

An Experiment in Panel Recruitment for Spanish Speaking Populations: The AmeriSpeak Case Study

Ilana Ventura¹, Rene Bautista¹, Erlina Hendarwan¹

¹NORC at the University of Chicago, 55 East Monroe, Suite 3100, Chicago, IL 60603

Abstract

Obtaining representative samples of the Hispanic and Latino population residing in the U.S. is challenging. Further, with variation in language preference among Hispanics, especially across different immigrant generations, researchers have little information as to which language, or combination of languages, in a survey invitation might be better received by selected survey participants. The objective of this research is to provide insights to guide the development of improved targeted recruitment materials for Hispanic and Spanish speaking populations. This paper presents results from a field experiment conducted in geographies with high Hispanic populations, where three versions of recruitment materials were tested with varying order and extent of Spanish and English languages. One version presented text in Spanish first, followed by English (Version A). A second version presented text in English first, followed by Spanish (Version B). A third version of the materials presented the majority of text in Spanish and some text in English (Version C). Three outcome metrics are examined to assess the impact of experimental conditions: sample yield, percent of sample yield that self-identified as Hispanic, and percent of yield that reported preference for answering surveys in Spanish. While this experiment was a case study for printed recruitment materials for NORC's AmeriSpeak Panel®¹, conducted as part of recruitment improvements—and more research is needed—researchers might find the findings useful to inform decisions on recruitment and retention of Hispanic, Latino and Spanish-speaking populations.

Key Words: survey experiment, panel recruitment, recruitment material design, bilingual

1. Introduction

A noticeable challenge in survey research is obtaining representative samples of the U.S. Hispanic and Latino population (Brown, 2015). Further, with variation in language preference among Hispanics—especially across different immigrant generations for various activities—(e.g., daily spoken interactions with friends and family, interactions

¹ AmeriSpeak is a nationally representative sample of U.S. adults, where households are selected randomly from NORC's National Sample Frame, which provides sample coverage for over 97 percent of U.S. households and includes additional coverage of hard-to-survey population segments, such as rural and low-income households. Recruitment is a two-stage process. For the initial recruitment, sample units are invited to join AmeriSpeak online by visiting the panel website or by telephone (in-bound/outbound supported). In the second stage, non-response follow-up is performed by way of Federal Express mailers, enhanced respondent incentives, and field interviewers using face-to-face contacts with non-responders. English and Spanish languages are supported for online, telephone, and in-person recruitment (Dennis, 2017).

with other members of society, media preference and consumption of information materials), researchers have little information as to which language, or combination of languages, in survey recruitment materials sampled individuals might prefer. Across generations, and often in the same household, language usage changes. Approximately 13% of the U.S. population 5 years of age and over speak Spanish at home. Of those who speak Spanish at home, 80% of 5-17 year olds speak English “very well,” 54.2% of 18-64 year olds speak English “very well” and only 37.7% of the population 65 years old and over speak English “very well” (United States Census Bureau / American FactFinder, 2017). This indicates a bilingual reality in American households—one which survey researchers must be cognizant of. Thus, this work is of utmost importance to be able to increase survey coverage of households with individuals who speak Spanish, or a mix of Spanish and English.

The existing literature indicates that language may be associated with various behaviors including, but not limited to, health behaviors, self-reported health status and access to health (DuBard & Gizlice, 2008), health care usage (Fiscella, Franks, Doescher, & Saver, 2002), ethnic identification (Geerlings, Verkuyten, & Thijs, 2015), and even investment and stock trading decisions (Grinblatt & Keloharju, 2001). While differences in survey responses based on the language of the interview have been blamed on “inadequate transition” in some studies (Berkanovic, 1980; Ryan, Chan, Ployhart, & Slade, 1999), other studies have focused more on how cultural differences play into different response propensities between language speakers (Venter, 1998).

Prior qualitative work conducted by the authors using AmeriSpeak (as a case study) to assess issues of translation and cultural equivalence, suggested that bilingual materials needed to be flexible in terms of language use to reach Hispanic and Latino respondents and households with variations of language use: English only, Spanish only, bilingual. Those insights led to adjustments in materials including clarification of the intention of the communication, to focus on the “opinion-sharing” aspect of the AmeriSpeak platform, more adapted translations to reduce unintended miscommunication, streamlining of text, and simplifying language and design, as to encompass both languages, readably and comfortably, in the same document (Ventura, Bautista-Martinez, Gleicher, Milesi, & Hendarwan, 2017). After integrating adjustments to the printed bilingual recruitment materials, we developed three versions of the bilingual materials (as detailed in the Methods section below), which were experimentally tested.

