

Effects of Culture, Immigration, and Acculturation on Sleep Among Non-U.S.-Born Latinx Adults

S. L. Burke¹, D. J. Jimenez¹, A. Grudzien¹, M. Sanchez², A. Moor³, E. Peralta¹,
E. Padden¹, G. Galvez², and A. Russell¹

¹ School of Social Work, Robert Stempel College of Public Health and Social Work,
Florida International University

² Department of Health Promotion and Disease Prevention, Robert Stempel College of Public
Health and Social Work, Florida International University

³ Professional Counseling Psychology, College of Arts, Sciences & Education,
Florida International University

This study examined associations between culture, immigration, acculturation, and sleep among non-U.S.-born Latinx adults. Insufficient data exist regarding the influence of culture and immigration experiences on sleep outcomes, necessitating the need for this preliminary investigation. This qualitative investigation explored the relationships between acculturative stress, immigration experiences, and sleep, and how these varied by country of origin. Participants completed a survey focused on demographics, acculturation, ethnic identity, family support and obligations, and sleep. Focus groups and individual interviews were conducted virtually (due to COVID-19) in English or Spanish. The participants ($n = 20$) were 60% female, 90% White, 100% Latinx, and between 21 and 58 years old. Participants rated their sleep quality as very bad to fairly bad using the Pittsburgh Sleep Quality Index (PSQI; $M: 1.95$; $SD: .887$), with an average sleep duration of 6.8 hr ($SD: 1.32$). Qualitative analysis identified three major themes: (a) country/region of origin influences Latinx immigrant experience and sleep behavior, (b) perception and experience of one's neighborhood influence sleep, and (c) U.S. immigration policy dynamics indirectly impact Latinx immigrant sleep. This pilot study begins to fill a gap in the nascent sleep literature with individuals from Latinx communities in the United States and abroad. When describing individual and societal-level sleep practices, participants highlighted considerable differences in cultural attitudes about the value and role of sleep that varied by Latinx country or region.

Public Significance Statement

Sleep is essential in promoting healthy brain and body functioning. This study explores the relationship between sociocultural and policy-related influences on sleep among immigrant Latinx populations. Factors such as neighborhood safety, volatility in U.S. policies toward immigration and asylum, family and cultural attitudes regarding sleep practices and productivity, and level of acculturation impacted participants' sleep either negatively or positively.

Keywords: immigration, acculturation, sleep, safety, neighborhood

This article was published Online First November 30, 2023.

S. L. Burke  <https://orcid.org/0000-0001-6969-3536>

D. J. Jimenez  <https://orcid.org/0009-0004-3219-2921>

A. Grudzien  <https://orcid.org/0009-0005-1035-0842>

M. Sanchez  <https://orcid.org/0000-0001-7794-4200>

A. Moor  <https://orcid.org/0009-0000-3799-1790>

E. Peralta  <https://orcid.org/0009-0004-1179-398X>

E. Padden  <https://orcid.org/0009-0000-9242-1790>

G. Galvez  <https://orcid.org/0000-0002-2509-1151>

A. Russell  <https://orcid.org/0000-0002-4957-6604>

The study was funded by the Pilot Program to Promote Cross-College Collaboration at Florida International University, Office of Research and Economic Development, the National Institutes of Health/National Institute on Aging

continued

Sleep is a complex physiological and social behavior that has increasingly well-documented consequences for physical (Tobaldini et al., 2017) and mental health (Bartlett & Jackson, 2016), cognitive functioning (Lo et al., 2014), emotional regulation (Gruber & Cassoff, 2014), and task performance (Orzeł-Gryglewska, 2010). Sleep quality refers to a person's ability to acquire restful sleep (Donohue & Garcia, 2020; Kemp et al., 2004), and is often captured subjectively in terms of one's perceived satisfaction with their sleep, how long it takes for one to fall asleep (sleep latency), as well as the ratio of total time asleep to time spent in bed (sleep efficiency; Reed & Sacco, 2016). Sleeping less than 6 hr a night has been associated with a higher risk of mortality and an increased relative risk of cardiovascular risk factors and conditions, which are overrepresented among Latinx adults (Davignus et al., 2012). Even though Latinx adults are disproportionately affected by health disparities related to sleep (Whinnery et al., 2014), studies of sleep behavior and the impact of sociocultural factors on sleep in this population are very limited. Influenced by societal, environmental, and individual factors, sleep-related outcomes, including sleep quality and duration, vary considerably and are vulnerable to disparities based on race, ethnicity, immigration status, country of origin, job type, sex, and age (Jackson et al., 2014; Lichstein et al., 2013; S. R. Patel et al., 2015). Population-based, longitudinal, and cross-sectional studies have identified sleep disparities in Latinx populations compared to non-Hispanic White (NHW) samples, including higher rates of short and long sleep (Krueger & Friedman, 2009; Stamatakis et al., 2007; Whinnery et al., 2014), and differences in nonrapid eye movement sleep among children (Quan et al., 2003). Previous sleep studies that included large numbers of Latinx participants have been limited (Loredo et al., 2010).

Existing data have identified sleep disparities as being directly linked to negative health outcomes among U.S. Latinx immigrant populations. In a study of 5,313 Latinx adults, of which 78% of the population identified as non-U.S. born, the impact of acculturative stress and ethnic

discrimination was found to be correlated with subjective reports of daytime sleepiness and the increased prevalence of short and long sleep duration (Alcántara et al., 2017). A study, including 391 U.S. Latinx immigrants, identified that younger age at immigration intensified the association between poor sleep quality and acculturative stress (Zhan et al., 2022). Among 397 U.S.-born Latinx adolescents, when assessing concern over immigration policy and rhetoric following the 2016 election, greater worries of family separation due to deportation (44.6%), personal consequences due to U.S. immigration policy (44.8%), and being reported to the immigration office (41.3%) were associated with increased self-reports of poor sleep quality and anxiety, and measurable blood pressure changes when compared to participants reporting lower worry (Eskenazi et al., 2019). While providing context to the correlation between adverse sleep outcomes and immigration among Latinx people, these studies either did not specify the participants' Latinx country of origin or included samples composed of participants that were primarily of Mexican descent.

Population-based, as well as large regional surveys, have documented differences in sleep quality and duration based on immigration status (Hale et al., 2014; Seicean et al., 2011; Whinnery et al., 2014). A systematic review of 38 studies, of which 23 involved Latinx populations, identified sleep quality/continuity, daytime sleepiness, and sleep disorders as more prevalently associated with those more acculturated when compared to U.S.-born populations (Aqua et al., 2023). Interestingly, Hale et al. (2014) discerned associations between a higher prevalence of sleep complaints (restless sleep, trouble falling asleep, waking too early, nocturnal awakenings) and English-language acculturation among U.S.-born Mexican Americans when compared to their immigrant counterparts with less language acculturation. The majority of studies conducted in the United States investigating sleep (duration, quality, and other parameters) among Latinx populations have been conducted using predominantly Mexican-origin samples (Hale &

(Grants L30 AG060524 and P30 AG066506), National Institutes of Health/National Institute on Minority Health and Health Disparities (Grants 3U54MD012393-04S1 and 2U54MD012393-06), and the National Science Foundation (Grant CNS-1920182) awarded to S. L. Burke.

Correspondence concerning this article should be addressed to S. L. Burke, School of Social Work, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 Southwest 8th Street, Miami, FL 33199, United States. Email: sburke@fiu.edu

Rivero-Fuentes, 2011; Hale et al., 2010; Heilemann et al., 2012; Seicean et al., 2011).

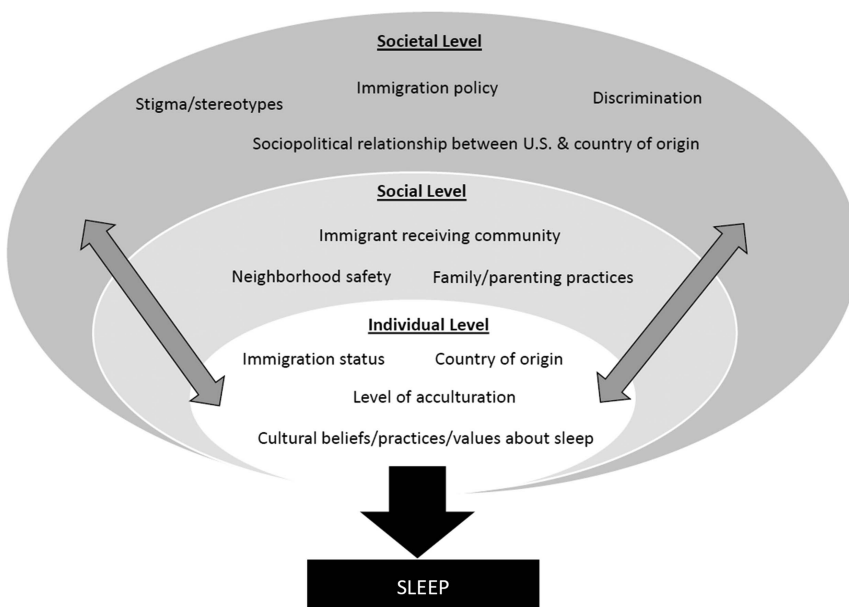
These studies have often found that sleep behavior often aligns with what has been termed the *Hispanic paradox*—comparable health and mortality among those of Mexican descent despite less access to health care and higher rates of cardiometabolic conditions, compared to the general U.S. population or NHWs (Grandner, 2019; K. V. Patel et al., 2004). Better sleep may partially explain such outcomes (Seicean et al., 2011), however, nativity and ethnic interactions have not always been observed (Hayes et al., 2014) or have varied (S. R. Patel et al., 2015) in studies with diverse Latinx samples. When accounted for, acculturation also appears to influence sleep duration and sleep quality outcomes among Latinx immigrant groups (Whinnery et al., 2014), but in other studies, this was heavily influenced by education level and occupational status (Hale & Rivero-Fuentes, 2011; S. R. Patel et al., 2015).

