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Differences in self-rated health by immigrant status and language preference among Arab Americans in the Detroit Metropolitan Area

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ABSTRACT

Arab Americans are a growing minority in the U.S., yet only a few studies have examined their health utilizing representative samples. Using data from the 2003 Detroit Arab American Study, which is based on a probability sample, we examined the self-rated health (SRH) of Arab Americans by two measures of acculturation – immigrant status and language preference. We specified logistic regression models to test whether immigrants report better or poorer health status compared to U.S.-born Arab Americans and whether language preference among the immigrant generation accounts for the association between immigrant status and SRH. Our findings reveal that the health status of Arab Americans improves with acculturation. Arab immigrants are more likely to report poorer SRH compared to U.S.-born Arab Americans. When language preference is taken into account, Arabic-speaking immigrants are more likely to report poorer SRH compared to both U.S.-born Arab Americans and to English-speaking immigrants. We discuss these findings in light of similar ones obtained in the literature on SRH among other immigrant groups in the U.S. We conclude by arguing that language is an important measure to include in SRH studies among Arab Americans as well as other non-English speaking ethnic groups.

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Introduction

Arab Americans are a growing and an increasingly visible minority group in the United States (U.S.), yet only a few studies have examined their health utilizing national (Dallo & Borrell, 2006; Read, Amick, & Donato, 2005) or randomly selected regional data (Jaber, Brown, Hammad, Zhu, & Herman, 2003; Rice & Kulwicki, 1992). The limited knowledge on the health of Arab Americans is not surprising. The racial classification of persons of Arab ancestry as White (OMB, 1997) contributes to the "invisibility" of members of the group (Jamal & Naber, 2008) and severely limits the ability to examine their social, economic, and health profiles. As such, Arab Americans are one of the most understudied minorities in the U.S. Much of the information on the health of the group is available in the form of cultural competency guides designed for health care professionals (Hammad, Kysia, Rabah, Hassoun, & Connelly, 1999; Kulwicki, 1996; Meleis & Hattar-Pollara, 1995) or research that relies on convenience and community samples (Amer & Hovey, 2007; Dallo & James, 2000; Meleis, 1991; Meleis & Lipson, 1992).

Until recently, the majority of studies on Arab Americans advanced that the group has a disadvantaged health profile and constitutes a "population-at-risk" (Laffrey, Meleis, Lipson, Solomon, & Omidian, 1989). For example, Arab Americans have been shown to exhibit high rates of diabetes and blood pressure (Dallo & James, 2000; Jaber et al., 2003), smoke at a higher rate compared to the general population (Rice & Kulwicki, 1992), and to be at a higher risk for HIV infection (Kulwicki & Cass, 1994). Two recent studies which utilized the National Health Interview Survey (NHIS) data, however, challenged the "population-at-risk" premise and revealed that the self-rated health (SRH) and self-reported health conditions of Arab immigrants were comparable to those reported by U.S.-born Whites (Dallo & Borrell, 2006; Read et al., 2005). Further, contrary to the commonly held belief that lack of acculturation contributes to poorer health outcomes, the findings by Read et al. (2005) showed that the more acculturated Arab immigrants (using citizenship status and length of residence as proxy measures) reported worse health status.

While relying on nationally representative data is a major strength in the two aforementioned studies, the NHIS does not allow for examining the health of Arab Americans by immigrant status. As only the foreign-born can be identified in the data through the place of birth variable, U.S.-born Arab Americans remain indistinguishable from the majority White population.

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Given major data limitations, studies on Arab Americans have generally been limited to either non-U.S. born Arab immigrants (Dallo & Borrell, 2006; Jaber et al., 2003; Read et al., 2005) or to U.S.-born and early immigrant Arab Americans (Amer & Hovey, 2007). To the best of our knowledge, no study has examined how the health status of this group changes by immigrant status and language, two of the most commonly used indicators of acculturation in studies on the health of other ethnic or immigrant groups. This is the main objective of our study.

