Occupational and Sociocultural Temporal Identity Integration: Links to Overall Health for Muslim-Heritage Immigrants to the United States

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This study examines the association between temporal identity integration, or how identity is integrated across time, and perceived health for new Muslim immigrants to the United States using the publicly available New Immigrant Survey. We examined the content of identity in the occupational and sociocultural domains. These two content areas are important aspects of the immigration transition and are influenced by the context of Islamophobia. We examined the association of changes across the occupational and sociocultural domains from pre-to-post immigration with four different indicators of health (e.g., current health, change in health, emotional health, and physical health) for 444 Muslim-heritage immigrants. Findings suggest overall perceived health of new Muslim immigrants was good. Hypotheses were partially supported where results suggest small, yet significant, associations between changes in occupational status, English use, and similarity of diet with health indicators. The results emphasize the need to further explore other constructs that are relevant to health for Muslim immigrants in a post-9/11 era.

Keywords

Muslim immigrants • health • identity integration • occupation • language • diet • immigration • transition • United States • secondary analysis • New Immigrant Survey 2003–1

Immigrants may face unique challenges creating a coherent sense of self during the transition from pre- to post-immigration as they negotiate their identity in a new context. Temporal identity integration explores past, present, and future configurations of one's self and is an

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important aspect of healthy identity development. In this study, we examine the content of identity integration, specifically, how temporal identity integration across the occupational domain and sociocultural experiences are associated with perceived health for new Muslim-heritage[1] immigrants to the United States.

We focused on Muslim immigrants as discrimination against Muslims in the United States and globally increased in the early period of the 21st century, the damaging resulting effects of the long-running "War on Terror", with greater reports of Islamophobia (see Poynting & Mason, 2007 for discussion; Saleem & Ramasubramanian, 2019; Samari et al., 2018). Islamophobia is defined as an irrational fear toward Muslims and Islam that results in both explicit and subtle discrimination against Muslims (Runnymede, 1997). Islamophobes believe Muslims are culturally inferior, threatening, and completely different from non-Muslims (Richardson, 2012). Additionally, even though Muslims are quite diverse in ethnic and national origins, the universal anti-Muslim sentiment has racialized Muslims, creating a racial and pan-ethnic group (Cesari, 2014; Garner & Selod, 2015).

In this context of Islamophobia, Muslim's stigmatized status affects health in multiple ways such as stress, resource access, occupational opportunities, or psychological reactions (Samari, 2016; Samari et al., 2018). Moreover, in the United States, Muslim immigrants are a growing population that are marginalized and may have increased identity integration challenges negotiating between Western norms and religious and cultural values (Saroglou & Galand, 2004; Britto & Amer, 2007). Accordingly, we explore the association of retrospective identity content—occupational factors and sociocultural experiences—and perceived health during the pre- to post-immigration transition in a post-9/11 era. These areas are important to an immigrant's sense of self which, influenced by the immigration transition, may be affected by the context of Islamophobia. Therefore, occupational factors and sociocultural experiences are useful areas to understand their association with health for Muslim immigrants to the United States.

Identity Integration

Identity integration is considered an important aspect of healthy identity development (Erikson, 1968; McAdams, 1985) and indicates a level of "sameness and continuity" for an individual across domains of identity (e.g., sexual identity, ethnic-racial identity, political identity), environments, and time (Syed & McLean, 2016). Identity integration can be separated into four forms: contextual integration (i.e., congruence between domains), temporal integration (i.e., integrating past, present, and future self-concepts), ego integration (i.e., how individuals make sense of their evolving self-concepts), and person-society integration (i.e., how culture affects self-concept; Syed & McLean, 2016). In the present study, we focused on temporal identity integration as it is especially relevant to immigrants as they transition to a new country (Syed, 2017). We examined specific manifestations of identity through two relevant components of identity for immigrants' transition to the United States: occupational and sociocultural factors.

Identity Integration and Health for Immigrants

Identity integration and coherence promotes psychological adjustment for immigrants (Waterman, 2015; Benish-Weisman, 2009). As immigrants undergo a cultural transition, they

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1. We use the term Muslim and Muslim-heritage interchangeably for simplicity and because 93% of the sample were practicing Muslims.

work to find cohesiveness between their past and present selves as they acclimate to a new culture (Syed, 2017). Continuity and discontinuity in cultural development can affect immigrants' adaptation, and being able to coherently integrate identities in the new cultural context promotes psychological functioning (Syed & Mitchell, 2015; Phinney et al., 2001). Furthermore, a recent review of Islamophobia and health highlights the associations between the negative social context and health for Muslims living in North America, Europe, Australia, and New Zealand (Samari et al., 2018).

Acculturation. Immigrants may experience a threat to continuity of their identity during the acculturation process as they begin to adopt a second culture and lose aspects of their heritage culture. Acculturation is a multidimensional process which results in both maintenance and changes in three domains, (1) practices/behaviors, (2) values, and (3) identification with respect to heritage and host cultures (Rudmin, 2009; Schwartz et al., 2006; Schwartz et al., 2010). The acculturation process occurs at different rates and the dimensions of acculturation may not all change equally among immigrants (Schwartz et al., 2010). Acculturation may cause distress, as immigrants negotiate their host and heritage countries' values and align them with their own personal sense of self (Schwartz et al., 2006). Although still multidimensional, acculturation research tends to focus on understanding an immigrant's experience at one point in time (i.e., post-immigration). However, temporal identity integration examines the immigration transition, focusing on both pre- and post-immigration experiences (Syed, 2017). Immigrants have unique challenges as they transition to a new country and negotiate balance among their previous, present, and future beliefs and actions (Hammack, 2008). Additionally, cultural mismatch between the host country and country of origin may negatively impact health (Fox et al., 2017). By examining pre- to post-immigration domains or temporal identity integration, we are uniquely capturing the transition or discontinuity/continuity that may occur during immigration rather than only examining post-immigration practices.

Identity Integration for Muslim Immigrants

Muslim religious values and associated cultural heritage practices may create greater conflict with mainstream American culture than other immigrants (i.e., drinking alcohol, clothing choices, religion), which may, in turn, cause integration challenges (Sirin & Fine, 2007; Britto & Amer, 2007). Furthermore, public anti-Muslim sentiment has increased in the past decades which may make it more challenging for Muslims to comfortably claim identities within American society (Saleem & Ramasubramanian, 2019; Haddad & Harb, 2014).

Researchers have found components of identity integration to be mainly protective but also stress-inducing for American Muslims. In terms of protection, in a sample of American Muslim adolescents, for participants with high identity conflict, perceived discrimination was associated with avoiding majority group members (Saleem et al., 2018). Conversely, for participants with integrated identities, perceived discrimination was not associated significantly with avoiding majority group members (Saleem et al., 2018). Similarly, in a study of Muslim Arab Americans, Britto and Amer (2007) found that individuals in the moderate bicultural group (i.e., moderate levels on both Arab and American identity subscales) experienced less family support and more acculturative stressors compared to those in the high bicultural group (i.e., high levels on both scales) or high Arab cultural group (i.e., high level of Arab and moderate level of American identity).