The social–ecological model of sleep health, an adaption of Bronfenbrenner’s ecological systems theory (Billings et al., 2021; Bronfenbrenner, 1977; Grandner, 2019; Grandner et al., 2016), offers a flexible, functional perspective by which

to organize and assess sleep’s determinants, as well as the impact of sleep. According to the social–ecological model of sleep health (summarized in Figure 1), sleep disturbances (and resultant adverse outcomes) depend on individual-level factors (e.g., behavior, physiology), which are embedded within social factors (e.g., neighborhood, work), which are themselves embedded within societal factors (e.g., society operating 24 hr a day and 7 days per week). This framework thus arranges these individual, social, and societal level “upstream” determinants of sleep in an embedded manner, and links these upstream determinants of sleep to their “downstream” effects upon varying domains of health and functioning (Grandner, 2019). Downstream domains of health and functioning specifically include general health, cardiovascular health, metabolic health, immunologic health, behavioral health, emotional health, cognitive health, and physical health (Grandner, 2019). The social–ecological model of sleep health, therefore, serves as an adaptable tool by which researchers may contextualize upstream sleep determinants and downstream health outcomes in a comprehensive, nuanced manner.

This study examined the effect of immigration, acculturation, and discrimination on perceptions

Figure 1
Presentation of Qualitative Themes Using Grandner’s (2019) Social–Ecological Model of Sleep Health as an Organizing Framework



of sleep among non-U.S.-born Latinx adults. Insufficient data exist regarding how culture and experience may impact sleep outcomes. As such, there is a need for further investigation concerning the immigration experience and acculturation on sleep. Through qualitative interviews and focus groups, we explored the relationships between acculturative stress, immigration experiences, and sleep and determined how these may vary by country of origin. This study benefited from the unique demography of Miami-Dade County, in which 54% of the 2.7 million residents are foreign born, over 70% are Latinx, and 64% speak Spanish at home (Health Council of South Florida, 2022; U.S. Census Bureau, 2021).

Method

Participants were recruited using web-based advertisements, snowball sampling, and word-of-mouth. All recruitment materials, screening forms, and surveys were presented in Spanish and English. Participants were asked to complete a screening and eligibility form via a Research Electronic Data Capture (REDCap) link, at which point a research team member followed up with them via telephone in order to confirm that they met the inclusion criteria. The inclusion criteria required the participant to be 20–60 years old, non-U.S. born, and identify as Hispanic/Latino. While the participants were recruited through convenience-based sampling techniques, the minimum age (20 years) closely parallels previous literature involving sleep and immigration that included adults ages 18 and older (Alcántara et al., 2017; Seicean et al., 2011; Zhan et al., 2022). The decision to apply the cutoff can be justified based on research indicating an occurrence of transient increases in subjective sleep quality around the time of retirement (Lemola & Richter, 2013), the bidirectional relationship between recurrent and onset depression and shorter sleep duration (Sun et al., 2018), and the prevalence of health-related sleep problems all occurring at ages 60 and older (da Silva et al., 2016). Participants varied in years living in the United States, with the longest residing in the United States for 33 years and the most recent residing in the United States for 3 years. This study received institutional review board (IRB) approval from (Florida International University), IRB-20-0243-AM05.

Data Collection

Once screened into the study, the informed consent was reviewed with participants, who were then sent a REDCap link to indicate their consent via a web-based form. Once consent was provided, participants were invited to attend a focus group (FG) or an individual interview. A total of four FGs (three participants for FG1, five participants for FG2, three participants for FG3, and four participants for FG4) and five individual interviews were conducted ($n = 20$). The decision about whether a participant attended the focus group or individual interview was based solely on their inability to attend one of the scheduled focus groups. In either case, the same interview guide (Appendix) was used to facilitate the questions and probes.

Study data were collected and managed using REDCap electronic data capture tools. REDCap is a secure, web-based software platform designed to support data capture for research studies, providing (a) an intuitive interface for validated data capture, (b) audit trails for tracking data manipulation and export procedures, (c) automated export procedures for seamless data downloads to common statistical packages, and (d) procedures for data integration and interoperability with external sources (Harris et al., 2009, 2019). Prior to attending the focus group, participants were asked to complete an online survey via REDCap. This survey began with a demographic questionnaire that asked for their sex, age, gender identity, race, ethnicity, marital status, occupation, household size, income, substance use, sleep aid use, sleep/relaxation techniques, smartphone/smartwatch sleep application use, existing medical conditions, and current prescription medication regimen. Additional measures followed, which are further described in the Measures section.

Focus groups and individual interviews took place on Zoom due to COVID-19-related precautions; however, data collection occurred so early in the pandemic that it was not yet considered as such, and as a result, the research team did not collect information on how the beginning of the COVID-19 pandemic impacted the participants' historical sleep, experiences as immigrants, and their acculturation process. In addition, the questions in the interview guide focused on early life and transitioning to the United States, cultural beliefs surrounding sleep and sleep health, and neighborhood safety,

rather than current impacts on their sleep. Only one participant during an individual interview discussed COVID-19 as an additional financial concern. Focus groups and interviews were conducted in Spanish or English, depending on the preference of the participants. For the present study, one focus group (FG3) and two in-depth interviews were conducted in Spanish. In the 90-min focus group, participants were asked questions related to sleep and their perspectives on how culture affects sleep. Each focus group followed a structured script with the same questions but given the nature of the focus group and individual responses, some probes to responses were unstandardized. Each focus group and individual interview were audio-recorded for transcription. Participants were provided with incentives (a \$25 gift card for completing the focus group, and a \$10 gift card for completing the surveys).

Training for conducting individual interviews and focus groups was led by the first author, a doctoral professional in social work (PhD, MSW, MPH), with supplemental training for Spanish interviews led by another doctoral-level social work professional (PhD, MS). In addition to the trainers, interviews and focus groups were moderated by graduate-level master's in social work (MSW) researchers, who either completed coursework in interviewing and/or possessed direct field experience. Graduate-level researchers were required to review the study aims and interview guide, review a recorded Zoom focus group or individual interviewer, observe a live Zoom focus group or individual interview (with the consent of participants), and meet with trainers to discuss any concerns or questions before receiving approval to conduct a focus group and/or interviews.

Trustworthiness was appraised utilizing several techniques related to credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). For credibility, investigator triangulation was applied through weekly team member collaboration, discussing different perspectives, cross-checking supplementing transcripts, and discussions involving code application by other members of the research team (Korstjens & Moser, 2018; Lincoln & Guba, 1985). Data source triangulation was also applied using in-depth interviews and focus groups incorporated into the methodology and by including participants of different entry points at entry into the United States, differences in age, and differences in Latin

American background (Carter et al., 2014; Korstjens & Moser, 2018). Transferability for data to be analyzed across various contexts was deduced through the technique of thick description, in which the research team allowed participants to accurately and openly describe their life histories and social actions (Ponterotto, 2006). In addition to weekly team meetings, the dependability and confirmability of the study methods were appraised through the use of project management software to uniformly audit the completion of each step of the study process, which included recruitment, screening, securing participant consent, scheduling/rescheduling, notifying the research team when each individual interview was completed, and notifying the participants of payment disbursement (Korstjens & Moser, 2018; Lincoln & Guba, 1985).

Data Analytic Approach

The coding team consisted of three IRB-approved PhD-level research assistants and the principal investigator (PI), who all had completed qualitative training and conducted qualitative studies in their respective areas. Data analysis consisted of a multistep process. Before coding and analysis, the research team, which included members of the coding team, participated in weekly meetings to discuss the interview protocol, conceptualization of the transcriptions, coding structure, and theme development. The next step involved the team listening to the audio recordings of the Zoom meetings of the focus groups and in-depth interviews to ensure audio quality. Once the quality of the audio recordings was established, the team familiarized themselves with the audio recordings by listening to them numerous times. Next, the coding team divided audio recordings for transcription and cross-checked the transcriptions for accuracy. For Spanish audio recordings, this process involved three bilingual researchers of Central American, South American, and Caribbean Latinx backgrounds transcribing the audio recordings in their original form, cross-checking transcriptions for quality and discrepancies, converting the Spanish transcriptions to English transcriptions, and cross-checking the transcriptions from one another. Additionally, given the diversity of countries across the Latinx sample, during this process, bilingual researchers met to discuss an agreeable consensus regarding similarities and

differences in vernacular and colloquialisms. The final step involved a discussion of potential codes, themes, and theoretical models to be incorporated into the data analysis according to what emerged from the transcripts. While qualitative–quantitative appraisal for interrater reliability was not employed for this study via an intercoder agreement equation, as referenced earlier, meetings discussing emerging themes, codes, and discussion items occurred weekly to establish data triangulation.

Data were stored in SharePoint and coded using ATLAS.ti, Version 9. Three coders then analyzed the transcripts using thematic analysis (TA) in accordance with guidelines outlined by Braun and Clarke (2006). Using the ATLAS.ti Cloud function for data analysis of the transcripts, coding team members were able to view codes as they were entered, provide feedback, and seek clarification from each other in real time. Deductive reasoning was used to code the data to identify themes and consensus on topics related to cultural beliefs about sleep, how sleep knowledge is learned, the immigration experience, discrimination, and acculturation as reflected in the interview guide. A total of 18 prespecified code groups/categories (e.g., discrimination, helps to sleep, immigration affected sleep, safety, among others) were entered into the project by the PI based on the interview guide and the social–ecological model of sleep health (Grandner, 2019), followed by several specific codes within each category deriving from participant reports (discrimination: accent in English, helps to sleep: autonomous sensory meridian response videos, immigration affected sleep: guilt/shame about privilege, sleep and safety: gate vs. no gate, among others). Once a consensus was established regarding the created codes, all three coders then coded the transcripts using these codes. The coders and the PI met once weekly for 4 weeks during the coding phase to discuss portions of the text for which there was no code agreement. Quantitative data gathered from the surveys were merged and extracted from REDCap, imported into Stata, and analyzed. Descriptive statistics were the main quantitative analysis method given the small sample size in this pilot.