Utilizing data from the 2003 Detroit Arab American Study (DAAS), which relies on a large randomly selected sample drawn from the Detroit Metropolitan Area (DMA), we examined whether and how the SRH of Arab Americans changes by immigrant status and language preference. Our research questions are: 1) Do Arab immigrants report better or poorer health status compared to U.S.-born Arab Americans? 2) Does language preference among the immigrant generation account for some of the effect of immigrant status on SRH? We explored these two questions with all Arab Americans in the sample controlling for age, gender, education, and income.

Arab Americans constitute a growing minority group in the U.S. While there were 716,391 persons of Arab ancestry in the U.S. in 1990, the number rose to 1.2 million in 2000 (de la Cruz & Brittingham, 2003). The Arab American community is a mix of recent immigrants and the descendents of immigrants who arrived to the U.S. in the late nineteenth century. While the early immigrants were Christian peasants from what is now known as Lebanon and Syria, Arab Americans currently constitute a diverse community with respect to national origin (having ancestry in any of the 22 Arab countries in the Middle East and North Africa) and religious affiliation (Suleiman, 1999). Arab Americans also display high diversity with respect to socioeconomic indicators. Considerable differences in income and educational attainment exist between Arab American men and women and between the different ancestry groups (Schopmeyer, 2000). Further, while Arab Americans reside throughout the U.S., they predominantly concentrate in a few urban centers such as Los Angeles, Detroit, and New York/New Jersey (Samhan, 2006).

The Detroit Metropolitan Area (DMA) is home to one of the largest and most highly concentrated Arab American communities. The 2000 Census estimated 115,284 persons who reported at least one Arab ancestry in the state of Michigan, the third largest after California and New York (de la Cruz & Brittingham, 2003). Further, 30% of residents in Dearborn, the suburb bordering the west side of Detroit, reported an Arab ancestry (Brittingham & de la Cruz, 2005); this was the largest proportion anywhere in the U.S. The official count of Arab Americans is believed to be an underestimate and a number of community organizations contend that there are more than 250,000 Arab Americans in the DMA alone (Abraham & Shryock, 2000). Given its size and visibility, this community has been the site of heightened media attention. Also, given the presence of many community organizations that facilitate participant recruitment and data collection, it is not a surprise that much of the health research on Arab Americans has been carried out in the DMA.

Background

Immigration, acculturation, and SRH

Epidemiologic research on immigration has become increasingly concerned with understanding how and why the health of immigrants changes by immigrant status and other acculturation-related variables. A large number of studies reveal that immigrants are healthier than their U.S.-born ethnic counterparts and that their health deteriorates with longer residence in the U.S. (Abraído-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999; Barcerra, Hogue, & Atrash, 1991; David & Collins, 1997; Frisbie, Cho, & Hummer, 2001; Hummer et al., 1999; Lucas, Barr-Anderson, & Kington, 2001; Scribner & Dwyer, 1989; Singh & Yu, 1996; Sorlie, Backlund, Johnson, & Rogot, 1993). Specifically, birth weight profiles, all-cause mortality, and infant mortality for immigrants from African and Latin American countries are better than those for U.S.-born Latinos or African Americans, respectively (Barcerra et al., 1991; David & Collins, 1997; Scribner & Dwyer, 1989). Given the robust positive association between socioeconomic position and health, the health advantage observed among Latino immigrants – who exhibit a less favorable socioeconomic profile compared to their U.S.-born co-ethnics and Whites – has been labeled a "paradox" (Abraído-Lanza et al., 1999; Franzini & Fernandez-Esquer, 2004; Franzini, Ribble, & Keddie, 2001; Sorlie et al., 1993). A number of hypotheses have been advanced to explain the paradox (Abraído-Lanza et al., 1999). One is the "healthy migrant effect," which postulates that only the healthiest members of any society migrate. Another hypothesis, the "salmon bias," suggests that the observed effect is an outcome of immigrants returning to their countries of origin in old age and not being counted among the deaths in the U.S. Further, psychosocial and acculturation factors, such as stronger social support and lower acculturative stress, have been hypothesized to explain the favorable health outcomes of immigrants (Finch & Vega, 2003).

