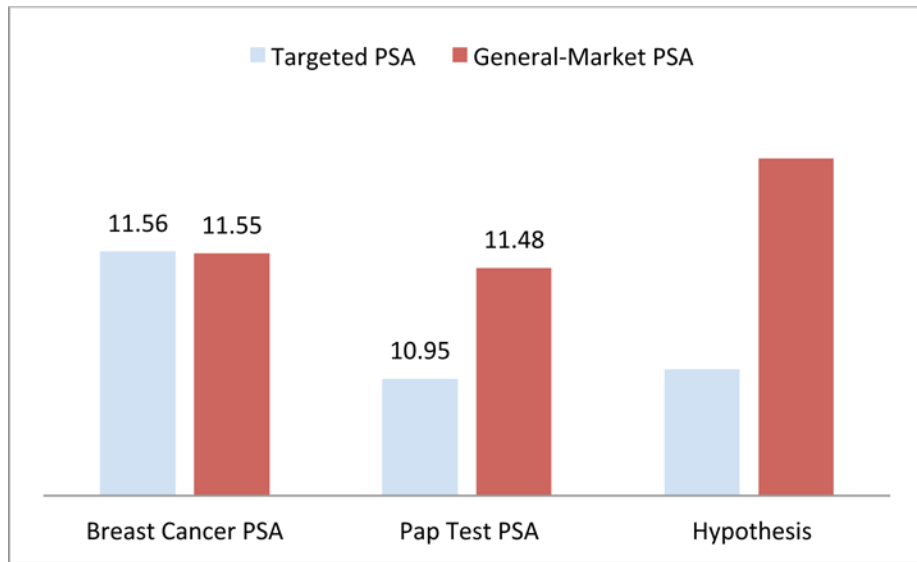


**Figure 2.** H2 test results: The Latina-targeted message is more effective for highly-accultured Latinas than for Non-Latina White Women.



**Figure 3.**  
H3 test results: Perceived Effectiveness of targeted versus general-market messages among highly-accultured Latinas.





**Figure 4.**  
H4 Test Results: Perceived Effectiveness of targeted versus general-market messages among Non-Latina White Women.

Table 1

Message Script Descriptions.

Message Pair #1: Pap Smear	Message Pair #2: Breast Cancer Family History
<p><b>General-Market PSA: “Happy Pap Day”</b></p> <p>Produced by the Michigan Department of Community Health</p> <p>Length: 30 seconds</p> <p>Summary of script: Scene: Office cubicle; white woman; multicultural cast of office mates present a birthday cake and sing “happy Pap day.”</p> <p>Reminder to have a Pap test regularly, for women of all ages.</p> <ul style="list-style-type: none"> <li>- <a href="http://www.youtube.com/watch?v=qA8IIA_VX58">http://www.youtube.com/watch?v=qA8IIA_VX58</a></li> </ul>	<p><b>General-Market PSA: “Breast cancer runs in my family”</b></p> <p>Produced by WJLA television station</p> <p>Length: 30 seconds</p> <p>Summary of script: Begins with a drawing of a family tree; 1 White woman (looks like she could be Latina, but her Anglo name is on the screen and she has no accent) describes her family history of breast cancer; another White woman identified as a genetic counselor describes the importance of family history in cancer risk. Message is to find out your family history and share with your doctor.</p> <ul style="list-style-type: none"> <li>- Appears to be sponsored by a genetic counseling organization and a local TV news station.</li> <li>- <a href="http://www.youtube.com/watch?v=_MyDv-ikN1w">http://www.youtube.com/watch?v=_MyDv-ikN1w</a></li> </ul>
<p><b>Latina-Targeted PSA: “Change of Mind”</b></p> <p>Produced by Redes en Acción</p> <p>Length: 30 seconds</p> <ul style="list-style-type: none"> <li>- Summary of script: Features 3 young middle age Latinas having coffee, 1 is late because she was at the clinic getting her routine Pap test. Another says she doesn’t get them anymore because her kids are grown and besides, they’re uncomfortable. The third says they are sometimes, but she gets them anyway, and they all agree that it’s important to get them regularly to be safe. Ends with male voice-over: find out more information about cervical cancer by calling the NCI’s Cancer Information Service (phone number provided on screen).</li> </ul>	<p><b>Latina-Targeted PSA: “I admire them”</b></p> <p>Produced by Redes en Acción</p> <p>Length: 30 seconds</p> <p>Summary of script: Scene: Three women in a living room looking at photo albums. Voice-over by a young woman with a Spanish accent: “Since my tía and cousin both got breast cancer, nothing has been the same. Now I know we may have a higher risk in our family. That makes it even more important to have regular and early checkups. Cancer should not happen to young people, but sometimes it does... Know your family history. Please, get screened.” One woman is currently going through chemo and is wearing a head scarf. Pictures show both women with cancer going through different treatments. Cuts to male voice-over: find out more information about breast cancer by calling the NCI’s Cancer Information Service (phone number provided on screen).</p>

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**Table 2**

Sample Characteristics by Stratification Group (Ethnicity), Pooled Across Experiments.