Conversely, a recent study found that bicultural identification was related to intensified negative outcomes where participants with a stronger Muslim American identity also reported increased perceived discrimination and anxiety symptoms (Lowe et al., 2018). In a similar

European study, Saroglou and Galand (2004) compared Belgian immigrants and found that Muslims were higher on Belgian identity, religious identity, and problematic identity statuses (i.e., defined by identity foreclosure and identity diffusion) than other immigrant groups. Identity foreclosure occurs when one believes they know themselves and does not explore identities, and identity diffusion occurs when one has neither committed to an identity nor exploring to form one. The discrepancy between Belgian and religious identities may be related to problematic identity status that led some immigrants to not engage in the same identity integration processes as others. Because both Belgian and religious identities are high for Muslim immigrants in Belgium, individuals may experience distress due to a belief that accepting the Western norms might be going against their traditional religious Muslim views (Saroglou & Galand, 2004). Identity integration challenges occur across many domains of identity, but changes in occupational and sociocultural factors are especially present during the immigration transition and are associated with health.

Identity Content

In order to better understand temporal identity integration across the immigration transition, it is important to understand identity content or *the what* of identity. Currently, identity researchers tend to focus on studying the process of identity instead of the actual content (McLean & Syed, 2015; Galliher et al., 2017). Galliher and colleagues' (2017) developmental model for studying identity in context provides a framework to approach the examination of identity content. The multilevel model of identity content in context includes four interrelated levels of analysis: (1) culture, (2) social roles, (3) domains, and (4) everyday experiences (see Galliher et al., 2017 for full review). Integrating this model with Schwartz and colleagues' (2010) domains of acculturation highlights the importance of practices, values, and identifications as significant and separate areas of interest for immigrants. These components of acculturation do not necessarily change in the same direct (i.e., toward host country) or at the same rate (Schwartz et al., 2010). Thus, it is important to examine these significant components separately. Notably, acculturation emphasizes post-immigration adaptation while temporal identity integration focuses on the transition or change from pre- to post-immigration and, therefore, considers an individual's own baseline behavior.

In this study, we examined identity content across the immigration transition using Galliher and colleagues' (2017) third and fourth levels of analysis (domains and everyday experiences, respectively) to explore temporal identity integration for Muslim immigrants. We aim to understand the content of temporal identity integration through components meaningful during the acculturation process (i.e., practices). We investigated the associations or changes in the occupational domain and health. The occupational domain is seen as an influential domain for one's self-concept (Gailliher et al., 2017). We also investigated the content of temporal identity integration through sociocultural experiences of everyday life (e.g., language and diet). During the immigration transition, occupational and sociocultural factors are especially vulnerable to change and therefore important domains or identity content areas to consider for immigrants (Syed, 2017).

Occupational Domain

The occupational domain is relevant to understanding identity, and there tends to be changes in the occupational domain during immigration (McLean et al., 2016). A study using the

Longitudinal Survey of Immigrants to Australia (Panel 1) found immigrants initially had a decline in occupational prestige from their last occupation in their country of origin to the first job in the destination country (Chiswick et al., 2005). Although the steepness of the occupational status differed, both refugees and other immigrants on average experienced a decline (Chiswick et al., 2005). Similarly, Akresh (2006) found on average immigrants to the United States decreased in job mobility from pre- to post-immigration. These changes in occupation lower an individual's baseline satisfaction level, and, overall, unemployed individuals report lower wellbeing compared to employed individuals (Lucas et al., 2004; McKee-Ryan et al., 2005). The evidence suggests continuity or sameness over time is associated with better health outcomes.

Sociocultural Experiences

Immigrants experience changes in sociocultural factors such as language, food, and religious practices during the immigration transition. Sociocultural factors influence an individual's cultural identity through changes in specific practices that lead to changes in values and identifications (Schwartz et al., 2006; Schwartz et al., 2010). After immigration, immigrants are exposed to ideals, values, and behaviors dominant in the new social environment, which may cause immigrants to expand their set of cultural ideals, values, and practices, integrating their new and heritage cultures (Schwartz et al., 2006). This process may be distressing for immigrants (Berry, 1997), and continuity or discontinuity across these factors may be differentially related to health. Thus, the examination of sociocultural factors is aligned with acculturation work, but is also important different as we focus on the transition or change of these factors rather than only acquisition. Retaining aspects of an immigrant's host culture, such as diet, may be protective during the transition (Berry, 1997; Berry et al., 2006). Language skills seem to help the transition as immigrants are able to communicate and navigate the new country easier (Birman & Trickett, 2001). Newly admitted immigrants to the United States found that speaking English well and speaking English with friends increased the odds of excellent health (Akresh & Frank, 2008; Okafor et al., 2013). Taken together, these central everyday experiences can influence an individual's identity or self-concept.

Muslim Health

The context of Islamophobia can affect health in multiple ways such as stress, resource access, occupational opportunities, or psychological reactions (Samari, 2016; Samari et al., 2018). Thus, American Muslims may be at at-risk population for developing a variety of health concerns. Systematic reviews of Islamophobia and health find support for a relationship between experiences of discrimination and poorer health among Muslim populations and those mistaken for Muslims (Samari et al., 2018). As Islamophobia is systemic and influences Muslim immigrants' lives at multiple points, gaining insight to occupational and sociocultural changes can help to elucidate ways in which changes in perceived health occur.

Exploring the association of retrospective identity content—occupational factors and sociocultural experiences—and perceived health during the pre- to post-immigration transition are useful areas to understand their association with health for Muslim immigrants to the United States. These areas are important to how an immigrant's sense of self, influenced by the immigration transition, may be affected by the context of Islamophobia.

Present Study

The present study explores the association between the content of temporal identity integration and perceived health for new Muslim-heritage immigrants to the United States. Using secondary analysis of publicly available immigrant data, we investigated how past and present configurations of one's self is related to health during the immigration transition. Specifically, the purpose of the present cross-sectional study is to examine how continuity and discontinuity pre- and post-immigration in the occupational domain and sociocultural experiences correlate with perceived health for Muslim-heritage immigrants. There are no direct measures of identity process in our study as we are measuring the content of important identity domains and experiences instead of general processes of identity across the immigration transition. Our analyses are situated in Galliher and colleagues' (2017) framework by investigating identity content through two levels of analyses (domain and everyday experiences) to gain a broader understanding of temporal identity integration for Muslim immigrants.

With respect to the occupational domain, we hypothesized continuity in the occupational domain (e.g., continuously employed or no change in occupational prestige) will result in better perceived health or a smaller decrease in wellbeing for Muslim immigrants to the United States (*Hypothesis 1a and 1b*). We tested group differences in perceived health with reference to the continuously employed group, which we hypothesized would report better health, and the losing employment group, which we hypothesized would report worse health. These hypotheses are based upon evidence that change tends to be associated with negative adjustment, but change involving increased employment or occupation prestige is associated with positive psychological and financial outcomes (Fujita & Diener, 2005; Lucas et al., 2004; McKee-Ryan et al., 2005).