In contrast to the consistent findings in studies on all-cause and infant mortality, research which relies on SRH yields mixed evidence. SRH is a strong predictor of mortality (Idler & Benyamini, 1997) and has been increasingly utilized as an outcome measure in immigration and health research. This research showed that Caribbean and Asian immigrants in the U.S. report better SRH in comparison to African Americans and U.S.-born Asian-Americans, respectively, and to U.S.-born Whites (Frisbie et al., 2001; Lucas et al., 2001). Conversely, Latino immigrants are more likely to report poorer SRH compared to U.S.-born Latinos and Whites (Angel & Guarnaccia, 1989; Finch, Hummer, Reindl, & Vega, 2002; Franzini & Fernandez-Esquer, 2004; Shetterly, Baxter, Mason, & Hamman, 1996). Further, when language is taken into account, Spanish-speaking Latinos have been found to report poorer health compared to English speakers (Franzini & Fernandez-Esquer, 2004).

Given the Latino health advantage, it has been suggested that the lower SRH among immigrants may reflect artifactual, social, and cultural factors and not necessarily lower objective health. It has been conjectured that the lower SRH among Spanish-speaking immigrants may be the result of a "linguistic artifact" (Angel & Guarnaccia, 1989); i.e., Spanish speakers in particular choose the fair SRH category more often compared to English speakers because the word fair in Spanish implies having normal or regular health. Franzini and Fernandez-Esquer (2004) argued that SRH functions as a measure of social health for Spanish-speaking immigrants; the variable measures their disadvantaged social standing in the U.S. Finally, Shetterly et al. (1996) advanced that the less acculturated Latino Americans do not rate their health highly because boasting about health is not acceptable in Latino culture.

Acculturation has received increasing attention in recent years as a compelling site for the study of health and immigration. The construct is often conceptualized as a process whereby immigrants acquire the language, customs, attitudes, and behaviors of another (a host or a mainstream) culture (Hunt, Schneider, & Comer, 2004; Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005). Multidimensional models argue that immigrants can interact with the host culture in a number of ways; while some may select to adopt to the host culture without abandoning their own, i.e., bi-culturation or integration (Berry, 1998), others may choose to integrate economically but without culturally assimilating (Portes,

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1995). Further, some have argued that acculturation cannot be divorced from the structural context, socioeconomic factors, and the psychosocial stress immigrants experience (Abraido-Lanza, Armbrister, Florez, & Aguirre, 2006; Hunt et al., 2004). It has been suggested that socioeconomic factors such as income and education confound the relationship between acculturation and health behaviors (Deyo, Diehl, Hazuda, & Stern, 1985).

Much of the knowledge on acculturation and health has evolved as an outcome of studies on Latino Americans (Lara et al., 2005), most of which measure the construct through proxies such as language, place of birth, and length of residence in the host country. Language constitutes a central measure (Abraido-Lanza et al., 2006; Deyo et al., 1985), and a critical review of acculturation and Latino health found that the majority of studies (90%) used language as the only or one of the main measures (Hunt et al., 2004). Often, an individual with English-language proficiency is categorized as being acculturated or as having preference for mainstream culture.

A number of studies among Black, Asian, and Arab immigrants (Frisbie et al., 2001; Lucas et al., 2001; Read et al., 2005) which discuss acculturation and health did not include a measure of language. In general, while the collection of SRH data among non-English speaking ethnic groups presents with major substantive and methodological problems, it has received scant attention in epidemiological research (Hunt & Bhopal, 2004) beyond the few studies among Latino Americans. In this study, we attempt to fill in some of the conceptual gaps in the immigration–SRH literature by examining whether both immigrant status and language preference, as measures of acculturation, influence the SRH of Arab Americans. We hypothesize that, as in the case of Latino Americans, language has a significant effect on the SRH of Arab Americans above and beyond immigrant status. We further hypothesize that, while socioeconomic factors mediate some of the relationship between acculturation and health, language preference remains important to include and is not explained away by socioeconomic factors.