Measures

The Bicultural Involvement Questionnaire (Guo et al., 2009) was used to measure acculturation and enculturation. This is a 33-item 5-point Likert scale

rated from 1 *very uncomfortable/not at all* to 5 *very comfortable/very much*, which takes approximately 1 min to complete and contains two subscales: (a) Hispanic Practices and (b) U.S. Practices. The total range of scores is acquired by subtracting the sum of Hispanic Practices from the sum of American Practices, with a positive difference indicating monoculturalism in the direction of Hispanic identity, a negative difference in the direction of Americanism, and scores closer to 0 suggesting biculturalism. The Bicultural Involvement Questionnaire is widely used with U.S.-born and foreign-born Latinx samples and has validated English and Spanish versions. In this sample, internal consistency reliability was 0.92 for the full scale, 0.88 for the Hispanicism subscale, and 0.80 for the U.S. Practices subscale. To determine a participant's level of biculturalism, the Americanism score is subtracted from the Hispanicism score. The closer the remaining sum is to zero, the greater the biculturalism of the participant. A positive difference indicates monoculturalism in the Hispanic direction, while a negative difference indicates monoculturalism in the American direction.

The Multigroup Ethnic Identity Measure (MEIM; Roberts et al., 1999) was used to measure Latinx identity. The MEIM is a 12-item measure of ethnic identity, takes about 1.5 min to complete, and is a revised version of the original 14-item MEIM (Phinney, 1992). Each of the 12 items are rated on a 5-point Likert scale, ranging from 1 *strongly disagree* to 5 *strongly agree*, with higher scores indicating stronger ethnic identity. The MEIM has been validated in English and Spanish. The index score is determined by calculating the mean of the items. The internal consistency reliability was 0.86 for the full scale in this sample. The MEIM has two subscales: Exploration (Items 1, 2, 4, 8, and 10) and Affirmation, Belonging, and Commitment. The internal consistency reliability was 0.66 for the Ethnic Identity subscale and 0.93 for the Affirmation, Belonging, and Commitment subscale in this sample.

The Scale of Ethnic Experience: Perceived Ethnic Group Discrimination (Malcarne et al., 2006) subscale was used to measure ethnic discrimination. The Perceived Ethnic Group Discrimination has nine items and is rated on a 5-point Likert scale, from 1 *strongly disagree* to 5 *strongly agree*. The index score is determined by calculating the mean of the items. Higher

scores suggest a greater experience of perceived discrimination (Malcarne et al., 2006). The scale takes 2 min to complete. In this sample, internal consistency reliability was 0.79.

The Mexican American Cultural Values Scale (MACVS; Knight et al., 2010) was used to measure familism. Specifically, MACVS Family Support (MACVSFS) and MACVS Family Obligation (MACVSFO) subscales were utilized. The MACVSFS is an 11-item, 5-point Likert scale, ranging from 1 *not at all* to 5 *completely*, with higher scores indicative of a greater presence of Latinx cultural values. The MACVS takes 2 min to complete and is widely used, with validated English and Spanish versions. The index score is determined by calculating the mean of the items. In this sample, internal consistency reliability was 0.68 for the Family Obligation subscale and 0.90 for the Family Support subscale.

The Neighborhood Collective Efficacy Scale (Sampson et al., 1997) is a 10-item scale measured on a 5-point Likert scale. The scale contains two subscales: Informal Social Control and Social Cohesion and Trust. The scale was designed to measure how people in communities work together toward certain outcomes, for instance, the informal social control section assesses the likelihood of intervention by neighbors when there is a problem, and the social cohesion and trust section assesses how likely neighbors are to support each other when needed. The total score as well as the subscale scores are calculated by taking the mean of the item-level scores. In this sample, internal consistency reliability was 0.76 for the full scale, 0.79 for the Informal Social Control subscale, and 0.78 for the Social Cohesion and Trust subscale.

One question from the PSQI (Buysse et al., 1989) was used to measure subjective sleep quality and self-reported sleep duration. Participants were asked, "During the past month, how would you rate your sleep quality overall." Scores were acquired on a 4-point Likert scale ranging from 0 *no difficulty* to 3 *severe difficulty*.

Researcher Positionality

As sleep researchers, we believe that healthy sleep is critical to physical and mental health. Emerging knowledge suggests that sleep disturbance and short sleep, which are well documented among minoritized adults in the United States, contribute to a host of negative outcomes in

human endocrine, metabolic, cardiovascular, and neurological systems, as critical physiological processes that occur during sleep are disturbed/disrupted. Our research seeks to investigate sleep as a locus at which external and internal stressors interact to influence disparities related to dementia and other life-limiting conditions. Through this, we hope to contribute to initiatives promoting health equity and support the flourishing of underserved and historically marginalized communities in the United States.

Results

Sample

Sixty percent of focus group (FG) and individual interview (SP) participants were female, 90% identified as White, and 100% identified as Hispanic/Latinx. The average age of participants was 36 years, with a range of 21–58 years of age. The marital status of the majority of participants was single (65%). Participants tended to rate their sleep quality as very bad to fairly bad (PSQI; M : 1.95; SD : .887), with an average sleep duration of 6.8 hr (SD : 1.32, range: 4–8 hr). Mean scores on the Hispanicism and Americanism subscales of the Bicultural Involvement Scale indicated comfort in speaking both Spanish and English languages, as well as enjoyment of cultural customs and behaviors associated with both cultures. Mean scores on the Neighborhood Collective Efficacy Scale (M = 2.80, SD = 1.56), including the Informal Social Control (M = 2.62, SD = 0.76) and Social Cohesion and Trust subscales (M = 2.98, SD = .500) indicate high levels of collective efficacy. Mean scores on the Mexican American Cultural Values Family Support (M = 4.29, SD = 0.597) and family obligation (M = 3.85, SD = .685) subscales indicate a high level of agreement with these values. Mean scores on the MEIM (M = 4.22, SD = 0.545), including the Exploration subscale (M = 3.93, SD = 0.647) and the Affirmation, Belonging, and Commitment subscale (M = 4.44, SD = 0.634) indicate a high level of identification with one's Latinx ethnic identity.

The qualitative analysis identified three major themes:

1. Country and region of origin influence Latinx immigrant experience and sleep behavior.

2. Perception, as well as experience of one's neighborhood, influences sleep.
3. U.S. immigration policy dynamics indirectly impact Latinx immigrant sleep.

Participants from Central American, South American, and Latin Caribbean countries shared lived experiences within their country of origin and the United States. For each theme, participants recounted similar and contrasting experiences. Many of the themes identified intersected with one or more additional themes and represented both upstream and downstream determinants suggested in Grandner's (2019) social-ecological model of sleep health (please see Figure 1). As such, the rationale for choosing variables and the development of the interview guide were based on previous literature regarding sleep practices, immigration, and acculturation, with great consideration toward the unique sociopolitical composition of the many Latinx countries specific to Miami-Dade County.

Country and Region of Origin Influence Latinx Immigrant Experience and Sleep Behavior

When asked how their cultures value or devalue sleep, the idea of sleep as a nonproductive activity sparked animated discussion among the participants and often involved an exploration of their parents' perceptions of sleep. Consistent with most participants, sleep duration for a Venezuelan-born participant was connected with waking early to be productive from the start of the day:

It's about waking up early. It's not really about how much sleep you get, it's about being productive and getting up (FG4).

Interestingly, as another participant explained, for elders in the family, more concern was placed on waking up early rather than getting an adequate amount of sleep.

She [participant's mother] was born in Cuba and my grandparents too or whatever. I don't think they thought much about sleep either. I feel like they are *[sic]* thought more about like waking up early and like going to work and stuff like that and it's more about like waking up early (FG4).

Another participant born in Cuba concurred and reflected that a cultural-relevant idiom sums up the matter, which was followed by a participant stating in their country of origin the same idiom was used:

Like there's a (Latin) dicho (saying) that says "lo quien madruga Dios ayuda [*sic*, el que madruga dios lo ayuda]" (God helps those who wake up early). And that's likely something that I was like raised with. I wasn't raised like "oh go to sleep early" or nothing like that. It was more about like waking up early and stuff like that (FG4).

For a Guatemalan-born participant, the idea that sleep was not a productive activity was captured in their family's perceptions of naps. This participant spoke of their father: "Naps? No, he doesn't like this. To him it's nothing to be encouraged. You shouldn't be napping you should always be busy doing something" (FG2).

When asked about family values on napping, a Colombian-born participant expressed the potential concern for illness:

At least in my family. I would take a nap; my mom would think I'm like sick or like not feeling well. Usually, naps are for I guess the younger kids, right? Like as an adult, if I were to nap my mom would be like? Why is she like, why is she napping? (FG2).

In contrast with the devaluing of sleep, in some cultures and countries of origin represented by the participants, the culture valued sleep in a manner where siestas (afternoon naps) were codified in the community structure through the closing of government and businesses.

In my country (Colombia) when I grew up people took naps. So, they- the schedule of people to work was from 8:00 to noon and 2:00 p.m. to 6:00 p.m. So, from noon to 2:00 everybody slept. Banks were closed, stores were closed. Everything stopped in the city (FG1).

Another Colombian-born participant explained that attitudes about naps were region specific.

Like you know life's going on outside but then other family members we also lived around the coast of like the Caribbean side of Colombia and sleep. Like life was more laid back, it was like sleeping in this fine. Napping is fine ... so I think it just depends a lot on like the culture of each region (FG2).

Similarly, differences in valuing sleep were identified between countries of origin and cultures as some participants described consistency in sleep timing as an indicator of productivity.

When I lived in Colombia one had to go to sleep at a specific time. Around, I don't know, ten of the night, nine at night, and wake up to go to school around 6 in the morning to be ready. So, at eight hours of sleep, it was always something I was instilled in from a young age here to sleep (FG3).

A Cuban-born participant recalled conversations regarding the importance of sleep despite not

receiving context describing the rationale for its importance.

My family they talked about sleep like it was something that was important, but they never discussed it. Like they never discussed why you needed sleep. It was just like "oh you have to get sleep, you got to get sleep so you can wake up refreshed." Then that's basically it. They didn't really explain much (FG4).