The motivation for this research is threefold: (1) increase representativeness of the Hispanic population, (2) increase Spanish-language responses to surveys, by respondents that may otherwise respond in English, if they are given a choice and feel comfortable responding in either language, and (3) understand how language of materials interacts with non-response follow-up (NRFU). It is important to note that we are primarily interested in language preference and not necessarily language proficiency. Though language preference and equivalence are inherently linked, as one cannot have a preference for a language in which they are not proficient, Gee et al have explicitly found a lack of measurement equivalence between measures of language proficiency and language preference in health-related outcomes (Gee, Walsemann, & Takeuchi, 2010).

2. Research Questions

Three questions guide the research in this paper. First, does having more Spanish than English on recruitment materials increase recruitment overall, and also, specifically

Spanish-language recruitment? Second, what is the effect of this language imbalance on bilingual Hispanic respondents choosing to respond in Spanish vs. English? We refer to this as ‘Spanish Preference’ in this study. The third question leading this analysis is, do the language of the materials make an influence at the non-response follow-up (NRFU) stage of recruitment?

3. Methods

Three versions of the material, which we refer to as Spanish/English (Version A), English/Spanish (Version B) and Spanish Dominant (Version C), are tested in three different sampling frames with varying likelihood of respondents’ being Hispanic and Spanish-speaking, based on proportion Hispanic in Census tract, proportion Spanish-language dominant in Census tract, and a vendor flag on the household indicating Hispanic. The Spanish/English (Version A) materials were identical to the English/ Spanish (Version B), with the exception that language order were reversed. In the former, Spanish appeared as the primary language in the mailing, either on the front or top, depending on the design of the particular mailing; and in the latter, English appeared as the primary language in the mailing, either on the front or top, depending on the design of the particular mailing. The secondary language appeared below the primary language, or on the back of the mailing, depending on the design of the mailing material. The Spanish Dominant material contained mostly Spanish, with less English, and indicated that more information was available in English online.

Sample were drawn using probability-based sampling from the NORC National Frame, stratified based on age and race/ethnicity, including an oversample of tracts and block groups with higher concentrations of Latinos. Sample in tracts with selected criteria were sent to two vendors. Vendors flagged households as Hispanic, based on their proprietary methodology.

We categorize the experimental test groups as follows, and as summarized in Table 1 below: Sample for experiment group ‘Test 1’ are from the NORC National Frame and the oversample, in which 70% or more households in the Census tract are Hispanic and 30% or more Households in the Census tract are Spanish dominant in language. Further, households in Test 1 were flagged as Hispanic by two vendors. We therefore note this experimental test group as ‘High’ in ‘Likelihood Hispanic’ and ‘High’ in ‘Likelihood Spanish Speaking.’ Half the sample in experiment group Test 1 received the Spanish/English (Version A) version of the materials and half the sample received the Spanish Dominant version (Version C) of the materials.

Sample in experiment group ‘Test 2’ are from the oversample, and include sample excluded from Test 1, as the households did not meet the more stringent criteria of the group of having either 70+ or more households in the Census tract as Hispanic and could not be verified as Hispanic by both vendors. Households in Test 2 are in Census Tracts in which 30% or more Households are Spanish dominant in language and were flagged as Hispanic by one, but not both, vendors. We therefore note this experimental test group as ‘Mid’ in ‘Likelihood Hispanic’ and ‘Mid’ in ‘Likelihood Spanish Speaking.’ Half the sample in experiment group Test 2 received the Spanish/English (Version A) version of the materials and half the sample received the English/ Spanish (Version B) version of the materials.

Sample in experiment group ‘Test 3’ are from the NORC National Frame. Households in Test 3 are in Census Tracts in which 50% or more Households are Hispanic and were flagged as Hispanic by one, but not both, vendors. Tract-level Spanish language dominance is not a criteria. We note this experimental test group as ‘Mid’ in ‘Likelihood Hispanic’ and ‘Unknown’ in ‘Likelihood Spanish Speaking.’ Half the sample in experiment group Test 3 received the Spanish/English (Version A) version of the materials and half the sample received the English/ Spanish (Version B) version of the materials.