Methods

Data

The DAAS was carried out in the DMA, home to one of the largest and most highly concentrated Arab American communities in the U.S. (Brittingham & de la Cruz, 2003; de la Cruz & Brittingham, 2003). The sampling frame for the study was defined to include all adults who self-identified as of Arab (including Chaldean) descent and who resided in households in the DMA during the survey period, July–November 2003. The DAAS was a companion to the 2003 Detroit Area Study, which has been conducted annually by the University of Michigan since 1951 (Clemens, Couper, & Powers, 2002). Both studies were reviewed and approved by the University of Michigan's Institutional Review Board.

The DAAS was based on a probability sample generated through a dual-frame sampling design that consisted of two component parts. The first was an area probability frame used to select housing units located in area segments from Census tracts in which 10% or more of persons were self-classified as of Arab or Chaldean ancestry in the 2000 Census. The second component was a list frame for selecting household units from mailing and membership lists of 13 major Arab and Chaldean American organizations. Household units in Census tracts with less than 10% residents of Arab or Chaldean ancestry were kept in the list frame, while those in Census tracts with 10% or more were removed. Therefore, the two sampling frames were mutually exclusive.

For the area probability frame, a conventional three-stage sampling design was employed: a primary stage of sampling area segment units, followed by a second stage sampling of housing units within area segments, and a third stage in which one adult was randomly selected out of all eligible persons in a household. With respect to the list frame, a master list was constructed which included only households in Census tracts with less than 10% Arab or Chaldean residents. A systematic random sample of households was drawn from that list and one eligible adult respondent was selected from each household. A total of 4619 households were screened and 1389 were found to be eligible. From those eligible, 1016 household members completed the interview, at a response rate of 73.7%.

Variables

The dependent variable, SRH, was assessed through the following question: "How would you describe your overall state of health these days? Would you say it is excellent, very good, good, fair or poor?" SRH is a reliable predictor of morbidity and mortality, even after controlling for physical and psychosocial health indicators (Idler & Benyamini, 1997). The variable is influenced by factors such as gender, age, socioeconomic position, and race (Ferraro & Kelley-Moore, 2001; Finch et al., 2002; Franks, Gold, & Fiscella, 2003). Following most previous studies on immigration (Finch et al., 2002; Frisbie et al., 2001; Lucas et al., 2001; Read et al., 2005), we collapsed SRH into a dichotomous variable, "excellent/very good/good" versus "fair/poor" in multivariate analyses.

The independent measures included in the analyses were immigrant status, language preference, gender, age, education, and income. With respect to immigrant status, respondents born in the U.S. were categorized as U.S.-born Arab Americans while those born outside the U.S. were categorized as Arab immigrants. Prior to carrying out the interview, participants were asked by bi-lingual interviewers whether they prefer to complete the survey in English or Arabic. As such, language preference, based on the language in which the interview was conducted, was included in multivariate analyses as English or Arabic. In order to test the effect of both immigrant status and language preference, and given that the overwhelming majority of U.S.-born Arab Americans completed the interview in English, a combined measure of immigrant status and preferred language was created. This measure was coded into three categories: U.S.-born Arab Americans, English-speaking immigrants, and Arabic-speaking immigrants.

Age was included in multivariate analyses in three categories that reflect age cohorts: 18–24, 25–59, and 60 years or older. Education and household income were included as dichotomous categorical variables. Treating high school graduation as a benchmark, we dichotomized education into "high school or less" and "more than high school." Finally, we dichotomized the household income variable around the $20,000 cut-off point and included it in multivariate analyses in two categories: "less than $20,000" and "$20,000 or more." This is the same income categorization used in a number of previous studies on SRH and immigration (for example: Lucas et al., 2001; Read et al., 2005).