In the sociocultural domain, we hypothesized increased English language ability results in better perceived health or smaller decrease in wellbeing for Muslim immigrants to the U.S. (*Hypothesis 2a*). English usage and ability have shown to be protective among other immigrant groups (Akresh & Frank, 2008). Conceptually, English knowledge may be beneficial for engaging in the social and work worlds. Additionally, we hypothesized continuity in food diet (i.e., similarity in diet) will result in better perceived health or a smaller decrease in wellbeing for Muslim immigrants to the U.S. (*Hypothesis 2b*). Retaining cultural practices is associated with more positive outcomes during the early adjustment period of immigration (Berry et al., 2006).

Method

Data Source

We used a well-suited nationally representative data source to address our hypotheses. We employed a subset of the adult sample of the New Immigrant Survey 2003–1 (NIS-2003–1), a nationally representative dataset of 8,573 immigrants newly admitted to the U.S. for permanent residency in 2003 (i.e., Green Card holders; Jasso et al., 2006). Although the New Immigrant Survey is a multi-wave study, we used the NIS Wave 1 data as we are interested in immigrant experiences pre- and post-immigration. This project was IRB exempt as it is secondary analysis of publicly available data.

The computer-assisted in-person interviews were conducted from 2003 to 2004 in the immigrants' preferred language. The questionnaire comprises 21 sections and includes a large range of items covering the domains of "health, schooling, marriage and family, languages and English

language skills, labor force participation, earnings, use of government services, networks, travel, and religion" (pp. 10, Jasso et al., 2005). The survey data also include data from the United States Immigration and Naturalization Services (INS, now referred to as the USCIS (U.S. Citizen and Immigration Services)), which contains information such as type of visa and date of visa or permanent residency attainment. A detailed description of the NIS-2003–1 sampling and protocol has been documented (see Jasso et al., 2005). We acknowledge the data is dated, yet believe this is the best publicly available dataset with a large sample of Muslim immigrants experiencing the post-9/11 cultural context.

Analytic Sample

Our analytic sample included 444 Muslim-heritage immigrants to the United States. Muslim-heritage immigrants include individuals who identify as Muslim or report their mother or father as Muslim. We limited our analytic sample to Muslim immigrants who had lived in the United States for less than a year. We conducted independent samples t-tests to examine differences between newly arrived immigrants and immigrants who had lived in the United States for more than one year to compare the new immigrant sample (*n* = 444) and the older than a year immigrant sample (*n* = 203) on key variables. There were some notable differences between the groups. New immigrants were significantly older, by five years (*d* = .34). New immigrants were less likely to be married (*d* = .46) and have fewer children (*d* = .29). On health measures, new immigrants reported significantly better current health (*d* = .35) and physical health (*d* = .23). New immigrants reported less of a decrease in health (*d* = .26). Additionally, the two groups have significantly different initial visa types (*d* = .45). Forty-five percent of immigrants who have been in the U.S. for more than one year entered with a refugee/asylee/parolee visa while less than one percent of new immigrants had refugee/asylee/parolee visas. Due to these differences and our examination of the immigration transition, we excluded 203 Muslim-heritage immigrants that lived in the U.S. for an average of six years (Range: 2 to 33 years).

Participants were also excluded from analysis if they were missing data on the key predictor, outcome, or control variables. Using listwise deletion on key predictor, outcome, and control variables we dropped 32 cases from the original 476 Muslim-heritage immigrants in the NIS-2003–1 dataset (7% of the sample) based upon recommendations by Widaman (2006) of what is considered a small amount of missingness. We used t-tests to compare the missing and analytic sample across key variables and there were no significant differences between the two groups. Although listwise deletion can be controversial, we felt strongly that due to the small amount of missing data and the data missing at random, we did not want to estimate data for this population.

The analytic sample had an average age of 36, with a range of 18 to 81 years old. The sample was 57% male and had an average of 13 years of school or some college. New arrival immigrants, immigrants that have not prior lived in the U.S. under another visa type, made up 92% of the sample. The remaining individuals have been in the U.S. an average of 8 months. Individuals immigrated to the U.S. through a variety of visa types: 52% diversity lottery visas, 33% family-sponsored visas, 9% employment-sponsored visas, 6% other visa type, and 0% refugee/asylee/parolee visa status. The diversity visa lottery is a lottery process for visas for individuals from countries with historically low immigration rates to the U.S. Individuals immigrated from across the world, most being from Africa, followed by Asia and Europe. In the analytic sample, 93% identified as currently

Muslim, 1% identified as growing up Muslim, and 6% identified one of their parents as Muslim.[2] A table of descriptive statistics for key sample characteristics is available by request and online on the Open Science Framework (OSF) at https://osf.io/fvzes/.

Measures

For more information on survey construction and item wording, see Jasso and colleagues (2005). Detailed codebooks are also available online. In this section, we review variable construction for this present study.

Covariates

Age and years of education. Age was measured by self-reported age. Years of education was measured by one item, "How many years of schooling in total have you completed?".

    Months in the United States. The number of months in the U.S. variable was created from the INS data. The number of months in the U.S. was based upon the INS green card date to the date of the interview for new arrival immigrants. For adjusted immigrants, number of months in the U.S. was based upon the INS temporary visa date. If the date was missing for adjusted immigrants, then number of months in the U.S. is based upon the individual's self-reported of how long they had lived in the United States (n=3).

Measures of the Occupational Domain

Occupational pathways. Occupational pathways were measured using employment status pre- and post-immigration. The two variables resulted in the four occupational pathways from pre- to post-immigration: continuously employed (employed-employed), continuously unemployed (unemployed-unemployed), losing employment (employed-unemployed), and gaining employment (unemployed-employed). Thirty-five percent of individuals were in the continuously employed group (employed-employed), followed by 26% in the continuously unemployed group (unemployed-unemployed), 23% in the losing employment group (employed-unemployed), and 16% in the gaining employment group (unemployed-employed).

    Occupational prestige. Occupational prestige was assessed by Nakao-Treas prestige scores (Nakao & Treas, 1992). The Nakao-Treas prestige scores are a reliable measure of occupational prestige derived from 1989 General Social Survey (GSS) collected at National Opinion Research center (NORC; see Nakao & Treas, 1994). This measure was optimal for this study because it could be linked to the NIS occupational data. Occupational prestige scores were generated using the IPUMS USA data linking current US occupation census codes to 1980 US occupation census codes (accessed via IPUMS.org; Ruggles et al., 2016). If respondents were employed at more than one job pre- or post-immigration, the average prestige score between the occupations was used. Occupational prestige scores were calculated for the 156 individuals that were employed both pre- and post-immigration. Individuals employed pre-immigration had an average Nakao-Treas occupational prestige score of $M = 47.96$, $SD = 14.80$. The individuals employed post-immigration had an average Nakao-Treas occupational prestige score of $M = 34.62$, $SD = 13.07$. A paired t-test showed there was on average a statistically significant decrease of 10.49 ($SD = 15.37$) in occupational prestige scores for employed individuals pre- to post-immigration, $t(155) = 8.53$; $p < .001$; $d = .68$. In our analysis, we used change

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2. It appears that 7% of respondents grew up in a Muslim household, but may not currently practice or identify as Muslim.

in occupational prestige. Seventy-six percent of employed individuals experienced a decline in occupational prestige from pre- to post-immigration, the change in occupational prestige ranged -49.33 to 33.51.