Table 1: Experimental Test Groups

Test Group	Likelihood Hispanic	Likelihood Spanish Speaking	Design
Test 1	High	High	<ul style="list-style-type: none"> • Version A (Spanish/English) • Version C (Spanish Dominant)
Test 2	Mid	Mid	<ul style="list-style-type: none"> • Version A (Spanish/ English) • Version B (English/ Spanish)
Test 3	Mid	Unknown	<ul style="list-style-type: none"> • Version A (Spanish/ English) • Version B (English/ Spanish)

Experimental design is summarized in Table 2. Sample was largest in Test 1, followed by Test 2 and then Test 3. Non-response follow-up (NRFU) was performed only for a stratified random sub-sample of the non-responders from the initial sample. Stratification was based on consumer vendor data and other variables used in the initial recruitment stage. Strata deemed less likely to respond were oversampled in the NRFU stage (Bilgen, Dennis, & Ganesh, 2018).

Table 2: Experimental Design

Test Group	Design	Initial Sample	Sample Selected for NRFU
Test 1	Version A (SP-EN)	10,222	1,575
	Version C (SP-Dom)	10,210	1,602
Test 2	Version A (SP-EN)	5,348	818
	Version B (EN-SP)	5,344	739
Test 3	Version A (SP-EN)	477	65
	Version B (EN-SP)	475	55

The key metrics to understand how changes in language order in recruitment material might have an influence in sample composition and language preference are the following:

- (1) Sample yield: Defined as the proportion of those who completed the intro survey for the AmeriSpeak Panel, of the total mailings.
- (2) Percent of sample yield that self-identified as Hispanic: Defined as the proportion of those who completed the intro survey for the AmeriSpeak Panel, of the total mailings, who self-identified as Hispanic in ethnicity.
- (3) Percent of yield that reported preference for answering surveys in Spanish: Defined as the proportion of those who completed the intro survey for the AmeriSpeak

Panel, of the total mailings, who self-identified as having a preference toward answering surveys in the Spanish language.

The analytic methods used in the paper are as follows: First, we present descriptive statistics of initial sample response yields prior to NRFU, those who received the NRFU, and total sample yield. We provide descriptive statistics of yields in each group of interest and use chi-square tests to compare the proportion of completes within each test group. We repeated this procedure for the following two outcomes of interest, self-reported Hispanic and self-report Spanish preference. We then use logistic regression to model self-reported Hispanic and self-report Spanish preference.²

4. Results

4.1 Complete Intro Survey

In this first section of results, we present initial response yields prior to NRFU, yields for those who received the NRFU, and total yield. Findings are summarized in Table 3. While pre- NRFU initial yields were highest in Test 3 and lowest in Test 2, this pattern changed post-NRFU, with total Yield being 10.9% in the Test 1 group, 9.6% in the Test 2 group and 9.8% in the Test 3 group, however, yields were not statistically different from each other between groups.

Prior to NRFU, yield for Spanish Dominant materials were lower than the Spanish-English materials, however, this trend reversed during the NRFU stage. In comparing NRFU between group yields, the Spanish-English materials had a statistically significant higher yield than the Spanish-Dominant materials (Chi-Square, $P < 0.05$). However, though the Spanish-English materials did result in an overall higher yield, compared to the Spanish-Dominant materials in Test 1, the difference was no longer statistically significant.

In Test 2, we found little difference between yields, pre- and post- NRFU, between the Spanish-English version of the materials and the English-Spanish version of the materials. In Test 3, though the Spanish-English materials resulted in a higher yield than the English-Spanish materials, differences were not statistically significant.

Thus, overall, we find little difference in material language order on initial survey completion yields, and only a slight preference of the Spanish-English materials over the Spanish-Dominant materials, only during the NRFU stage, and not overall. We hypothesize that the difference between Spanish-English and Spanish-Dominant may be due to the exclusionary nature of materials with less English on it toward those who may not speak English who received the material. Even though we attempted to send these materials to Hispanic households, we fully recognize that not all Hispanics in the United States speak Spanish. Thus, this might have had a slight back-fire effect, even if statistically insignificant overall, resulting in Hispanics who do not speak Spanish to not reply, as they may feel that the material could be less relevant to them as non-Spanish speakers.

² All results presented in this paper are unweighted, and thus may not fully represent the panel sample design, including differences between initial and NRFU respondents in sampling methodology. Additionally, in both initial and NRFU stages, young adults, non-Hispanic African Americans, and Hispanics are oversampled, and thus, the impact of oversampling may not be fully reflected in this analysis.