Statistical analyses

For the purpose of the analyses, weights were created to take into account the unequal probability of selection due to utilizing a dual-frame sampling design and non-response. Further, these weights took into account post stratification factors that involve adjusting the final weights for sampled cases so that they conform to known distributions for the population represented by the sample. A final weight for each respondent in the survey was computed as the product of the three above mentioned weight components – sampling design, non-response, and post

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stratification factors. Missing income data were imputed and logistic regression analyses were carried out to estimate the equations that predicted the likelihood of reporting fair/poor health. Using the Statistical Package for the Social Sciences program (SPSS), we specified two logistic regression models. In the first model, we tested the odds of reporting fair/poor health by immigrant status. We ran a crude model with immigrant status only as the independent measure and an adjusted model controlling for sex, age, education, and income. In the second model, we tested the odds of reporting fair/poor health by immigrant status and preferred language. Here, we also ran a crude model and an adjusted model controlling for sex, age, education, and income. In the Results section, we report odds ratios and their 95% confidence intervals.

Results

Fig. 1 displays key social and demographic characteristics of the DAAS sample in comparison to national figures on persons of Arab ancestry. In comparison to Arab Americans nationally, Arab Americans in the DMA were 6 years older on average and had a higher proportion of females (54 versus 43%) and immigrants (75 versus 54%). Further, the figure reveals that Arab Americans in the DMA were socioeconomically disadvantaged in comparison to Arab Americans nationally. While 84% of Arab Americans nationally had at least a high school education, only 73% in the DMA did so. Also, only 23% of Arab Americans in the DMA had a university degree or more compared to 41% of Arab Americans nationally. Our univariate analyses (not shown in figure) also showed that the median household income category for Arab Americans in the DMA ($30,000–49,000) is lower than the Arab American national household income average ($52,318).

Table 1 presents descriptive data on how Arab Americans responded to the SRH question. In the total sample, 16.12% reported fair or poor health. Disaggregating the data by immigrant status and preferred language, however, revealed important heterogeneity. While only 4.66% of U.S.-born Arab Americans reported fair/poor health, 11.03% of English-speaking Arab immigrants and 27.47% of Arabic-speaking immigrants did so. Specifically, Arabic-speaking immigrants selected the fair SRH category much more frequently (22.89%) compared to English-speaking immigrants (10%) and U.S.-born Arab Americans (2.86%).

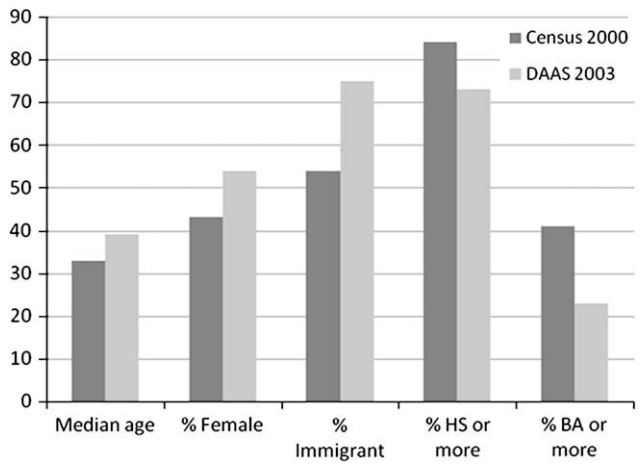

Fig. 1. Select demographic and socioeconomic characteristics from the DAAS 2003 study, in comparison to data for persons of Arab ancestry from the 2000 Census ($N = 850{,}027$). Data on Arab Americans nationally were obtained from two reports prepared by the U.S. Census Bureau: Brittingham and de la Cruz (2005) and de la Cruz and Brittingham (2003).

Table 2 summarizes results from the two logistic regression models we specified to predict the odds of reporting fair/poor health. Our first model reveals that immigrants are more likely to report fair/poor health compared to U.S.-born Arab Americans. After adjusting for sex, age, education, and income, the odds ratio attenuated (from 5.11 to 2.92) but remained significant (95% CI = 1.56–5.47). Age, education, and income were also significantly predictive of the odds of reporting fair/poor health, however, sex was not. Controlling for immigrant status, those who have high school or less were more likely to report fair/poor health (OR = 2.13; 95% CI = 1.41–3.22), and those who have an annual household income of less than $20,000 were more likely to report fair/poor health (OR = 3.27; 95% CI = 2.2–4.86).