Parties and celebrations were mentioned by participants as culturally related events that specifically impacted sleep consistency and duration behaviors for participants from cultures that reported valuing sleep (siestas, 8 hr of sleep, consistent sleep times, etc.) and those that did not. When asked for final thoughts and questions before ending a focus group, participants collectively recounted shared events during family celebrations and holidays where adults and children were awake late at night.

In Argentina, it's very common for kids to go to the parties with the parents, something that I've seen here [U.S.] not happen as much. Like [masked] said, like even if you're staying up late. Like kids would stay up late 12, 1, 2 just because they are at this party with the parents and here, I see that the kids are usually left-back with the babysitter or someone and the parents will go out (FG2).

Another participant described late night/early morning parties and celebrations as frequent occurrences within the culture impacting sleep timing and duration.

My ethnic group, which is Puerto Rican culture, we party too much. I mean, we try to find every excuse to celebrate. So, when I grew up, I was all about staying out late, going to the beach, watching the sunrise, you know, drinking, you know, hanging out with friends and ... It was all about partying (SP23).

According to statements from participants regarding how their cultures think about sleep and how sleep is taught, sleep was perceived as holding lower priority compared to other activities. A Venezuelan-born participant described that their parents sacrificed sleep duration to advance in the United States.

It's not just being Hispanic but being Hispanic immigrants in this country; they had to kind of give up a little bit of sleep to make it work here a little (FG3).

Perception, as Well as Experience of One's Neighborhood, Influences Sleep

Participants discussed neighborhood safety with respect to sleep disturbance. Several

participants answered affirmatively when asked whether personal experiences of safety insecurity such as robberies, gun violence, theft, and physical intrusions were agitators to insufficient sleep quality. When asked whether such occurrences in their neighborhood impacted their sleep, a Venezuelan-born participant described an experience involving a neighborhood intruder that had a lasting impact on sleep latency.

The guy had a gun and he jumped into like a neighbor's yard that we know and the neighbor was outside. And that was a very scary situation. Like everybody was very scared. Everybody came out and everything. So yeah, and stuff like that has happened a lot around my neighborhood. So yeah, I do think a lot about that, especially when like the lights go off (FG4).

When asked a similar question regarding neighborhood safety and sleep disturbance, another participant described frequent illegal activity as occurring as a hindrance to sleep.

It always was. When I grew up, it was a lot of shootings. I remember shootings was a regular thing where you actually listen, you know? You hear shots all over the place ... That was in Puerto Rico. And it was always, you know? You were always on watch because they could, or you could have a break-in. And, you know, actually, they break. They actually broke into one of my, one of the places that I lived in Puerto Rico. They stole my TV, you know? (SP26).

Racial and ethnic perceptions were described by a participant as a reason for sleep interruption within the neighborhood. When asked whether neighborhood concerns influenced their sleep, a Colombian-born participant referenced racial/ethnic differences contributing to their attitudes toward safety and sleep consistency.

Well, the truth? No, and yes. No, because people that live downstairs, they're Puerto Rican but they don't speak Spanish. But they are very kind people. I mean, we've never had any problems, everything normal with them. And yes, because at night, I live in [masked neighborhood]. At night, over here, sometimes it's very dark and I live near a neighborhood that where there's lots of [race of people]. And, you know, they like to go out a lot at night to cause harm. They shoot and all that over here (SP21).

Another Colombian-born participant described an experience in the neighborhood of their country of origin influencing safety precautions and a cause of sleep disturbances.

I have to ... I have to lock my door. It gives me security because when I was a child the robbers came into our home at night and they robbed us. So ... and sometimes

I have nightmares about somebody getting into that house where I grew up, not this one here in Miami. I still have nightmares about that, about not feeling secure. So, to me, it's priority to feel secure with the locks (FG1).

Conversely, despite having similar perceptions and experiences of insecurity, a Venezuelan-born participant described immigrating to the United States as a facilitator to better sleep quality due to an elevated sense of security within their neighborhood surroundings.

The truth is, ever since I got to this country, I've felt a sense of security. So, well, no. It's never gone through my head before. The places where I have lived there are also more of gated communities. So that's a factor of security. But in general. Well, no, I haven't had any kind of insecurity or anything that I've had to confront ... In Venezuela, there is always a sense of insecurity. You're walking on the street or you're driving. But, let's say, those kinds of factors haven't been fundamental to me, so (sleep) it's not going to interrupt (FG3).

In addition to potential break-ins and illegal activities, when participants discussed neighborhood safety as a factor that impacts sleep, a participant described a raid from Immigration and Customs Enforcement agency that led to lasting effects on the family's sleep latency.

Since that day it's like now we're like more cautious like is someone at the gate like we always look out, even before we like go lock the door now. Yeah, it really does like affect me because you never know (FG2).

U.S. Immigration Policy Dynamics Indirectly Impact Latinx Immigrant Sleep

During the time of the study, changes to immigration reform and policy were directly impacting the lives of immigrants in the United States. Participants were asked if the administration and policies at the time caused disturbances in sleep. Several participants explained government policies impacted them for various reasons. When asked whether policies impacted their sleep, a participant born in Ecuador explained experiencing deficits in sleep timing throughout the administration.

Well in recent years, the last four years, I probably will say yes. I have gone to sleep; you know kind of upset about what I hear. So, on and the news regarding some government policies and the way they treat other people. So, I will probably say that yes, it has affected my sleep pattern. At least it added to, you know, the lack of sleep. I have something else to think about (FG1).

A Colombian-born participant reported immigration policies affecting their ability to reenter the United States as an international student as impacting their sleep consistency.

I cannot travel although I have a visa and a provision. This has definitely affected my sleep. Right now, we're sleeping with my son in the same bed. So, you can imagine me picturing my whole Spring ... in this uncomfortable place. Of course, it's my parents' house. They love me, and they cook for me and but it's not the same. I appreciate a lot my freedom, my house, my space, my son's bedroom, my bedroom so yeah, the news has definitely disrupted my sleep (FG4).

Participants seeking political asylum identified significant sleep loss due to the cumbersome process. For a Colombian-born participant in the process of being granted asylum, when asked whether their sleep was impacted as a result of the immigration process, they described how constant worry about the potential of being deported increased sleep disturbance.

Well, that increased. Well, I have a political asylum process, but so far. And I have a permit to work. They gave us the card and the social security card but they haven't called us or anything. I mean, everything is up in the air. So these things make you think sometimes ... So that sometimes has also affected me a lot because I'm thinking that someday we're going to have to have a deportation order or something (SP21).

During an individual interview, a Venezuelan-born participant shared their physical and sleep issues experienced leading up to their subsequent approval of asylum.

Sleeping and the issue with my papers (immigration). It has also taken away a lot of sleep ... I did not sleep. My face was dropping, and my back was giving out on me. I got more stressed out about the bills (SP11).

For Cuban-born participants, national policies occurring within the United States brought forth different views about the impact of national policies on immigration and sleep. When asked if reports in media regarding U.S. policy and immigration impacted their sleep, while not personally affected by U.S. immigration policies, a participant described the concern for others experiencing these changes as a component that influenced their sleep. The aftermath of immigrating as a refugee left remaining impressions of U.S. policy and immigration reform.

For me, yes. Like a ton. I know that has been a huge stressor. The, I mean, nothing that directly impacts me,

but having at this point in life, but having gone through that process when I did come here because I came as a refugee. Yeah, like I it was just like distressing to see people going through like hardships (FG2).

When asked if national news coverage concerning immigration affected their sleep, another Cuban-born participant expressed comfort due to legal immigration and protections provided to their country of origin.

I don't think. For me it has, you know, living in Miami, I feel like I'm very comfortable and most people around me are Cubans like me. And I don't really think about those type of things. I feel like if I, maybe I lived in another state or another city, I probably would. But living in Miami I honestly don't stress much about immigration and stuff like that (FG4).

Following the participant's statement, another Cuban-born participant stated political relationships between the United States and Cuba being a contributor to disrupted sleep consistency.

It just makes me think about the, all the political nature of our relationships with the country 90 miles away from us, you know? and you know with the election, I definitely lost sleep. I definitely lost some time I would have spent kind of doing other things like watching the news and you know, on top of that, watching the virus numbers go up. So, I think definitely the anxiety for me has gone up so my sleep has been affected by stuff that has been going on in the world (FG4).

Discussion

This study's inquiry into social and cultural influences on Latinx immigrant's sleep resulted in three themes: (a) *country and region of origin influence Latinx immigrant experience and sleep behavior*, (b) *U.S. immigration policy dynamics indirectly impact Latinx immigrant sleep*, and (c) *perception, as well as experience of one's neighborhood, influence sleep*. This pilot study begins to fill a gap in the nascent sleep literature with individuals from varied Latinx communities in the United States and abroad. When describing individual- and societal-level sleep practices, participants highlighted considerable differences in cultural attitudes about the value and role of sleep that varied by Latinx country or region. Sleep was understood to be critical and protected in the lived experience of some participants, while others reported receiving family- and societal-level messages that sleep interferes with productivity. This was particularly apparent in attitudes and practices related to napping or siesta and bedtime behaviors. Some participants

suggested that their country of origin's history of engagement/alignment with either Spain (Venezuela) or the United States (Ecuador) influenced whether siesta is practiced. Early or late bedtime practices were reflected in participants' reports of their country of origin's local economies: activity in the community of one participant from Colombia was attenuated by 10:00 p.m., while others from Argentina or Puerto Rico reported that the evening's activities, including dinner, were just beginning at that time.