	Main Study* (N=1,419)		General Population <sup>†</sup>	
	Latina (N=715)	NLW (N=704)	Latina	NLW
	Mean (SD) or Proportion	N	Mean (SD) or Proportion	Mean or Proportion
Age, mean	38.5 (5.86)		38.6	39.4
Education, mean years	13.5 (1.96)		13.6	14.1
Income, mean \$	49,641 (30,031)		60,767	58,407
% of Latinas:				
Mexican	43.0	286	58.6	
1 <sup>st</sup> Generation (Born in Latin America)	27.6	193	19.8	
2 <sup>nd</sup> Generation (Born in U.S. to foreign-born parents)	37.3	261	37.7	
3 <sup>rd</sup> Generation (Born in U.S. to U.S.-born parents)	35.1	245	42.5	

\* *Note.* Includes subjects recruited during the Pilot Study (n=132). For reporting purposes, the results shown pool the samples across the two experiments. ANOVA tests indicated no significant differences in basic demographic characteristics (age, education, income) across the randomized conditions across the two experiments within stratification groups.

<sup>†</sup> *Note.* The general population estimates for Latinas are based on Pew Hispanic Health Survey (2007) data. The general population estimates for NLW are based on ANHCS data. Estimates from Pew and ANHCS are weighted to the Current Population Survey in order to reflect population estimates.

**Table 3**

Perceived Effectiveness and Identification by PSA and Stratification Group (Ethnicity).

		Perceived Effectiveness (Range 0–15)		Identification (Range 2–12)	
		Latina	NLW	Latina	NLW
<b>Targeted PSA</b>		<b>12.13</b>	<b>11.56</b>	<b>6.18</b>	<b>6.07</b>
SD		2.39	2.39	2.35	2.32
95% CI		(11.80,12.45)	(11.19,11.92)	(5.86,6.50)	(5.72,6.43)
N		208	165	208	165
<b>Mainstream PSA</b>		<b>11.38</b>	<b>11.55</b>	<b>5.74</b>	<b>5.94</b>
SD		2.49	2.49	2.34	2.08
95% CI		(11.01,11.76)	(11.2,11.9)	(5.38,6.10)	(5.64,6.24)
N		169	184	169	184
<b>Targeted PSA</b>		<b>11.86</b>	<b>10.95</b>	<b>6.58</b>	<b>5.80</b>
SD		2.46	2.41	2.43	2.29
95% CI		(11.47,12.25)	(10.60,11.31)	(6.20,6.96)	(5.46,6.14)
N		157	176	157	176
<b>Mainstream PSA</b>		<b>12.10</b>	<b>11.48</b>	<b>6.09</b>	<b>5.96</b>
SD		2.13	2.24	2.38	2.21
95% CI		(11.79,12.41)	(11.15,11.81)	(5.74,6.44)	(5.63,6.29)
N		181	179	181	176

**Table 4**

Effects of the Interaction of Ethnicity and Message Targetedness on Perceived Effectiveness.

	Perceived Effectiveness (0–15)		
	Experiment 1: Breast Cancer $\beta$	Experiment 2: Pap Test $\beta$	
Ethnicity (Latina=1)	-0.03	<b>0.14**</b>	
Message Targetedness (Targeted=1)	0.00	<b>-0.11*</b>	
Ethnicity * Targetedness	<b>0.14*</b>	0.05	
Age	0.06	0.01	
Education (Number of years)	0.01	-0.02	
Income	0.02	0.01	
	N	723	687
	R <sup>2</sup>	0.02	0.04
	F	2.27	4.42

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**Table 5**

Effects of the Interaction of Ethnicity and Message Targetedness on Identification.

	Identification (Range 2–10)	
	Experiment 1: Breast Cancer $\beta$	Experiment 2: Pap Test $\beta$
Ethnicity (Latina=1)	-0.03	0.05
Message Targetedness (Targeted=1)	0.03	-0.03
Ethnicity * Targetedness	0.06	0.12†
Age	0.06	<b>0.04*</b>
Education (Number of years)	0.04	0.03
Income	-0.01	0.00
	N	723
	R <sup>2</sup>	0.01
	F	1.21

Note.

\* indicates  $p < 0.05$ ,† indicates  $p < 0.10$ .

**Table 6**

Hypothesis Test Summary.

	<b>Experiment 1: Breast Cancer Supported?</b>	<b>Experiment 2: Pap Test Supported?</b>
<b>H1: The general-market message will be more effective for NLW than for Latinas.</b>		
Step 1 (H1, Perceived Effectiveness):	Yes	No
Step 2 (H5, Identification):	No	No
<b>H2: The Latina-targeted message will be more effective for Latinas than for NLW.</b>		
Step 1 (H2, Perceived Effectiveness):	Yes	Yes
Step 2 (H6, Identification):	No	No
<b>H3: Latinas will be more persuaded by the Latina-targeted message than by the general-market message.</b>		
Step 1 (H3, Perceived Effectiveness):	Yes	No
Step 2 (H7, Identification):	No	No
<b>H4: NLW will be more persuaded by the general-market message than by the Latina-targeted message.</b>		
Step 1 (H4, Perceived Effectiveness):	No	Yes
Step 2 (H8, Identification):	No	No
<b>H9: Mediation</b>		
Step 3 (H9, Mediation of H1–H4):	N/A	N/A