Table 3: Complete Intro Survey

Test Group	Design	Yield prior to NRFU	Yield NRFU only	Total Yield	Yield prior to NRFU, by Test	Total Yield, by Test
Test 1	Version A (SP-EN)	4.10%	46.5%*	11.30%	4.00%	10.90%
	Version C (SP-Dom)	3.90%	42.5%*	10.60%		
Test 2	Version A (SP-EN)	3.40%	40.20%	9.50%	3.50%	9.50%
	Version B (EN-SP)	3.60%	40.20%	9.50%		
Test 3	Version A (SP-EN)	5.00%	47.70%	11.50%	4.50%	9.80%
	Version B (EN-SP)	4.00%	34.50%	8%		
* Chi-Square comparing proportion completes within in Test group statistically significant at p<0.05 level						

4.2 Self-Report Hispanic

Second, we examine the proportion of respondents to the intro survey who self-reported as Hispanic or Latino. Results are summarized in Table 4.

Overall, Test 1 produced the largest percent return of Hispanic respondents, of about 94%, which appropriately reflects the sample. Test 2 resulted in self-reporting of Hispanic or Latino ethnicity in the high 60% range. Test 3, which though on average resulted in 79.6% of respondents self-reporting as Hispanic or Latino, found a larger, and statistically significant, difference between groups, with 89% self-reporting Hispanic or Latino in the Spanish-English treatment and 66% self-reporting Hispanic or Latino in the English-Spanish treatment. The results from the Test 3 group indicates that in an area in which we have a 'Mid' likelihood of a Hispanic or Latino respondent, and an unknown likelihood of their Spanish language propensity, that the Spanish/ English materials are associated with higher returns of Hispanic respondents. We may hypothesize that Hispanic respondents may have been more prone to answer a survey when the materials were more targeted toward them, by having Spanish as the primary language.

Table 4: Self-Report Hispanic

Sample	Likelihood Hispanic	Likelihood Spanish Speaking	Design	Hispanic Self-Report pre-NRFU	Selected for NRFU, Hispanic	Total Hispanic
Test 1	High	High	Version A (SP-EN)	92.3%	94.4%	93.7%
			Version C (SP-Dom)	91.7%	95.2%	93.9%
Test 2	Mid	Mid	Version A (SP-EN)	61.3%	74.2%	69.6%
			Version B (EN-SP)	60.8%	69.9%	66.4%
Test 3	Mid	Unknown	Version A (SP-EN)	87.5%*	90.3%	89.1%*
			Version B (EN-SP)	47.4%*	84.2%	65.8%*
* Chi-Square comparing proportion completes within in Test group statistically significant at p<0.05 level						

To understand these patterns more fully, we created dummy variables representing the different facets of our experiment and performed a binary logistic regression, with Self-reporting as Hispanic as the dependent variable. The model is presented in Table 5 below, with predicted probabilities, as well as lower and upper bounds, in Figure 1.

The largest takeaway from the model, which confirms our work above, is that the likelihood of respondents self-reporting as Hispanic or Latino decreases when we are putting forth English/ Spanish materials (compared to Spanish-English) in middle likelihood Hispanic areas. Additionally, receiving the NRFU seems to increase the likelihood of respondents self-reporting as Hispanic or Latino, but we are not quite sure why this may be. However, we may hypothesize that having bilingual English/ Spanish interviewers making calls and going door-to-door may have made Hispanic and Latino respondents more inclined to answer the phone or door. This is a research question to explore further.

Table 5: Logistic Regression, Modeling Self-Reporting as Hispanic

Variable	Estimate (SE)	Pr > t
Intercept (High Hispanic + Spanish Lang, SP-EN, no NRFU)	0.904 (0.014)	<.000
Test 2 (Mid Hispanic, Mid Spanish Language)	-0.233 (0.017)	<.000
Test 3 (Mid Hispanic, Mid OR Unknown Spanish Language)	-0.114 (0.036)	0.002
EN-SP	-0.085 (0.029)	0.003
SP-Dom	0.013 (0.022)	0.544
NRFU	0.052 (0.017)	0.002
ES-SP*NRFU	0.063 (0.033)	0.06
SP-Dom*NRFU	-0.017 (0.027)	0.531
N= 3345 Root MSE=0.3297 R-Square= 0.1221		