While scientific literature examining Latinx immigrant sleep behavior is limited, this study's participant contributions may help to explain conflicting results. Differences observed in sleep duration and insomnia rates among Mexican-born immigrants, Mexican Americans, and the general U.S. population using National Health and Nutrition Examination Survey data were identified by Seicean et al. (2011), while elsewhere, a nonsignificant nativity status–immigration interaction from a diverse sample of Latinas ($n = 196$), also via National Health and Nutrition Examination Survey, was documented (Hale et al., 2014). Whinnery et al. (2014) identified differences by Latinx heritage group and language acculturation: Mexican Americans were less likely to report long sleep, and “other Hispanic/Latinos” were more likely to report very short sleep, while Mexican-born participants report less short sleep and monolingual Spanish speakers were less likely to report very short sleep. Using data from the Hispanic Community Health Study/Study of Latinos ($n = 11,860$), S. R. Patel et al. (2015) sought to explicate differences among Latinx heritage groups, including Cuban, Dominican, Mexican, Puerto Rican, South American, and other/mixed Hispanic heritage groups, and observed differences in sleep duration: Puerto Rican and South American participants reported the highest rates of short sleep (<7 hr) even after controlling for demographics, time in the United States, and study site location, while Mexican, Cuban, and Dominican participants reported the least. Our results, when juxtaposed with quantitative research by S. R. Patel et al. (2015) and others, underline the importance of avoiding umbrella Hispanic/Latino samples in sleep research.

This study also identified indirect country of origin differences on sleep, which were influenced by U.S. immigration policy, and captured by the theme: *U.S. immigration policy*

dynamics indirectly impact Latinx immigrant sleep. Participants noted that those from Cuba had immediate access to secure residence in the United States, while those not from Cuba, including one study participant who struggled financially for months without “papers” (thus impacting his sleep), endure a precarious status. Other participants noted a direct influence of U.S. policy exists and described sleep-impacting concerns about friends or communities vulnerable to harm from American immigration policy or about the U.S.’s history of foreign policy on Cuba.

Indeed, numerous changes have occurred over the past several years related to the U.S. immigration policy as it relates to Cuba. Since the 1960s, under the Cuban Adjustment Act, Cubans who arrived in the United States were able to circumvent standard immigration rules to more swiftly obtain lawful permanent resident status. In 2017, with the normalization of diplomatic relations between the United States and Cuba, it was determined that such exemptions for Cuban nationals were no longer necessary, and portions of the policy were repealed ([The White House: President Barack Obama, 2017](#)). This included ending the wet foot, dry foot policy whereby Cubans trying to reach the United States would be returned to Cuba if intercepted at sea but allowed to enter the United States if they reached land. The modifications to the Cuban Adjustment Act in 2017 have substantially impacted newly arrived Cubans, who no longer receive the legal protections granted to previous Cuban arrivals. The end of the wet foot, dry foot act has led Cubans to become vulnerable to deportation—something virtually impossible before the repeal of this policy ([Rivero, 2019](#)). Additionally, sweeping rounds of immigration policies over the past several years, including an escalation in immigration enforcement, increased vetting and obstacles for legal immigration, construction of a physical wall on the U.S.–Mexico border, cuts to humanitarian programs, and the ending of the Deferred Action for Childhood Arrivals (DACA) program, have increased stress among Latinx in the United States ([Pierce et al., 2018](#)).

The scarce existing literature investigating the influence of U.S. policy on sleep outcomes has largely focused on young adults affected by DACA and adolescent American citizen children of Latinx immigrants, but these findings are similar to our study of adults. DACA-eligible

adults age 18–35 reported longer sleep duration than DACA-ineligible between 2009 and 2019 when comparing pre-DACA sleep to DACA-period sleep ([Giuntella et al., 2021](#)). When examining sex, however, results were only significant with men in the study, but our pilot study sample, which was predominantly female, also reported such concerns. A study of predominantly Mexican adolescents with immigrant mothers’ ($n = 397$) mental health and sleep found that after the 2016 election of Donald Trump, who as a presidential candidate engaged in much anti-immigrant rhetoric and supported the anti-immigrant policy, greater worry about immigration policy consequences (reported by 44.8% of participants) was inversely associated with sleep quality via the PSQI, but again, only among males ([Eskenazi et al., 2019](#)). Biomarker data in this study noted a blunted stress response in males, indicating hypothalamic-pituitary-adrenal axis compensation related to chronic stress. The authors suggest that sex-related biological responses to stress and gendered coping behaviors may have influenced outcomes. The present mixed-methods pilot study did not include an objective measure of stress, but future studies examining Latinx immigration and sleep may wish to add biomarker data to delineate physiological, social, and individual responses to the immigration process.

The influence of immigration and acculturation on sleep disturbance has been considered by several studies and may help explain variability in previous results exploring sleep duration and quality among Latinx immigrants. An investigation of acculturation among Mexican immigrants ($n = 644$) and Mexican Americans ($n = 792$) using National Health Interview Survey data ([Hale & Rivero-Fuentes, 2011](#)) observed that those who endorsed higher Anglo acculturation were 40% more likely to be short sleepers after demographic adjustments, but this relationship weakened after including health variables and perceived stress in the model. [Martinez-Miller et al.’s \(2019\)](#) more recent research investigated the role of U.S. acculturation in sleep outcomes in first-generation respondents in the Sacramento Area Latino Study on Aging ($n = 1,789$) and their second-generation children via the Niños Lifestyle and Diabetes Study ($n = 670$). First-generation participants with higher levels of acculturation reported better sleep outcomes, but like [S. R. Patel et al. \(2015\)](#) this was heavily

influenced by education level and occupational status, while second-generation participants with higher levels of acculturation reported shorter sleep duration than those with lower acculturation scores. The authors suggest that greater “community integration” may be protective against acculturation pressures but also noted considerable differences in education and socioeconomic status between the two sample groups. [Martinez-Miller et al. \(2019\)](#) suggested that perceived discrimination may also moderate the impact of immigration on sleep behavior/outcomes, but their research design did not include this variable. [Ghani et al. \(2020\)](#) identified similar results using the same acculturation measure; higher levels of Anglo acculturation (but not Mexican acculturation) correlated with poorer sleep quality and more insomnia, sleep apnea, and sleep medicine use, but they too did not account for the impact experiences of discrimination may have on sleep duration and quality.

Interestingly, data from the present study’s qualitative component do not suggest a strong role for acculturation in Latinx immigrant sleep quality or duration. Some participants who arrived to the U.S. as children reported distress associated with missing family and friends. However, the degree of affiliation with U.S. cultural practices, in general, or sleep practices, specifically, were not highlighted by participants as factors that facilitated their transition during the immigration process, nor directly impacted their sleep. One participant mentioned an indirect effect of acculturation on sleep, however, by way of prejudice from other Latinx community members who expressed negative sentiments about the participant’s affiliation with their culture of origin, specifically music. Participant omissions in this area do not necessarily suggest a null effect; however, focus group/interview questions may have included prompts insufficient to elicit information about this topic. Our quantitative measures of participants’ current degree of acculturation suggest at least a moderate level of acculturation for most participants in our sample. Most reported comfort using English and Spanish in various settings and thinking in both languages, suggesting considerable linguistic acculturation. High levels of enjoyment of Hispanic cultural activities were reported, but American cultural activities were at least partially embraced by many. Our sample was, overall, also highly educated and

economically stable, which, based on previous studies adjustment for socioeconomic status ([Hale & Rivero-Fuentes, 2011](#); [S. R. Patel et al., 2015](#)), may have influenced acculturation experience ([Billings et al., 2021](#)).

The final theme, *perception, as well as experience of one’s neighborhood influence on sleep*, was often expressed in terms of perceptions of personal or family safety. Participants described current and former neighborhoods in their country of origin, and shared greater feelings of safety after immigrating related to increased security, either due to less crime or political instability or access to security equipment, including cameras and gates. Conversely, others reported feeling unsafe in current or previous neighborhoods after immigrating due to recent robberies or perceptions of their neighborhoods being unsafe because of its inhabitants with the latter comments reflecting both ingroup and anti-Black bias.

Neighborhood disadvantage has been shown to have a significant impact on sleep dynamics and should be considered alongside other cultural and sociological factors, which in turn have the potential to impact downstream health outcomes. A cross-sectional analysis of 2,156 U.S. Latinx adults across four U.S. regions found short sleep, lower sleep efficiency, and late sleep midpoint more pervasive among participants living in unsafe neighborhoods when compared to participants who perceived their neighborhoods as safe and insomnia more frequently reported for those living in noisy neighborhoods when compared to participants uninfluenced by noise ([Simonelli et al., 2017](#)). Similarly, in a study comprised of low-income Latinx adults of which 52.3% were primarily Spanish speaking and the majority (66%) received Section 8 or public housing, neighborhood disorder and building problems were found to be positively associated with sleep disturbance and poorer sleep quality when comparing participants living in neighborhoods free of extreme problems ([Chambers et al., 2016](#)). While studies with Latinx populations are few, inverse relationships across various measures of neighborhood characteristics (disadvantage, disorder, low socioeconomic status) and sleep quality or duration ([Chambers et al., 2016](#); [Murillo et al., 2021](#); [Rubens et al., 2018](#); [Simonelli et al., 2017](#)) parallel similarities to studies with predominantly Black ([Fuller-Rowell et al., 2018](#); [Troxel et al., 2019](#)) and NHW samples.

Previous research has found that neighborhood disadvantage impacts sleep quality and duration and, as such, should be considered alongside other factors impacting immigrant sleep (Grandner, 2019). Recent studies with Latinx samples have yielded results similar to studies with non-Hispanic or predominantly non-Hispanic samples (Hale et al., 2010; Troxel et al., 2019). A large ($n = 2,156$) 7-day long actigraphy study with a diverse Latinx sample that included Cuban, Dominican, Mexican, Puerto Rican, Central and South Americans found that after controlling for age and sex, low sleep efficiency, late sleep midpoint, and short sleep (less than 6 hr) were associated with residence in unsafe neighborhoods (Simonelli et al., 2017). After further adjustment for site, nativity, background, employment, income, depression, and sleep apnea, participants who reported living in unsafe neighborhoods were nearly 8% more likely to experience short sleep. This study did not examine differences by heritage group, but an analysis of neighborhood social cohesion and sleep duration with Latinx adults from the National Health Interview Study ($n = 13,537$) noted that among Mexican and Mexican Americans, medium and high neighborhood cohesion correlated with normal sleep duration, while in Puerto Rican, Cuban, Central and South American subsamples, only high social cohesion was predictive of normal sleep; no such correlation was found among Dominican participants (Murillo et al., 2021).