In our second model, where we replaced immigrant status with a new variable that takes into account the language preference among immigrants, our findings reveal that language captures much of the association between immigrant status and SRH. Controlling for sex, age, education, and income, immigrants who completed the interview in Arabic were 3.52 times more likely to report fair/poor health compared to U.S.-born Arab Americans (95% CI = 1.82–6.81), while immigrants who completed it in English were only 2.32 times more likely to report fair/poor health compared to the U.S.-born (95% CI = 1.17–4.6). Education and income are also significant predictors of SRH in this model; having only high school education or less (OR = 1.93; 95% CI = 1.26–2.96) and less than $20,000 annual household income (OR = 2.96; 95% CI = 1.96–4.46) increased the odds of reporting fair/poor health.

Discussion

Using a sample that is representative of Arab Americans in the DMA, our findings reveal that the perceived health status of this group is not homogeneous but is differentiated by both socioeconomic and acculturation-related factors. The association between socioeconomic position and health is one of the most robust in social epidemiology and our findings confirm that it holds for Arab Americans. In the two adjusted models we tested, education and income significantly predict SRH. In addition to socioeconomic position, acculturation factors (as measured by immigrant status and language preference) also contribute significantly to the heterogeneity in Arab Americans' health status profile. In general, Arab immigrants report fair/poor health at a higher rate compared to U.S.-born Arab Americans. Language, however, captures much of the association between immigrant status and SRH. When language preference is taken into account, a trend is revealed. Both Arabic- and English-speaking immigrants remain more likely to report fair/poor health compared to U.S.-born Arab Americans. However, the odds are higher and more significant for Arabic-speaking immigrants.

Our findings suggest that the SRH of Arab Americans improves with acculturation into U.S. society. This is in contrast to the results by the Read et al. (2005) national study in which the less acculturated Arab immigrants reported better health status. This may be due to the fact that the two studies, though both are based on randomly selected samples, actually captured two different subgroups of the Arab American community. While the Read et al. (2005) study is national, it is only representative of Arab immigrants who were able to complete the survey in English. It does not include U.S.-born Arab Americans or non-English speaking immigrants. On the other hand, while our sample includes both immigrants and U.S.-born Arab Americans, the DMA is a region in the U.S. with its unique history of Arab migration and presence. As our descriptive data reveal, Arab Americans in the DMA are older, more

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Table 1
Frequencies and percentages[a] for reporting each of the SRH categories and fair/poor health combined in the DAAS by immigrant status and language preference.

SRH	Arab Americans total sample DAAS ($n = 1011$)	U.S.-born Arab Americans DAAS ($n = 256$)	English-speaking immigrants DAAS ($n = 291$)	Arabic-speaking immigrants DAAS ($n = 441$)
Excellent	27.69%	37.27%	30.69%	20.24%
Very good	29.97%	34.76%	32.76%	23.85%
Good	26.21%	23.29%	25.52%	28.43%
Fair	13.45%	2.86%	10.0%	22.89%
Poor	2.67%	1.79%	1.03%	4.58%
Fair/poor	16.12%	4.66%	11.03%	27.47%

[a] Percentages were calculated from unweighted data.

likely to be immigrants, and more socioeconomically disadvantaged compared to Arab Americans nationally. It may be that acculturation exerts a different effect on socioeconomically disadvantaged Arab Americans than it does on those who are better off. Our results are, however, congruent with those revealed in a number of SRH studies among Latino Americans (Angel & Guarnaccia, 1989; Finch et al., 2002; Franzini & Fernandez-Esquer, 2004; Lara et al., 2005; Shetterly et al., 1996). As such, it may be that the SRH trajectory of Arab Americans in the DMA is more similar to that of Latino Americans than it is to Arab Americans nationally. The SRH of Arab Americans in the DMA improves, rather than worsens, with acculturation.