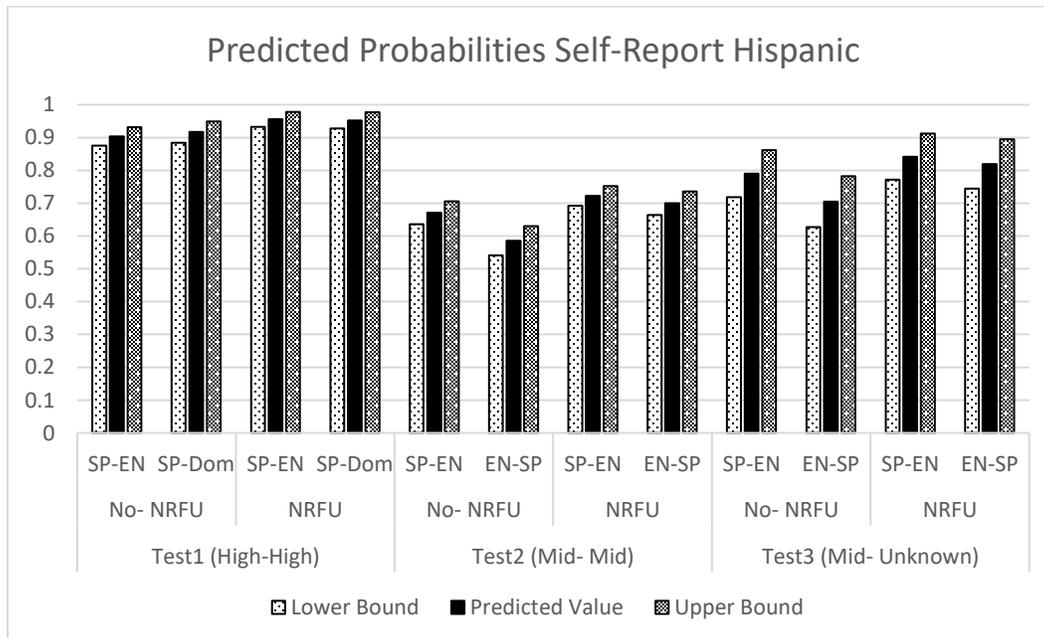


Figure 1: Predicted Probabilities Self- Report Hispanic

4.3 Self-Reported Spanish Preference

One of the goals of this experiment was to learn if and how material design might influence a respondent to respond in one language, versus another. In the final portion of this analysis, we examine the self-reported Spanish language preference of self-reported Hispanics who completed the recruitment survey. Table 6 presents initial frequencies for each design and test group. While Spanish-Dominant materials result in slightly higher Spanish-language preference, compared to the Spanish-English materials, differences are not statistically significantly different. In Test 2, our middle likelihood Hispanic and Spanish speaking areas, the Spanish-English design outperformed the English-Spanish design, in having respondents select for Spanish preference, but this too was statistically insignificant. In the Test 3 sample, in which there was a middle likelihood of respondents being Hispanic, but an unknown likelihood of Spanish speaking, overall, the English-Spanish materials received more respondents selecting for Spanish preference, however, in the NRFU group only, the pre-NRFU group, the Spanish-English materials did better. Similarly to the previous two test groups, however, differences between designs in Test 3 were also statistically insignificantly different.

Table 6: Self- Reported Spanish Preference of Self-Reported Hispanics Respondents

Sample	Likelihood Hispanic	Likelihood Spanish Speaking	Design	Spanish Pref. pre-NRFU	Selected for NRFU, Spanish Pref.	Total Spanish Pref.
Test 1	High	High	Version A (SP-EN)	50.78%	57.08%	54.82%
			Version C (SP-Dom)	52.47%	60.92%	57.90%
Test 2	Mid	Mid	Version A (SP-EN)	63.06%	65.16%	64.51%
			Version B (EN-SP)	54.24%	59.63%	57.74%
Test 3	Mid	Unknown	Version A (SP-EN)	47.6%	25.0%	34.7%
			Version B (EN-SP)	33.3%	50.0%	44.0%
* Chi-Square comparing proportion completes within in Test group statistically significant at p<0.05 level						

Thus, to better understand these effects, we conducted forth a logistic regression model in which we tested how the design variables might influence Spanish-language preference of self-reported Hispanic respondents, which is presented below in Table 7. In this model, we elected to control for certain demographic characteristics, including age and gender, as well as how well the respondent can read English (1=Very well; 4= Not at all) and whether or not Spanish is spoken by the respondent.