Another recent study by Chambers et al. (2016) focused on 371 Latinx adults in low-income housing environments and found that self-reported neighborhood disorder, as well as unfriendly neighbors, inadequate security, and litter or broken glass in common areas within participants' apartment buildings, were associated with both increased sleep disruption and worse sleep quality. The authors discuss that this study highlights the roles that both proximal (building-wide) and increasingly distal (neighborhood-wide) factors may impact sleep dynamics (Chambers et al., 2016). Neighborhood impact may be either direct or indirect: Rubens et al. (2018) suggested that such outcomes, at least in adolescents ($n = 144$), may be indirect and explained by higher rates of anxiety: neighborhood disadvantage predicted anxiety (but not depression), which indirectly influenced sleep, while negative life events impacted sleep via

higher rates of depression. In our study, 65% of participants endorsed responses indicating moderate to high feelings of safety in their neighborhoods on the scale, but nearly one third endorsed the PSQI response indicating that they have trouble sleeping sometimes due to feeling unsafe. These results appear reflective of sentiments shared by participants who reported greater feelings of security as immigrants in the United States or through access to greater security measures. Previous or recent experiences of a home invasion or knowledge of neighborhood crime affected participant sleep, according to focus group and interview comments. Greater ambivalence was observed in neighborhood cohesion after analysis of Collective Efficacy Scale results, but like acculturation, aspects of cohesion, including counting on neighbors to intervene in disturbances (fighting, etc.) for the betterment of the community, were not explicitly addressed by study participants, who largely focused on safety as the cause of sleep disturbance. Future studies may wish to "unpack" what is required to feel safe to better understand the role of neighborhood cohesion and influence Latinx immigrant sleep.

The results from this study add to the scientific literature by presenting a more nuanced view of how immigration and acculturation may or may not impact sleep duration, quality, and behavior in non-U.S.-born Latinx adults than quantitative measures alone could provide. As this study included focus groups and individual interviews, participants had the opportunity to share about, reflect on, and for focus group members who comprised most of the sample, discuss their experiences with other Latinx immigrants. The three themes that emerged: *country and region of origin influence Latinx immigrant experience and sleep behavior*, *U.S. immigration policy dynamics indirectly impact Latinx immigrant sleep*, and *perception, as well as experience of one's neighborhood, influences sleep* appear to align with the social-ecological model of sleep health that served as our conceptual framework. Individual and social sleep influences, such as stressors associated with immigration status, are embedded in larger, society-wide influences, including U.S. immigration policy.

Findings from this study should be interpreted in light of its limitations. With a mixed-methods design, we were able to collect dynamic qualitative and associated quantitative data about sleep

and various aspects of immigrant experiences, but additional, bivariate analyses, which may have identified correlations between specific sleep and sociocultural variables, were not possible due to the small sample size ($n = 20$) and insufficient power of this pilot study. While mixed methods were included in the study design, the use of acculturation scales may present a limitation in addressing sleep disparities as studies have identified inconsistencies about sleep domains and Latinx populations (Aqua et al., 2023; Hale et al., 2014). In addition to the small sample, while providing context and perspectives of people from South American and Caribbean countries, the study only included one participant from Central America (Guatemala). The findings presented in this study regarding sleep practices and behaviors associated with immigration and acculturation may differ from previous literature, specifically among those of Mexican descent, as research discussed priorly referenced those of Mexican descent more acculturated exhibits higher sleep disparities in comparison to those less acculturated (Hale & Rivero-Fuentes, 2011; Hale et al., 2010; Heilemann et al., 2012; Seicean et al., 2011). This study employed both focus groups and individual interviews based on the availability of participants. Whether purposeful or convenience based, data source triangulation using both types of interviews has been shown to increase trustworthiness, enhance the understanding of the context through combined interview techniques, and allow for a comparison of data by interview type to more deeply explore occurrences (Carter et al., 2014; Korstjens & Moser, 2018). Weaknesses in selecting both types of interviews may exist despite these strengths. When appraising differences in interview types among 350 African American men concerning health-seeking behaviors, Guest et al. (2017) found the use of individual interviews more effective at producing a broader range of discussion items while focus groups were more effective at eliciting sensitive and personal information. While triangulation provided rigor for interrater reliability through weekly debriefings to modify the coding structure and appraise interpretations of codes and themes, quantitative tools such as the interrater agreement calculation provided by ATLAS.ti were not utilized (Belotto, 2018). The appropriateness of the utilization of a qualitative–quantitative mechanism for data

analysis provided from the intercoder agreement tool function within ATLAS.ti should be considered in future studies given its potential to strengthen perceptions of transparency, consistency, and communicability of these data across diverse audiences (O'Connor & Joffe, 2020). Another limitation is presented in the recording of the age demographics and point of entry into the United States of each participant. While it was deduced through review of the transcripts that the participant residing in the United States the longest time was 33 years and the participant residing the shortest time was 3 years, this study did not collect formal data on the length of time since arriving in the United States. Providing a formal question regarding the length of time since arriving in the United States would allow additional insight into how variations in experiences may be related to this variable, including what stage of life someone was in during their immigration experience and potential sociopolitical factors. In addition, fluctuations in political and social contexts in the United States and their countries of origin could have been explored as influential factors in participants' experiences had the year of immigration been collected. Confirmation bias may have also been introduced by asking participants to reflect specifically on how immigration, discrimination, and neighborhood affected their sleep.

Given that the study's implementation occurred during the initial stages of the COVID-19 pandemic, requiring a fully web-based study design, a potential limitation may have occurred in participant diversity. This limitation is considered as previous research with Latinx populations has demonstrated overestimation in participant computer literacy (Lee et al., 2015), enrollment (Carroll et al., 2010), and participant retention upon initiating online study components (Du Bois et al., 2012). Despite these limitations, our study provided valuable, first-person insights that can inform the design of future studies, including the use of focus groups and individual interviews with the target population prior to finalizing surveys and interview guides. Without this preliminary qualitative inquiry, researchers may overlook or not be aware of factors in participants' lives that are salient, impactful, and affecting them, even if indirectly. Though difficult with small sample sizes and clustering of heritage groups in different U.S. regions, sleep researchers are encouraged to

recruit and enroll diverse samples of sufficient numbers in order to parse sleep outcomes by heritage group and country of origin.

Resumen

En este estudio se examinaron las asociaciones entre la cultura, la inmigración, la aculturación y el sueño entre adultos latinx no nacidos en Estados Unidos. No existen datos de investigación suficientes que den cuenta de la influencia de cultura y las experiencias de la inmigración en los resultados del sueño, lo que hace necesaria esta investigación preliminar. Esta investigación cualitativa exploró las relaciones entre el estrés aculturativo, las experiencias de inmigración y el sueño, y cómo éstas variaban según el país de origen. Los participantes respondieron a una encuesta enfocada en datos demográficos, aculturación, identidad étnica, apoyo y obligaciones familiares, y sueño. Los grupos focales y las entrevistas individuales se realizaron virtualmente (debido a la COVID-19) en inglés o español. Los participantes ($n = 20$) eran 60% mujeres, 90% blancos, 100% latinx, y tenían entre 21 y 58 años. Los participantes calificaron su calidad del sueño de muy mala a bastante mala, utilizando el Índice de Calidad del Sueño de Pittsburgh (PSQI; $M: 1.95$; $SD: .887$), con una duración promedio del sueño de 6.8 h ($SD: 1.32$). En el análisis cualitativo se identificaron tres temas principales: (a) el país/región de origen influye en la experiencia y el comportamiento del sueño de los inmigrantes latinx; (b) la percepción y la experiencia del propio barrio influyen en el sueño; y (c) la dinámica de la política de inmigración de EE.UU. repercute indirectamente en el sueño de los inmigrantes latinx. Este estudio piloto comienza a llenar un vacío en la incipiente literatura sobre el sueño con personas de comunidades latinx en Estados Unidos y en el extranjero. Al describir las prácticas de sueño a nivel individual y societal, los participantes destacaron diferencias considerables en las actitudes culturales sobre el valor y el papel del sueño que variaban según el país o la región latinx.

References

- Alcántara, C., Patel, S. R., Carnethon, M., Castañeda, S., Isasi, C. R., Davis, S., Ramos, A., Arredondo, E., Redline, S., Zee, P. C., & Gallo, L. C. (2017). Stress and sleep: Results from the hispanic community health study/study of Latinos sociocultural ancillary study. *SSM—Population Health*, 3, 713–721. <https://doi.org/10.1016/j.ssmph.2017.08.004>
- Aqua, J. K., White, K., & Johnson, D. A. (2023). A systematic review of acculturation and sleep health among adult immigrants in the United States. *Sleep Health*, 9(3), 288–305. <https://doi.org/10.1016/j.sle.2023.01.007>
- Bartlett, D., & Jackson, M. L. (2016). The bidirectional nature of sleep problems and psychopathology. *Medicine Today*, 17(3), 23–28.
- Belotto, M. J. (2018). Data analysis methods for qualitative research: Managing the challenges of coding, interrater reliability, and thematic analysis. *Qualitative Report*, 23(11), 2622–2633. <https://doi.org/10.46743/2160-3715/2018.3492>
- Billings, M. E., Cohen, R. T., Baldwin, C. M., Johnson, D. A., Palen, B. N., Parthasarathy, S., Patel, S. R., Russell, M., Tapia, I. E., Williamson, A. A., & Sharma, S. (2021). Disparities in sleep health and potential intervention models: A focused review. *Chest*, 159(3), 1232–1240. <https://doi.org/10.1016/j.chest.2020.09.249>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513–531. <https://doi.org/10.1037/0003-066X.32.7.513>
- Buyse, D. J., Reynolds, C. F., III, Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh sleep quality index: A new instrument for psychiatric practice and research. *Psychiatry Research*, 28(2), 193–213. [https://doi.org/10.1016/0165-1781\(89\)90047-4](https://doi.org/10.1016/0165-1781(89)90047-4)
- Carroll, N. M., Ritzwoller, D. P., Stopponi, M. A., & Johnson, C. C. (2010). Identifying and oversampling Hispanics by the passel-word surname list for enrollment in a web-based nutritional intervention. *Ethnicity & Disease*, 20(1), 15–21. <https://www.jstor.org/stable/48668247>
- Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545–547. <https://doi.org/10.1188/14.ONF.545-547>
- Chambers, E. C., Pichardo, M. S., & Rosenbaum, E. (2016). Sleep and the housing and neighborhood environment of urban Latino adults living in low-income housing: The AHOME study. *Behavioral Sleep Medicine*, 14(2), 169–184. <https://doi.org/10.1080/15402002.2014.974180>
- da Silva, A. A., de Mello, R. G. B., Schaan, C. W., Fuchs, F. D., Redline, S., & Fuchs, S. C. (2016). Sleep duration and mortality in the elderly: A systematic review with meta-analysis. *BMJ Open*, 6(2), Article e008119. <https://doi.org/10.1136/bmjopen-2015-008119>
- Daviglus, M. L., Talavera, G. A., Avilés-Santa, M. L., Allison, M., Cai, J., Criqui, M. H., Gellman, M., Giachello, A. L., Gouskova, N., Kaplan, R. C., LaVange, L., Penedo, F., Perreira, K., Pirzada, A.,