One explanation to our findings is that the less acculturated Arab Americans (Arabic-speaking immigrants) experience worse physical health because they experience more acculturative stress. The link between acculturative stress and negative psychological and physical health outcomes among immigrants has been established in studies carried out in a number of settings (Berry, Kim, Minde, & Mok, 1987; Finch, Hummer, Kol, & Vega, 2001). It can be easily argued that Arabic-speaking immigrants would experience more acculturative stress in their jobs and in public spaces, a factor which influences both their physical health and self-reported health status. Further, a proportion of immigrants in our study who prefer to communicate in Arabic actually have a low command of the English language which limits their health care access. All these factors affect physical health outcomes negatively.

Further, the poorer perceived health status among this group may reflect lower "social health," a term used by Franzini and Fernandez-Esquer (2004) in their study among Latino Americans. The authors point to both socioeconomic conditions and perceived discrimination as "social health" factors. Their argument is in line with the "sponge hypothesis" (Idler & Benyamini, 1997), whereby SRH captures not only physical health but a host of social and structural factors. With respect to Arab Americans, the DAAS was carried out shortly after the tragic events of September 11, a difficult time for all Americans in general and for Arab Americans specifically. It is to be expected that the less acculturated Arabic-speaking immigrants bore most of the negative social consequences of September 11, including but not limited to fear of being identified in public spaces and the psychological stress which ensues from absorbing stereotyped images of their culture. Incidents of stereotyping in the aftermath of September 11 often involved identifying a person through factors related to language, such as having an Arabic/Muslim sounding name or a heavy accent (Cainkar, 2002). Further, a unique study carried out in California revealed that September 11 had an almost immediate impact on the birth outcomes of women with Arabic-sounding names (Lauderdale, 2006). Arabic-named women who chose ethnically distinct names

Table 2
Summary of findings from the two models of logistic regression analyses, showing ORs and their 95% CIs.

	Model 1				Model 2			
	Crude		Adjusted		Crude		Adjusted	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Immigrant status								
U.S.-born	1.0		1.0					
Immigrant	5.11	2.77–9.40	2.92	1.56–5.47				
Immigrant status-language								
U.S.-born					1.0		1.0	
Immigrant-English					2.34	1.17–4.68	2.32	1.17–4.6
Immigrant-Arabic					7.36	3.96–13.68	3.52	1.82–6.81
Sex								
Male			1.0				1.0	
Female			1.30	0.89–1.91			1.31	0.89–1.92
Age								
18–24			1.0				1.0	
25–59			4.32	1.51–12.42			4.126	1.43–11.88
60 and over			8.28	2.82–24.35			8.09	2.74–23.81
Education								
More than HS			1.0				1.0	
HS or less			2.13	1.41–3.22			1.93	1.26–2.96
Income								
$20,000 or more			1.0				1.0	
<$20,000			3.27	2.2–4.86			2.96	1.96–4.46

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for their babies were at an increased risk of low birth weight in the 6 months following September 11.

Like preference for ethnically distinct names, Arabic-language preference may be indicative of a stronger identification with Arabic culture and is important to include in studies on Arab Americans that utilize SRH as the outcome. In addition to viewing language simply as a proxy measure of acculturation, it can be viewed as a measure of the extent to which an immigrant is influenced by processes of "othering" and "racialization" that disrupt acculturation (Bhatia & Ram, 2001). While these processes entwine with social class, in controlling for income and education in our study, we excluded the possibility that preference for the Arabic language would merely constitute an indicator of lower socioeconomic position. Like Latino Americans, Arab Americans are often not easily or uniformly identified based on skin color or phenotypical attributes. In many cases, Arabic-language preference may imply a limited command of English or speaking English well but with a heavy accent, in which case language assumes the role of the stigmatizing identifier. In other cases, preference for Arabic may signal that an individual holds on to a particular cultural orientation which places Arab culture and the Arabic language in high esteem. In a post-September 11 environment, this cultural orientation is more likely to lead to psychological stress due to the difficulty of consolidating one's sense of cultural pride with the forces of "othering" and "racialization."