Measures of Sociocultural Experiences

English ability. English ability was measured by a two-item, self-report assessment of English speaking ("How well would you say you speak English?") and comprehension ability ("How well would you say you understand English when someone is speaking to you?"). Individuals responded to both items on a 4-point Likert-type scale ranging from 1 (*not at all*) to 4 (*very well*). The two items were averaged to so that higher values represent better global English ability. On average participants reported an average English ability, M = 2.55, SD = 0.91 or *well*. The two items had good reliability with a Cronbach's alpha of .95. Self-ratings of language ability are a valid and reliable measure of language ability (Bachman & Palmer, 1989).

English use in multiple contexts. English use in multiple contexts was measured by three item about speaking English with (1) friends ("What languages do you speak outside of your home when you are with friends?"), (2) at work ("What languages have you spoken outside of your home while at work in the United States in the past twelve months?"), and (3) at home ("What languages do you currently speak at home?"). Individuals were able to provide up to ten languages per question and the item was endorsed if English was listed as one of the languages listed. Participants reported speaking English most at work, then with friends, and lastly at home. The three items were then summed where higher numbers represent speaking English in more contexts. Participants reported speaking English in an average of 1.57 (SD = 1.12) out of 3 contexts.

Similarity in diet. Similarity in diet was assessed by one item asking participants to compare the similarity in in the diet in the food they normally eat in the United States with the food they normally ate in their home country on a scale of one to ten where 1 means *completely different* and 10 means *exactly the same*. Participants reported middle to high similarity in diet from pre- to post-immigration, M = 6.02, SD = 3.12.

Measures of Perceived Health

Current health. Current health was measured by one self-report item ("Would you say your health is excellent, very good, good, fair, or poor") on a 5-point Likert-type scale ranging from 1 (*poor*) to 5 (*excellent*). Participants had on average *very good* health, M = 4.09, SD = 0.96.

Change in health. Change in health pre- to post-immigration was measured by (1) self-reported health status growing up ("Consider your health while you were growing up, from birth to age 16. Would you say that your health during that time was excellent, very good, good, fair, or poor?") and (2) current health status. Individuals responded to both items on a 5-point Likert-type scale ranging from 1 (*poor*) to 5 (*excellent*). The two items were used to compute a difference score of change in health pre- to post-immigration. Participants, on average, experienced a small decline in health, M = -0.32, SD = 1.01.

Emotional health. Emotional health was measured by a five-item index of emotional health. Participants endorsed psychiatric problems, pain, drinking concerns, and feelings of sadness or depression ("Have you ever had or has a doctor ever told you that you have any emotional, nervous, or psychiatric problems?"). The index was reversed scored and ranged from 0 to 5 where higher scores was better emotional health. We conceptualized these items would more accurately capture emotional health for the immigrant sample due to cultural differences in

mental health, tendency to somaticize symptoms, and mental health stigma (see Sue et al., 2012 for discussion). Participants endorsed few emotional health concerns, $M = 3.85$, $SD = 0.76$.

Physical health. Physical health was assessed by a seven-item index of physical health. Participants responded to seven items about their physical health and the items were reversed summed so that higher scores indicated better physical health. The index of physical health ranged from 0 to 7. The items assessed high blood pressure, diabetes, cancer, chronic lung disease, heart problems, heart attack, stroke, and arthritis (e.g., "Has a doctor ever told you that you have high blood pressure or hypertension?"). These items are common concerns that contribute to allostatic load and have shown to be critical to physical health (see McEwen & Stellar, 1993 for discussion). The sample is in physically good health, $M = 5.83$, $SD = 0.50$.

Results

Analysis Plan

Descriptive statistics and bivariate correlations were first conducted to examine the interrelatedness of all study variables. Path analysis was used to test the association of perceived health on occupational factors and sociocultural factors (Figures 1–3 of path models are available online by OSF at https://osf.io/7w4gb/). Path analysis was used to account for the theoretical interrelatedness between the four outcome variables and the theoretical interrelatedness between predictor variables covariates.[3] Thus, the purpose of the path analysis was to test the hypotheses using more efficient models versus several separate multiple regressions models, and not because we were testing a theoretical model or to compare multiple competing theoretical models. We tested three path models. Model 1 and 2 examined the occupational domain. Model 3 assessed the sociocultural domain. All models included age, months in the U.S., and years of education as covariates. These covariates were included in our analytic model due to their significant correlations with main health outcomes as well as their conceptual relevance to understanding identity integration (Van Hoof & Raaijmakers, 2002).

Multivariate normality of outcome variables was assessed using Stata Statistics and was found to be skewed (Mardia et al., 1979). Log and square root transformations were conducted but did not correct the skewness and kurtosis of the predictor variables. Thus, we used the quasimaximum likelihood method, specifically the Huber/White/sandwich estimator that is robust to violations or nonnormality (StatCorp, 2013; Huber, 1967). There were no differences in results using the robust estimator. Other statistical assumptions (i.e., linear relationships and independence of response variables) were examined and upheld. Lastly, model fit was not assessed as the three path models were fully saturated and, therefore, fit statistics would show perfect fit. As mentioned, we used path analysis to account for the variance between the predictor and outcome variables.

Preliminary Analysis

Bivariate correlations between continuous variables are presented in Table 1. Health outcome variables were all significantly positively related. Age and similarity in diet were negatively related to health outcomes. Years of education, English ability, and English usage were positively

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3. Analyses were also done with univariate outcome regression models. Results are generally consistent and deviations will be explored in the discussion section. Result tables from these analyses can be found at https://osf.io/cq53v/ (login required).

related to health variables. Change in occupational prestige and months in the U.S. showed no relationship.

Main Analyses

Covariates. Tables 2–5 show the standardized coefficients for covariates (e.g., age, months in U.S., and years of education) included in the models. Age was significantly associated with current health (age; ß = -.42, *p* < .001), change in health (age; ß = -.35, *p* < .001), and the index of physical health (age; ß = -.50, *p* < .001) in all path models. Months in U.S. was nearly significantly associated with change in health in Model 1 (months in U.S.; ß = .09, *p* = .05). Years of education was significantly related to the index of emotional health in Model 1 (ß = .16, *p* < .001) and Model 3 (ß = .14, *p* < .01). Notably, age accounted for a large amount of the variance in all health outcomes, but especially the index of physical health.