- Schneiderman, N., Wassertheil-Smoller, S., Sorlie, P. D., & Stamler, J. (2012). Prevalence of major cardiovascular risk factors and cardiovascular diseases among Hispanic/Latino individuals of diverse backgrounds in the United States. *JAMA*, 308(17), 1775–1784. <https://doi.org/10.1001/jama.2012.14517>
- Donohue, K., & Garcia, Y. E. (2020). Individual differences and sleep disorders. In B. J. Carducci, C. S. Nave, J. S. Mio, & R. E. Riggio (Eds.), *The Wiley encyclopedia of personality and individual differences* (pp. 157–161). Wiley. <https://doi.org/10.1002/9781119547181.ch290>
- Du Bois, S. N., Johnson, S. E., & Mustanski, B. (2012). Examining racial and ethnic minority differences among YMSM during recruitment for an online HIV prevention intervention study. *AIDS and Behavior*, 16(6), 1430–1435. <https://doi.org/10.1007/s10461-011-0058-0>
- Eskenazi, B., Fahey, C. A., Kogut, K., Gunier, R., Torres, J., Gonzales, N. A., Holland, N., & Deardorff, J. (2019). Association of perceived immigration policy vulnerability with mental and physical health among US-Born Latino adolescents in California. *JAMA Pediatrics*, 173(8), 744–753. <https://doi.org/10.1001/jamapediatrics.2019.1475>
- Fuller-Rowell, T. E., Curtis, D. S., Chae, D. H., & Ryff, C. D. (2018). Longitudinal health consequences of socioeconomic disadvantage: Examining perceived discrimination as a mediator. *Health Psychology*, 37(5), 491–500. <https://doi.org/10.1037/hea0000616>
- Ghani, S. B., Delgadillo, M. E., Granados, K., Okuagu, A. C., Alfonso-Miller, P., Buxton, O. M., Patel, S. R., Ruiz, J., Parthasarathy, S., Haynes, P. L., Molina, P., Seixas, A., Williams, N., Jean-Louis, G., & Grandner, M. A. (2020). Acculturation associated with sleep duration, sleep quality, and sleep disorders at the U.S.–Mexico border. *International Journal of Environmental Research and Public Health*, 17(19), Article 7138. <https://doi.org/10.3390/ijerph17197138>
- Giuntella, O., Lonsky, J., Mazzonna, F., & Stella, L. (2021). Immigration policy and immigrants' sleep. Evidence from DACA. *Journal of Economic Behavior & Organization*, 182, 1–12. <https://doi.org/10.1016/j.jebo.2020.11.037>
- Grandner, M. A. (2019). Social–ecological model of sleep health. In M. A. Grandner (Ed.), *Sleep and health* (pp. 45–53). Academic Press. <https://doi.org/10.1016/B978-0-12-815373-4.00005-8>
- Grandner, M. A., Williams, N. J., Knutson, K. L., Roberts, D., & Jean-Louis, G. (2016). Sleep disparity, race/ethnicity, and socioeconomic position. *Sleep Medicine*, 18, 7–18. <https://doi.org/10.1016/j.sleep.2015.01.020>
- Gruber, R., & Cassoff, J. (2014). The interplay between sleep and emotion regulation: Conceptual framework empirical evidence and future directions. *Current Psychiatry Reports*, 16(11), Article 500. <https://doi.org/10.1007/s11920-014-0500-x>
- Guest, G., Namey, E., Taylor, J., Eley, N., & McKenna, K. (2017). Comparing focus groups and individual interviews: Findings from a randomized study. *International Journal of Social Research Methodology*, 20(6), 693–708. <https://doi.org/10.1080/13645579.2017.1281601>
- Guo, X., Suarez-Morales, L., Schwartz, S. J., & Szapocznik, J. (2009). Some evidence for multidimensional biculturalism: Confirmatory factor analysis and measurement invariance analysis on the Bicultural Involvement Questionnaire-Short Version. *Psychological Assessment*, 21(1), 22–31. <https://doi.org/10.1037/a0014495>
- Hale, L., Do, D. P., & Rivero-Fuentes, E. (2010). What do we know about Mexican immigration and sleep? A population-based study and future research directions. *Hispanic Health Care International; the Official Journal of the National Association of Hispanic Nurses*, 8(4), 199–208. <https://doi.org/10.1891/1540-4153.8.4.199>
- Hale, L., & Rivero-Fuentes, E. (2011). Negative acculturation in sleep duration among Mexican immigrants and Mexican Americans. *Journal of Immigrant and Minority Health*, 13(2), 402–407. <https://doi.org/10.1007/s10903-009-9284-1>
- Hale, L., Troxel, W. M., Kravitz, H. M., Hall, M. H., & Matthews, K. A. (2014). Acculturation and sleep among a multiethnic sample of women: The study of women's health across the nation (SWAN). *Sleep*, 37(2), 309–317. <https://doi.org/10.5665/sleep.p.3404>
- Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., Duda, S. N., & the REDCap Consortium. (2019). The REDCap consortium: Building an international community of software platform partners. *Journal of Biomedical Informatics*, 95, Article 103208. <https://doi.org/10.1016/j.jbi.2019.103208>
- Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, 42(2), 377–381. <https://doi.org/10.1016/j.jbi.2008.08.010>
- Hayes, T. L., Riley, T., Mattek, N., Pavel, M., & Kaye, J. A. (2014). Sleep habits in mild cognitive impairment. *Alzheimer Disease and Associated Disorders*, 28(2), 145–150. <https://doi.org/10.1097/WAD.0000000000000010>
- Health Council of South Florida. (2022). 2022 demographics, population data for county: Miami-Dade. <https://www.miamidadematters.org/tiles/index/display?alias=aboutmiamihealthmatters>