We further discuss two potential interpretations for the poorer perceived health status among Arabic-speaking immigrants in our study. The first is that language preference may reflect benign factors related to holding on to cultural or religious values which discourage from boasting about health. Humbleness in reporting health status has been suggested as a potential interpretation for the lowered SRH profiles among Latino- and African Americans (Franzini & Fernandez-Esquer, 2004; McMullen & Luborsky, 2006). With respect to Arab Americans, both Christians and Muslims, health is perceived to be an entrusted gift and both cultural and religious beliefs encourage humbleness and advocate against boasting when one is asked about her or his health (Rahman, 1987). For example, among Arabs, a common response to the question: "How is your health?" comes in the generic form: "Thanks to God, it is fine." While we do not include a measure of religiosity in our study, it is possible that the less acculturated Arab Americans are more likely to hold on to religious values which promote humbleness when talking about one's health. As such, the more religious would report fair or good health, in order not to be perceived as boastful, even if their health status could be described by objective standards as very good or excellent.

Another, but a related, interpretation is more methodological in nature and has been evoked in Latino SRH studies; namely that the effect of language is merely artifactual. It has been argued that Spanish-speaking Latinos report fair health at a higher frequency compared to English speakers in part because the word used in Spanish (*normal* or *regular*) is equivalent to "just fine" in English, which may be closer to good than it is to poor health (Angel & Guarnaccia, 1989). This phenomenon has been referred to as "language anchoring" whereby what constitutes normal health may shift between languages. Indeed, our descriptive findings (in Table 1) show that Arabic-speaking immigrants selected the fair health category at a higher frequency compared to both U.S.-born Arab Americans and English-speaking immigrants. It may be that the word used for fair in Arabic simply biased the answers for Arabic-speaking immigrants towards a higher frequency of selecting the fair category. While the DAAS instrument was translated from English to Arabic through an iterative process – translation and back-translation by two bi-lingual translators followed by a refinement of the Arabic version – this may not have been sufficient to address all linguistic details. In any case, it is well acknowledged that the process of obtaining SRH data from non-English speaking immigrants is fraught with conceptual and linguistic challenges (Hunt & Bhopal, 2004). The "linguistic artifact" hypothesis is intriguing and deserves to be further explored qualitatively among Arab Americans as well as other non-English speaking ethnic groups in the U.S. such as Latino- and Asian-Americans.

This study has a number of limitations which are worth mentioning. First, the DAAS was carried out in the DMA, a region in the U.S. that has its unique urban context and history of emigration from Arabic-speaking countries of the Middle East. It is important to acknowledge that our findings may not be representative of Arab Americans nationally. As previously mentioned, Arab Americans in the DMA tend to be more socioeconomically disadvantaged and our sample included a higher proportion of immigrants and females in comparison to Arab Americans nationally. We believe that the issue of data representativeness and generalizability in studies among Arab Americans deserves serious attention in future research. Second, the language preference variable we used was based solely on the language in which the respondent chose to complete the interview. In some Latino studies (Franzini & Fernandez-Esquer, 2004), on the other hand, a composite language measure which combines use of Spanish at home with preference for Latino music and television programs is used. Composite measures may be a more reflective and comprehensive. Third, the DAAS was designed for the purpose of understanding the political participation of Arab Americans in the aftermath of the tragic events of September 11 and was not designed as a health survey. As such, our study was limited by the absence of other health variables and the inability to use more than basic measures of acculturation. We advocate for more quantitative and large-scale studies on Arab Americans in which data on a range of health outcomes are collected. We also suggest that future studies use validated instruments that are better equipped to capture the variability in acculturative processes, especially given that this group experienced immense changes and challenges in the last few years.

Notwithstanding these limitations, the DAAS allowed us to examine for the first time the SRH profile of Arab Americans as an outcome of two important measures of acculturation, immigrant status and language, which have been used in studies among other immigrant groups. Our study contributes to the literature on immigration and health which utilizes SRH as the outcome measure and to the very limited, but burgeoning, health research on Arab Americans. The findings support claims raised in Latino studies and in other theoretical writings that obtaining reliable SRH data from non-English speaking ethnic groups in the U.S. deserves more attention in epidemiological research. We suggest that research should focus on exploring some of the cultural issues surrounding the meaning of perceived health status among Arab Americans as well as other immigrant and ethnic groups.

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