Hypothesis 1a: *Continuously employed group will report better perceived health and the losing employment group will report worse perceived health*. Tables 2–5 show the standardized coefficients for Model 1, which examines the effects of occupational continuity pre- to post- immigration on the four indices of health. Occupational pathways significantly predicted change in current health, the index of emotional health, and the index of physical health. Occupational pathways did not predict current health. We did the analyses twice switching the reference group (continuously employed group and losing employment group). Consistent with our hypothesis, the continuously employed group had a significantly smaller decrease in health pre- to post-immigration that the gaining employment group (ß[4] = -0.27, *p* = .03). Additionally, consistent with our hypothesis, the continuously employed group had significantly higher emotional health than the gaining employment group (ß = -0.42, *p* = .01). The continuously employed group did not show significant differences among any of the other groups.

With respect to the losing employment group, inconsistent with our hypothesis, the losing employment group had a significantly smaller decrease in health pre- to post-immigration than the continuously unemployed (ß = -0.41, *p* = .003). Inconsistent with the hypothesis, the losing employment group also had a significantly smaller decrease in health pre- to post-immigration than the gaining employment group (ß = -0.48, *p* = .001). The losing employment group had significantly higher physical health than the continuously unemployed group (ß = -0.34, *p* = .01). The losing employment group had on average significantly higher physical health than the gaining employment group (ß = -0.32, *p* = .01). In summary, hypothesis 1a was partially supported where, consistent with the hypothesis, employment continuity was associated with increased health and inconsistent with the hypothesis, discontinuity or losing employment was not associated with decreased health. See Figure 1 for visual representation.

Hypothesis 1b: *Smaller change in occupational prestige will be associated with better perceived health*. Tables 2–5 show the standardized coefficients for Model 2, which tests the effects of change in occupational prestige on health for the subsample of individuals who were employed pre- and post-immigration (*n* = 156). Inconsistent with the hypothesis, change in occupational prestige did not significantly predict any of the indicators of health. The variance explained for current health, change in health, emotional health, and physical health was 4%, 6%, 5%, and 13%, respectively.

Hypothesis 2a and 2b: *Increased language ability and use and similarity in diet will be associated with better perceived health*. Tables 2–5 also show the standardized coefficients for Model 3

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4. Beta is standardized on y for occupational pathway variable in Model 1, Hypothesis 1a. All betas in current section are standardized on y.

Table 1. Mean (standard deviation) and Bivariate Correlations

		M (SD)	1	2	3	4	5	6	7	8	9	10	11
1	Index of emotional health	3.85 (0.76)	1										
2	Index of physical health	5.83 (0.5)	0.20*	1									
3	Current health	4.09 (0.96)	0.15*	0.41*	1								
4	Change in health	-0.32 (1.01)	0.10*	0.29*	0.65*	1							
5	Age	35.51 (13.03)	-0.10*	-0.51*	-0.43*	-0.34*	1						
6	Years in USA	0.52 (0.39)	0.02	0.11*	0.05	0.12*	-0.14*	1					
7	Years of education	13 (4.83)	0.20*	0.23*	0.23*	0.15*	-0.30*	-0.01	1				
8	Change in occupational prestige	-10.49 (15.37)	0.12	-0.07	-0.01	0.03	-0.08	0.10	-0.04	1			
9	English ability	2.55 (0.91)	0.16*	0.20*	0.25*	0.19*	-0.28*	0.09	0.46*	0.23*	1		
10	English usage in contexts	1.57 (1.12)	0.15*	0.21*	0.24*	0.13*	-0.26*	0.09*	0.51*	0.28*	0.66*	1	
11	Similarity of diet	6.02 (3.12)	-0.06	-0.11*	-0.08	-0.16*	0.21*	-0.11*	-0.11*	0.04	-0.05	-0.12*	1

$*p < .05$

Table 2. Occupational and sociocultural factors predicting current health

		Current health								
					95% CI			95% CI		
		b	SE	p	Lower	Upper	B	Lower	Upper	R^2
Model 1										0.20
Occupational pathways^										
	Employed–Unemployed vs Employed–Employed	0.13	0.11	0.26	-0.10	0.35	0.13	-0.10	0.36	
	Unemployed–Unemployed vs Employed–Employed	-0.04	0.11	0.73	-0.25	0.17	-0.04	-0.26	0.18	
	Unemployed–Employed vs Employed–Employed	-0.12	0.12	0.30	-0.35	0.11	-0.13	-0.37	0.11	

	B	SE	p	LL	UL	B	LL	UL	R²
Age	-0.03	0.00	0.00	-0.04	-0.02	**-0.42**	-0.52	-0.33	
Years in USA	0.00	0.10	0.99	-0.21	0.20	0.00	-0.08	0.08	
Years of Education	0.02	0.01	0.08	0.00	0.04	0.09	-0.01	0.20	
Occupational pathways^									0.20
Employed–Employed vs Employed–Unemployed	-0.13	0.11	0.26	-0.35	0.10	-0.13	-0.36	0.10	
Unemployed–Unemployed vs Employed–Unemployed	-0.16	0.13	0.22	-0.42	0.10	-0.17	-0.44	0.10	
Unemployed–Employed vs Employed–Unemployed	-0.25	0.14	0.08	-0.52	0.03	-0.26	-0.54	0.03	
Age	-0.03	0.00	0.00	-0.04	-0.02	**-0.42**	-0.52	-0.33	
Years in USA	0.00	0.10	0.99	-0.21	0.20	0.00	-0.08	0.08	
Years of Education	0.02	0.01	0.08	0.00	0.04	0.09	-0.01	0.20	
Model 2									
Occupational prestige (n=156)	0.00	0.00	0.77	-0.01	0.01	-0.02	-0.17	0.12	0.04
Age	-0.02	0.01	0.01	-0.04	-0.01	**-0.20**	-0.35	-0.05	
Years in USA	-0.17	0.16	0.30	-0.49	0.15	-0.08	-0.24	0.07	
Years of Education	0.01	0.02	0.64	-0.03	0.04	0.04	-0.12	0.19	
Model 3									
English use in multiple contexts	0.07	0.05	0.14	-0.02	0.16	0.08	-0.03	0.19	0.21
English ability	0.07	0.06	0.26	-0.05	0.19	0.06	-0.05	0.18	
Similarity in diet	0.00	0.01	0.73	-0.02	0.03	0.01	-0.07	0.10	
Age	-0.03	0.00	0.00	-0.04	-0.02	**-0.38**	-0.48	-0.29	
Years in USA	-0.05	0.10	0.65	-0.25	0.16	-0.02	-0.10	0.06	
Years of Education	0.01	0.01	0.39	-0.01	0.03	0.05	-0.06	0.16	

Bolded B are significant at $p < .05$.

^B for occupational pathways are standardized on y.