- Heilemann, M. V., Choudhury, S. M., Kury, F. S., & Lee, K. A. (2012). Factors associated with sleep disturbance in women of Mexican descent. *Journal of Advanced Nursing*, 68(10), 2256–2266. <https://doi.org/10.1111/j.1365-2648.2011.05918.x>
- Jackson, C. L., Hu, F. B., Redline, S., Williams, D. R., Mattei, J., & Kawachi, I. (2014). Racial/ethnic disparities in short sleep duration by occupation: The contribution of immigrant status. *Social Science & Medicine*, 118, 71–79. <https://doi.org/10.1016/j.socscimed.2014.07.059>
- Kemp, S., Biswas, R., Neumann, V., & Coughlan, A. (2004). The value of melatonin for sleep disorders occurring post-head injury: A pilot RCT. *Brain Injury*, 18(9), 911–919. <https://doi.org/10.1080/02699050410001671892>
- Knight, G. P., Gonzales, N. A., Saenz, D. S., Bonds, D. D., Germán, M., Deardorff, J., Roosa, M. W., & Updegraff, K. A. (2010). The Mexican American cultural values scales for adolescents and adults. *The Journal of Early Adolescence*, 30(3), 444–481. <https://doi.org/10.1177/0272431609338178>
- Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *The European Journal of General Practice*, 24(1), 120–124. <https://doi.org/10.1080/13814788.2017.1375092>
- Krueger, P. M., & Friedman, E. M. (2009). Sleep duration in the United States: A cross-sectional population-based study. *American Journal of Epidemiology*, 169(9), 1052–1063. <https://doi.org/10.1093/aje/kwp023>
- Lee, Y. J., Boden-Albala, B., Jia, H., Wilcox, A., & Bakken, S. (2015). The association between online health information-seeking behaviors and health behaviors among Hispanics in New York City: A community-based cross-sectional study. *Journal of Medical Internet Research*, 17(11), Article e261. <https://doi.org/10.2196/jmir.4368>
- Lemola, S., & Richter, D. (2013). The course of subjective sleep quality in middle and old adulthood and its relation to physical health. *The Journals of Gerontology: Series B, Psychological Sciences and Social Sciences*, 68(5), 721–729. <https://doi.org/10.1093/geronb/gbs113>
- Lichstein, K. L., Durrence, H. H., Riedel, B. W., Taylor, D. J., & Bush, A. J. (2013). *Epidemiology of sleep: Age, gender, and ethnicity*. Psychology Press. <https://doi.org/10.4324/9781410610850>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Lo, J. C., Loh, K. K., Zheng, H., Sim, S. K. Y., & Chee, M. W. L. (2014). Sleep duration and age-related changes in brain structure and cognitive performance. *Sleep*, 37(7), 1171–1178. <https://doi.org/10.5665/sleep.3832>
- Loredo, J. S., Soler, X., Bardwell, W., Ancoli-Israel, S., Dimsdale, J. E., & Palinkas, L. A. (2010). Sleep health in U.S. Hispanic population. *Sleep*, 33(7), 962–967. <https://doi.org/10.1093/sleep/33.7.962>
- Malcarne, V. L., Chavira, D. A., Fernandez, S., & Liu, P.-J. (2006). The scale of ethnic experience: Development and psychometric properties. *Journal of Personality Assessment*, 86(2), 150–161. https://doi.org/10.1207/s15327752jpa8602_04
- Martinez-Miller, E. E., Prather, A. A., Robinson, W. R., Avery, C. L., Yang, Y. C., Haan, M. N., & Aiello, A. E. (2019). U.S. acculturation and poor sleep among an intergenerational cohort of adult Latinos in Sacramento, California. *Sleep*, 42, Article zsy246. <https://doi.org/10.1093/sleep/zsy246>
- Murillo, R., Ayalew, L., & Hernandez, D. C. (2021). The association between neighborhood social cohesion and sleep duration in Latinos. *Ethnicity & Health*, 26(7), 1000–1011. <https://doi.org/10.1080/13557858.2019.1659233>
- O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: Debates and practical guidelines. *International Journal of Qualitative Methods*, 19. <https://doi.org/10.1177/1609406919899220>
- Orzeł-Gryglewska, J. (2010). Consequences of sleep deprivation. *International Journal of Occupational Medicine and Environmental Health*, 23(1), 95–114. <https://doi.org/10.2478/v10001-010-0004-9>
- Patel, K. V., Eschbach, K., Ray, L. A., & Markides, K. S. (2004). Evaluation of mortality data for older Mexican Americans: Implications for the Hispanic paradox. *American Journal of Epidemiology*, 159(7), 707–715. <https://doi.org/10.1093/aje/kwh089>
- Patel, S. R., Sotres-Alvarez, D., Castañeda, S. F., Dudley, K. A., Gallo, L. C., Hernandez, R., Medeiros, E. A., Penedo, F. J., Mossavar-Rahmani, Y., Ramos, A. R., Redline, S., Reid, K. J., & Zee, P. C. (2015). Social and health correlates of sleep duration in a U.S. Hispanic population: Results from the Hispanic community health study/study of Latinos. *Sleep*, 38(10), 1515–1522. <https://doi.org/10.5665/sleep.5036>
- Phinney, J. S. (1992). The multigroup ethnic identity measure: A new scale for use with diverse groups. *Journal of Adolescent Research*, 7(2), 156–176. <https://doi.org/10.1177/074355489272003>
- Pierce, S., Bolter, J., & Selee, A. (2018). *U.S. immigration policy under trump: Deep changes and lasting impacts*. Migration Policy Institute. <https://www.migrationpolicy.org/research/us-immigration-policy-trump-deep-changes-impacts>
- Ponterotto, J. G. (2006). Brief note on the origins, evolution, and meaning of the qualitative research concept thick description. *Qualitative Report*, 11(3), 538–549. <https://doi.org/10.46743/2160-3715/2006.1666>
- Quan, S. F., Goodwin, J. L., Babar, S. I., Kaemingk, K. L., Enright, P. L., Rosen, G. M., Fregosi, R. F., & Morgan, W. J. (2003). Sleep architecture in

- normal Caucasian and Hispanic children aged 6–11 years recorded during unattended home polysomnography: Experience from the Tucson children's assessment of sleep apnea study (TuCASA). *Sleep Medicine*, 4(1), 13–19. [https://doi.org/10.1016/s1389-9457\(02\)00235-6](https://doi.org/10.1016/s1389-9457(02)00235-6)
- Reed, D. L., & Sacco, W. P. (2016). Measuring sleep efficiency: What should the denominator be? *Journal of Clinical Sleep Medicine*, 12(2), 263–266. <https://doi.org/10.5664/jcsm.5498>
- Rivero, D. (2019, March 27). "I should not be here": The new reality for Cuban immigration to the U.S. *WLRN*. <https://www.wlrn.org/news/2019-03-27/i-should-not-be-here-the-new-reality-for-cuban-immigration-to-the-us>
- Roberts, R. E., Phinney, J. S., Masse, L. C., Chen, Y. R., Roberts, C. R., & Romero, A. (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *The Journal of Early Adolescence*, 19(3), 301–322. <https://doi.org/10.1177/0272431699019003001>
- Rubens, S. L., Gudiño, O. G., Fite, P. J., & Grande, J. M. (2018). Individual and neighborhood stressors, sleep problems, and symptoms of anxiety and depression among Latino youth. *American Journal of Orthopsychiatry*, 88(2), 161–168. <https://doi.org/10.1037/ort0000234>
- Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, 277, 918–924. <https://doi.org/10.1126/science.277.5328.918>
- Seicean, S., Neuhauser, D., Strohl, K., & Redline, S. (2011). An exploration of differences in sleep characteristics between Mexico-born U.S. immigrants and other Americans to address the Hispanic Paradox. *Sleep*, 34(8), 1021–1031. <https://doi.org/10.5665/SLEEP.1154>
- Simonelli, G., Dudley, K. A., Weng, J., Gallo, L. C., Perreira, K., Shah, N. A., Alcantara, C., Zee, P. C., Ramos, A. R., Llabre, M. M., Sotres-Alvarez, D., Wang, R., & Patel, S. R. (2017). Neighborhood factors as predictors of poor sleep in the Sueño ancillary study of the hispanic community health study/study of Latinos. *Sleep*, 40(1), Article zsw025. <https://doi.org/10.1093/sleep/zsw025>
- Stamatakis, K. A., Kaplan, G. A., & Roberts, R. E. (2007). Short sleep duration across income, education, and race/ethnic groups: Population prevalence and growing disparities during 34 years of follow-up. *Annals of Epidemiology*, 17(12), 948–955. <https://doi.org/10.1016/j.annepidem.2007.07.096>
- Sun, Y., Shi, L., Bao, Y., Sun, Y., Shi, J., & Lu, L. (2018). The bidirectional relationship between sleep duration and depression in community-dwelling middle-aged and elderly individuals: Evidence from a longitudinal study. *Sleep Medicine*, 52, 221–229. <https://doi.org/10.1016/j.sleep.2018.03.011>
- The White House: President Barack Obama. (2017). *Statement by the president on Cuban immigration policy*. <https://obamawhitehouse.archives.gov/the-press-office/2017/01/12/statement-president-cuban-immigration-policy>
- Tobaldini, E., Costantino, G., Solbiati, M., Cogliati, C., Kara, T., Nobili, L., & Montano, N. (2017). Sleep, sleep deprivation, autonomic nervous system and cardiovascular diseases. *Neuroscience and Biobehavioral Reviews*, 74(B), 321–329. <https://doi.org/10.1016/j.neubiorev.2016.07.004>
- Troxel, W. M., DeSantis, A., Richardson, A. S., Beckman, R., Ghosh-Dastidar, B., Nugroho, A., Hale, L., Buysse, D. J., Buman, M. P., & Dubowitz, T. (2019). Neighborhood disadvantage is associated with actigraphy-assessed sleep continuity and short sleep duration. *Sleep*, 42(3), Article zsy250. <https://doi.org/10.1093/sleep/zsy250>
- U.S. Census Bureau. (2021). *U.S. Census Bureau QuickFacts: Miami-Dade County, Florida*. <https://www.census.gov/quickfacts/fact/table/miamidade-countyflorida/PST045221>
- Whinnery, J., Jackson, N., Rattanaumpawan, P., & Grandner, M. A. (2014). Short and long sleep duration associated with race/ethnicity, socio-demographics, and socioeconomic position. *Sleep*, 37(3), 601–611. <https://doi.org/10.5665/sleep.3508>
- Zhan, C., Nagy, G. A., Wu, J. Q., McCabe, B., Stafford, A. M., & Gonzalez-Guarda, R. M. (2022). Acculturation stress, age at immigration, and employment status as predictors of sleep among Latinx immigrants. *Journal of Immigrant and Minority Health*, 24(6), 1408–1420. <https://doi.org/10.1007/s10903-022-01342-8>

(Appendix follows)

Appendix

Interview Guide

- Global Question
 - Can we go around and have each of you list three things that affect your sleep the most?
 - What do you do to try and fall asleep?
- Participants' perceptions of how their culture discusses, feels about, values or devalues, ritualizes, or otherwise thinks about sleep.
 - Can you tell me about how you feel your culture thinks about sleep?
 - Further explanation: This could be how people discuss, feel about, value or devalue, ritualize, or otherwise think about sleep?
 - Follow-up probe: Perceptions of how this influences their own sleep behaviors?
 - How was this information transmitted to you as a child/adult?
 - How do you think your culture differs from other Latino cultures regarding sleep and bedtime rituals, nighttime behaviors?
 - How do you think your culture differs from other non-Latino cultures regarding sleep and bedtime rituals?
- Participants' recollection of how they learned about sleep/how does one develop sleep knowledge in their culture?
 - How did you learn about sleep?
 - In your culture, how do people develop sleep knowledge? Who are the culture teachers?
- Participants' perception of how sleep deficiency affects cognition and health?
 - How does not getting enough sleep affect your thinking, your concentration, and your attention?
 - How does not getting enough sleep affect your physical health? How does it make your body feel?
- Participants' perceptions of how the experience of immigration affected their sleep?
 - If you came to the United States from another country, can you share with us how the experience of immigration affected or continues to affect your sleep?
 - Follow-up probe: Thoughts about how recent national policies and national news regarding immigration have affected their sleep.
 - Has any of the national news coverage about immigration affected your sleep?
- Participants' perceptions of how the experience of discrimination affects their sleep?
 - Have you ever experienced discrimination, and if so, has that affected your sleep?
- Participants' perceptions of how the experience of neighborhood experiences, safety, and the built environment affect their sleep?
 - Do you have any concerns about the safety of your neighborhood that affect your sleep?
 - Are there any other neighborhood factors that affect your sleep? Some examples could be noise, construction, lights, or other factors that I have not mentioned.
- PROBE: Is there anything about sleep that I didn't ask about that you wish I did?

Received October 17, 2022

Revision received June 20, 2023

Accepted July 26, 2023 ■