As one might expect, reading English less well and speaking Spanish, independently and controlling for all other variables in the models, are positively and statistically significantly associated with Spanish language preference. While not statistically significant at the P<0.05 level, we see a trend indicating that the Spanish-Dominant materials, controlling

for other variables, might decrease Spanish language preference compared to the Spanish-English materials; however, in the NRFU stage, Spanish-Dominant materials statistically significantly increase Spanish language preference among Hispanic respondents.

Table 7: Logistic Regression, Modeling Self- Reported Spanish Language Preference

Variable	Estimate (SE)	Pr > t
Intercept (High Hispanic + Spanish Lang, SP-EN, no NRFU)	-0.4773 (0.0306)	<.0001
Test 2 (Mid Hispanic, Mid Spanish Language)	0.0599 (0.0191)	0.0018
Test 3 (Mid Hispanic, Mid OR Unknown Spanish Language)	-0.0503 (0.0389)	0.1959
EN-SP	-0.0253 (0.0342)	0.4591
SP-Dom	-0.0372 (0.0221)	0.0926
NRFU	-0.0198 (0.0173)	0.2524
ES-SP*NRFU	-0.0025 (0.0388)	0.9484
SP-Dom*NRFU	0.06825 (0.0269)	0.0111
Age	0.0034 (0.0004)	<.0001
Male	-0.0251 (0.0126)	0.0447
Read English	0.2885 (0.0060)	<.0001
Spanish Spoken	0.2842 (0.0251)	<.0001
N= 2862 Root MSE= 0.31527 R-Square= 0.596119		

5. Conclusion

At the outset of this paper, we asked three guiding questions. Though we have implicitly answered them through the results section, the reader may find it useful for the questions to be explicitly answered as well.

First, we asked: does having more Spanish than English on recruitment materials increase recruitment overall, and also, specifically Spanish-language recruitment? Our results indicate that the Spanish-English version of the materials, within an appropriate sampling frame, may in fact outperform a Spanish-Dominant version of materials in simple yield. Put another way, we find that the answer to the first part of the question is ‘no’; having more Spanish than English on recruitment materials does not increase recruitment overall, in high likelihood Hispanic and high Spanish-language usage regions. However, among

self-reported Hispanics, having more Spanish than English on recruitment materials did increase Spanish-language as preference recruitment, but it was not a statistically significant improvement. Thus, we must answer ‘no’, as well, to the second part of our first guiding question.

The second guiding question was: what is the effect of this language imbalance on Hispanic respondents choosing to respond in Spanish vs. English? While Spanish speakers are most definitely more likely to indicate a preference to take surveys in Spanish, we see no statistically significant difference in respondent language preference between materials of different language ordering. However, we did find that in the NRFU stage, respondents who received Spanish-Dominant materials were more likely to indicate a Spanish-language preference.

The third question guiding this analysis was: does the language of the recruitment materials have any influence at the non-response follow-up (NRFU) stage of recruitment? Our results indicated that NRFU yield was influenced, only when comparing Spanish/English versus Spanish-Dominant materials in the high-likelihood Hispanic and Spanish language sample, where Spanish-English outperformed the Spanish-Dominant materials in NRFU. Being selected for NRFU does, unto itself, seem to influence respondents to self-report Hispanic (which may also indicate that Hispanics are more likely to answer if they are selected for NRFU), but this was not in conjugation with a particular version of the recruitment materials. In general, we did not find a significant influence of the interaction between NRFU and particular materials on the language preference of the respondent.

These results indicate that language imbalance (more Spanish than English) does not necessarily increase Spanish-language recruitment, and thus, it may not be prudent, for budgetary nor methodological reasons, to produce both Spanish-English and Spanish-Dominant materials, as Spanish-English may suffice in promoting Spanish-language recruitment. However, we advise more research in understanding the differences between Spanish-English and English-Spanish recruitment materials in recruiting both Hispanic, non-Hispanic, as well as bilingual Spanish/English respondents.

While these findings may be applied more generally to other surveys that target Hispanic or Latino populations, we might caution against extrapolating these findings into other bilingual designs. However, we hope this study does inform other survey recruitment experiments targeting other language combinations, and perhaps also similar studies of bilingual designs in the international context.

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