Table 3. Occupational and sociocultural factors predicting change in health

Change in health									
	b	SE	p	95% CI		B	95% CI		R^2
				Lower	Upper		Lower	Upper	
Model 1									0.15
Occupational pathways^									
Employed–Unemployed vs *Employed–Employed*	0.22	0.13	0.09	-0.03	0.46	0.21	-0.03	0.46	
Unemployed–Unemployed vs *Employed–Employed*	-0.20	0.12	0.09	-0.43	0.03	-0.20	-0.43	0.03	
Unemployed–Employed vs *Employed–Employed*	-0.27	0.12	0.03	-0.52	-0.03	**-0.27**	-0.51	-0.03	
Age	-0.03	0.00	<0.001	-0.04	-0.02	**-0.35**	-0.45	-0.25	
Years in USA	0.22	0.11	0.05	0.00	0.45	0.09	0.00	0.17	
Years of Education	0.00	0.01	0.90	-0.02	0.02	0.01	-0.09	0.11	
Occupational pathways^									0.15
Employed–Employed vs *Employed–Unemployed*	-0.22	0.13	0.09	-0.46	0.03	-0.21	-0.46	0.03	
Unemployed–Unemployed vs *Employed–Unemployed*	-0.42	0.14	0.003	-0.69	-0.14	**-0.41**	-0.68	-0.14	
Unemployed–Employed vs *Employed–Unemployed*	-0.49	0.15	0.001	-0.79	-0.19	**-0.48**	-0.78	-0.19	
Age	-0.03	0.00	<0.001	-0.04	-0.02	**-0.35**	-0.45	-0.25	
Years in USA	0.22	0.11	0.05	0.00	0.45	0.09	0.00	0.17	
Years of Education	0.00	0.01	0.90	-0.02	0.02	0.01	-0.09	0.11	

Model 2								
Occupational prestige (n=156)	0.00	0.00	0.86	-0.01	0.01	0.01	-0.13	0.15	0.06
Age	-0.03	0.01	0.001	-0.05	-0.01	**-0.24**	-0.37	-0.11	
Years in USA	-0.12	0.18	0.51	-0.48	0.24	-0.05	-0.21	0.11	
Years of Education	-0.01	0.02	0.51	-0.05	0.02	-0.04	-0.18	0.09	
Model 3								
English use in multiple contexts	0.11	0.05	0.03	0.01	0.21	**0.12**	0.01	0.24	0.14
English ability	-0.06	0.07	0.37	-0.19	0.07	-0.05	-0.17	0.07	
Similarity in diet	-0.03	0.01	0.04	-0.06	0.00	**-0.09**	-0.18	0.00	
Age	-0.02	0.00	0.001	-0.03	-0.01	**-0.28**	-0.38	-0.19	
Years in USA	0.16	0.12	0.16	-0.06	0.39	0.06	-0.02	0.15	
Years of Education	0.01	0.01	0.65	-0.02	0.03	0.03	-0.09	0.14	

Bolded B are significant at $p < .05$.

^B for occupational pathways are standardized on y.

Table 4. Occupational and sociocultural factors predicting emotional health

Index of emotional health									
	b	*SE*	*p*	*95% CI*		*B*	*95% CI*		*R²*
				Lower	Upper		Lower	Upper	
Model 1									
Occupational pathways^									0.06
Employed–Unemployed vs *Employed–Employed*	-0.16	0.09	0.06	-0.33	0.01	-0.21	-0.44	0.01	
Unemployed–Unemployed vs *Employed–Employed*	-0.19	0.10	0.06	-0.39	0.01	-0.25	-0.51	0.01	
Unemployed–Employed vs *Employed–Employed*	-0.32	0.12	0.01	-0.55	-0.09	**-0.42**	-0.73	-0.12	
Age	0.00	0.00	0.41	-0.01	0.00	-0.05	-0.17	0.07	
Years in USA	0.03	0.09	0.76	-0.15	0.21	0.01	-0.08	0.11	
Years of Education	0.03	0.01	0.002	0.01	0.04	**0.16**	0.06	0.26	
Occupational pathways^									0.06
Employed–Employed vs *Employed–Unemployed*	0.16	0.09	0.06	-0.01	0.33	0.21	-0.01	0.44	
Unemployed–Unemployed vs *Employed–Unemployed*	-0.03	0.10	0.79	-0.22	0.17	-0.03	-0.29	0.22	
Unemployed–Employed vs *Employed–Unemployed*	-0.16	0.13	0.20	-0.41	0.09	-0.21	-0.54	0.11	
Age	0.00	0.00	0.41	-0.01	0.00	-0.05	-0.17	0.07	
Years in USA	0.03	0.09	0.76	-0.15	0.21	0.01	-0.08	0.11	
Years of Education	0.03	0.01	0.002	0.01	0.04	**0.16**	0.06	0.26	

Model 2									
Occupational prestige (n=156)	0.01	0.00	0.08	0.00	0.01	0.14	-0.01	0.28	0.05
Age	0.01	0.01	0.21	-0.01	0.03	0.10	-0.05	0.25	
Years in USA	-0.08	0.16	0.61	-0.40	0.23	-0.04	-0.20	0.12	
Years of Education	0.03	0.02	0.10	-0.01	0.07	0.14	-0.02	0.30	
Model 3									
English use in multiple contexts	0.04	0.05	0.32	-0.04	0.13	0.07	-0.06	0.20	0.05
English ability	0.02	0.06	0.74	-0.09	0.13	0.02	-0.11	0.15	
Similarity in diet	-0.01	0.01	0.51	-0.03	0.02	-0.03	-0.12	0.06	
Age	0.00	0.00	0.70	-0.01	0.01	-0.02	-0.14	0.09	
Years in USA	0.02	0.09	0.85	-0.16	0.20	0.01	-0.08	0.10	
Years of Education	0.02	0.01	0.01	0.01	0.04	**0.14**	0.04	0.24	

Bolded B are significant at $p < .05$.

$^\wedge B$ for occupational pathways are standardized on y.

Table 5. Occupational and sociocultural factors predicting physical health

	Index of physical health			95% CI			95% CI		R^2
	b	SE	*p*	Lower	Upper	B	Lower	Upper	
Model 1									0.28
Occupational pathways^									
Employed–Unemployed vs *Employed–Employed*	0.09	0.05	0.07	-0.01	0.19	0.18	-0.02	0.37	
Unemployed–Unemployed vs *Employed–Employed*	-0.08	0.05	0.14	-0.19	0.03	-0.16	-0.37	0.05	
Unemployed–Employed vs *Employed–Employed*	-0.07	0.05	0.11	-0.16	0.02	-0.14	-0.32	0.03	
Age	-0.02	0.00	<0.001	-0.02	-0.01	**-0.50**	-0.58	-0.41	
Years in USA	0.07	0.05	0.16	-0.03	0.16	0.05	-0.02	0.12	
Years of Education	0.01	0.01	0.39	-0.01	0.02	0.05	-0.06	0.16	
Occupational pathways^									0.28
Employed–Employed vs *Employed–Unemployed*	-0.09	0.05	0.07	-0.19	0.01	-0.18	-0.37	0.02	
Unemployed–Unemployed vs *Employed–Unemployed*	-0.17	0.07	0.01	-0.30	-0.04	**-0.34**	-0.60	-0.07	
Unemployed–Employed vs *Employed–Unemployed*	-0.16	0.06	0.01	-0.27	-0.05	**-0.32**	-0.54	-0.10	
Age	-0.02	0.00	<0.001	-0.02	-0.01	**-0.50**	-0.58	-0.41	
Years in USA	0.07	0.05	0.16	-0.03	0.16	0.05	-0.02	0.12	
Years of Education	0.01	0.01	0.39	-0.01	0.02	0.05	-0.06	0.16	

Model 2									
Occupational prestige (n=156)	0.00	0.00	0.16	-0.01	0.00	-0.10	-0.24	0.04	0.13
Age	-0.02	0.01	0.01	-0.03	0.00	-0.34	-0.50	-0.19	
Years in USA	0.00	0.06	0.97	-0.12	0.13	0.00	-0.13	0.13	
Years of Education	0.01	0.01	0.13	0.00	0.03	0.12	-0.02	0.26	
Model 3									
English use in multiple contexts	0.00	0.02	0.94	-0.05	0.04	0.00	-0.11	0.10	0.27
English ability	0.03	0.03	0.34	-0.03	0.09	0.06	-0.06	0.17	
Similarity in diet	0.00	0.01	0.79	-0.01	0.02	0.01	-0.08	0.10	
Age	-0.02	0.00	<0.001	-0.02	-0.01	**-0.47**	-0.56	-0.38	
Years in USA	0.05	0.05	0.25	-0.04	0.15	0.04	-0.03	0.11	
Years of Education	0.01	0.01	0.26	-0.01	0.02	0.07	-0.05	0.18	

Bolded *B* are significant at $p < .05$.

^{B} for occupational pathways are standardized on *y*.
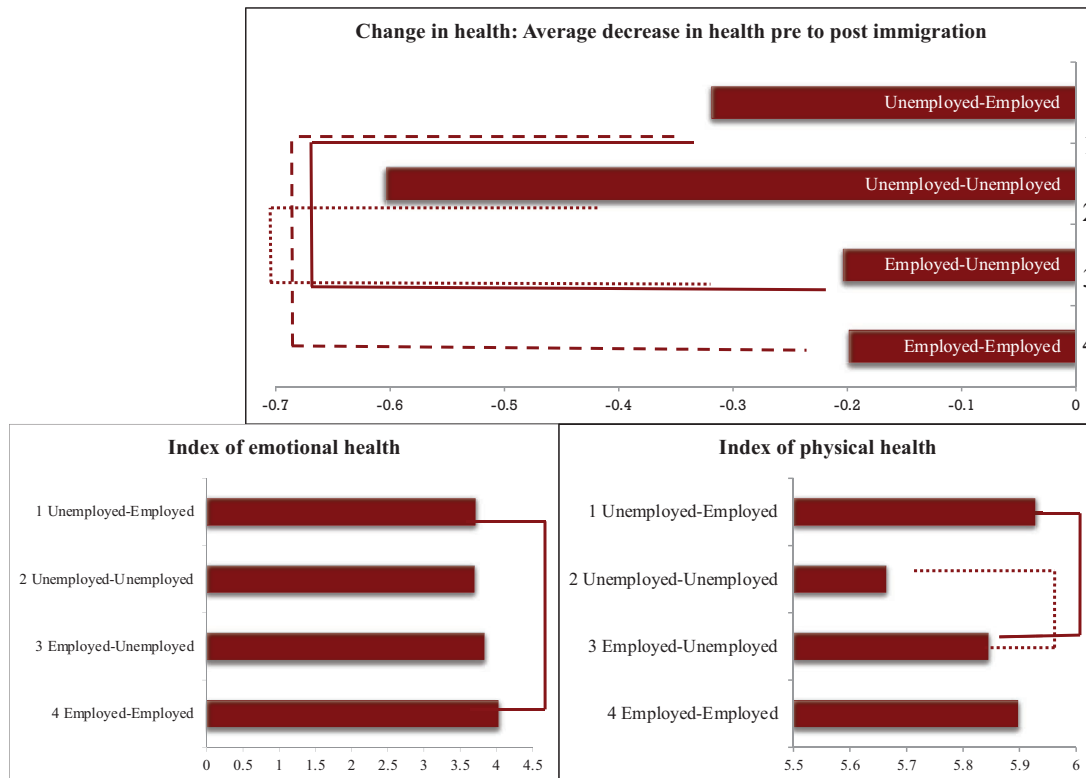
Figure 1. Visual representation of occupational pathways results for hypothesis 1a.

which tests the effects of English use in multiple contexts, English ability, and similarity of diet on perceived health. English use in greater contexts significantly predicted smaller decrease in health from pre- to post-immigration (ß = 0.12, *p* = .03). Greater similarity in diet significantly predicted larger decrease in health from pre- to post-immigration (ß = -.09, *p* = .04). However, this effect was very small. English use in multiple contexts and similarity in diet did not predict any other indicators of health. Additionally, English ability did not significantly predict any health outcomes. Sociocultural experiences explained 21% of variance for current health and 14 % of variance for change in health. Only 5% of the variance was explained for emotional health in Model 3. Lastly, although 27% of the variance was explained for physical health in Model 3, it was due to covariates instead of sociocultural experiences.

Sensitivity Analysis

We made several design and analytic decisions that could impact the findings. We examined alternative models with no covariates and with additional covariates. In the models without covariates, all the indicators, except for occupational prestige, were significant predictors of at least one measure of health; thus, highlighting the importance of the covariates included in the main analysis models. The alternative covariate models included our primary covariates (age, months in the U.S., and years of education), and also included gender, marital status, number of biological children, and type of visa at entry. We hypothesized these additional covariates would be important, but did not have theoretical evidence to include them in our primary model. The tables with standardized beta coefficients and effect sizes for the sensitivity analysis are available online on the OSF project page (https://osf.io/6wzhy/).

The magnitude of the coefficients across all the analytical models are similar. The significance of occupational pathways and English in multiple contexts for indicators of perceived

health was consistent across analytical models. Similarity in diet was still significant with a similar magnitude of the coefficient in the model without covariates, but was not significant in multiple regression models with additional covariates. The discrepancy highlights the need for further investigation of the role of similarity of diet and perceived health. Additionally, English ability consistently predicted health in multiple regression models which was not present in the path model analysis. This difference may be due to the high covariance between English ability and English in multiple contexts (see Table 1).

The inclusion of additional covariates highlight other avenues of exploration. Gender is consistently significantly associated with the index of emotional health. NIS visa type is repeatedly significantly related to health all the indices of health. There are not enough individuals in each category of visa type to see group differences, but highlights the potential importance of visa type. Overall, the sensitivity analyses aligned with the main analyses with respect to the magnitude of the effects.

Discussion

The purpose of this cross-sectional study was to examine the association between relevant components of temporal identity integration during the immigration transition and perceived health for Muslim-heritage immigrants. We explored how continuity and discontinuity pre- to post-immigration in the occupational domain and sociocultural experiences correlated with four different aspects of health (current health, change in health pre- to post-immigration, emotional health, and physical health). The beta coefficients of the constructs of interests are small to very small, yet results consistently displayed a significant findings that was robust to various analytical decisions. Thus, the present study provides insight into the content of temporal identity integration and health for Muslim immigrants to the U.S in terms of what constructs may warrant further investigation and what constructs appear to not be as influential as may have hypothesized. Specifically, age accounted for much of the variance in perceived health, and years of education accounted for a lot of variance in emotional health. The inclusion of these covariates resulted in a strict test of the contribution of occupational and sociocultural factors on perceived health. Thus, even though the effect size and coefficients are small, this study suggests occupational change and speaking English in multiple contexts contributes to Muslim immigrants' perceived health during the immigration transition.

Importantly, the average overall perceived health across all indices was high, indicating that participants were relatively healthy and health may not be an immediate pressing concern. The good health scores align with previous work on the immigrant paradox that finds that first-generation immigrants tend to have better overall health outcomes than second- or third- generation descendants (Salas-Wright et al., 2014; Marks et al., 2014). It is also possible that the higher post-immigration health ratings align with research that finds that immigrants' health tends to decline after living in the host country for extended periods of time (Williams, 1999). These contextual factors help to explain and interpret the results.

Hypothesis 1a

The results from the occupational domain demonstrate the strongest association with perceived health outcomes. Consistent with our hypothesis, the continuously employed group showed the smallest change in health and better emotional health than at least one other group. Inconsistent with our hypothesis, the losing employment group had a significantly

smaller change and better physical health than at least one other group. Furthermore, inconsistent with our hypothesis, the gaining employment group and continuously unemployed group displayed significantly worse health than the continuously employed group/the losing employment with larger decreases in health, lower emotional health, and lower physical health. Thus, in sum, although there is some evidence that continuity pre- to post-immigrant in the occupational domain is related with better health outcomes, there is also evidence that losing employment is also related to better outcomes.

There are many potential explanations for these findings that can be further explored in future work. For example, our findings may suggest that individuals in the losing employment group may not be seeking employment as they do not need to work in the U.S., while individuals in the gaining employment group now need to work to survive financially and, also, are more likely to encounter language and cultural stressors in the workplace. On the other hand, immigrants in the continuously employed group, although similarly employed post- immigration, are potentially entering the country with a job or are already comfortable in their work environment and therefore employment may not lead to the same stress. Additionally, the continuously unemployed group, although not experiencing any change, may be struggling to find work or are struggling financially due to lack of work. The continuously unemployed group also had lower physical health which may be related to their unemployment status. Notably, from further examining *the transition from pre- to post-immigration* we may be able to gain more insight as to what aspects of the occupational domain are associated with health. For example, in another study examining post-immigration employment status and mental health found immigrants (from China, India, and South Africa) who were employed and unemployed both had similar low mental health, showing no effect of employment status and mental health (Pernice et al., 2000). However, in our current study, examining the transition or change between pre- to post-immigration elucidated differences in perceived health.

Hypothesis 1b

There was no significant association between change of occupational prestige pre- to post-immigrant and perceived health. Change in occupational prestige was not significantly correlated with any health outcome. Occupational prestige may be different depending on the country and therefore the Nakao-Treas's scores may not fully capture participant experiences with occupational prestige. It is also possible that occupational prestige may not be as influential during the initial immigration transition that is filled with many significant changes, but may be more related to health as immigrants settle into the new host country. For example, in a U.S.-based nationally representative sample, there is evidence that higher occupational prestige is associated with lower mortality (Krueger et al., 2016). Thus, although there is no evidence in our data, we believe that change in occupational prestige needs further examination.

Hypothesis 2a and 2b

Our hypotheses regarding sociocultural experiences partially aligned with the results. Increased English use is related to a smaller decrease in health for Muslim immigrants, though English ability was not significantly associated with health; notably, in our sensitivity analysis, English ability consistently predicted perceived health. We believe that in the path model, the high correlation between English ability and English use in multiple contexts resulted in only English use being a significant predictor. The positive relationship between English use and health for Muslim immigrants aligns with other research on language and health in immigrants. While there are many potential explanations for this relationship, one possible mechanism is that increased English use allows for increased access to health care (Fox et al., 2017). We also

investigated the sociocultural experience of similarity in diet from pre- to post-immigration. Contrary to our hypothesis, similarity in diet was associated with a larger decrease in health; however, this effect is very small and should be interpreted cautiously.

Limitations and Future Directions

This study has several limitations that we hope will motivate future research on identity integration and health for Muslim immigrants to the United States, including sampling, identity content areas, health indicators, and methodology.

Sample

Although the subsample used in this study is from a nationally representative data set, the Muslim sample is not a nationally represented sample of all Muslim immigrants to the U.S. Therefore, although the set allows for increased knowledge on Muslim immigrants to the U.S., it is not completely generalizable. Additionally, the data was collected between 2003 and 2004, which was soon after the 9/11 attacks, and the experiences of Muslim immigrants to the U.S. in the past 15 years may result in different findings due to social changes. This may be especially true during the Trump administration (2016 to 2020) in which inflammatory rhetoric and aggressive postures resulted in increased Islamophobia and anti-Muslim immigration policies (Abu-Ras et al., 2018). These limitations highlight the need for continued research and deeper understanding on current Muslim immigrant experiences.

Identity Content Domains

There are other content dimensions of temporal identity integration that may be relevant for Muslim immigrants and perceived health besides those of our focus. We were also only able to examine particular components of the content of temporal identity integration that were included in the survey. For example, the sensitivity analyses provided initial evidence of the significant influence of visa type on health. Syed (2017) discussed that identity integration and the immigration transition may be more difficult for individuals that did not voluntarily choose the transition (i.e., refugees vs. diversity lottery immigrants). Thus, a future qualitative research study would allow for bottom-up approach instead of our current theory driven method that may elucidate other influential experiences for Muslim immigrants.

Health Indicators

An objective health measure would have helped reduce concerns with using perceived wellbeing and health and future studies should include both subjective and objective measures of health.

Methodology

This is a cross-sectional study and we cannot make any causal claims about the influence of these content areas of identity and health during the immigration transition. Participants also retrospectively answered questions regarding their pre-immigration lives. Future studies should interview immigrants prior to immigration and then after they immigrate for more reliable longitudinal data during the transition.

Additionally, due to high initial health ratings and previous research that immigrant health declines over time, exploration of the currently available longitudinal data within the larger NIS

study could examine whether good perceived health continues or decreases separate from ordinary aging health concerns (Williams, 1999). Future investigation is warranted as additional analyses elucidated differences in covariates and outcomes between the Muslim immigrant sample that lived in the U.S. for one year or less compared to those present longer than one year.

Future Directions

The rich data set allows for researchers to make many choices on which variables to use and how to code the data. Even though we did not pre-register the study, we were purposefully very transparent on our "researcher choices" and have posted cleaning and analysis code on the Open Science Framework. We welcome other researchers using the data to contact us with questions.

Other researchers may be interested in the effects of temporal identity integration and health of Muslim immigrant health compared to other immigrants to the U.S. We encourage future studies to investigate other group comparison questions related to immigration.

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