HISPANIC LEP PATIENTS' PERCEPTIONS OF PHYSICIANS' INTERPERSONAL COMMUNICATION HABITS AS MEDIATORS OF MEDICAL TEST DELAYS

by

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ABSTRACT

Patients with LEP status (LEP) often face barriers to healthcare that occur; as a result, reduced rates of health insurance and other social determinants of health barriers related to socioeconomic status (Gulati and Hur 2021). This study aims to assess the effects of LEP status on reports of medical test delays. Additionally, this study uses a two-step approach to identify how interpersonal communication mediates the effects of LEP status and medical test delays. This study also aims to understand this relationship from the perspective of Hispanic LEP patients with diabetes. This study contributes to the literature by isolating the mechanisms of interpersonal communication that can lead to delays in medical care for Diabetic Hispanic LEP (DHLEP) populations. The analysis uses a sample (n=309) from the Developing the PROMIS-Preference Score for Monitoring Population Health Outcomes, United States (Hanmer 2017).

The sample was specified only to include patients who reported being diagnosed with diabetes. The analysis method includes using an inverse odds ratio weighted mediation that assesses the causal effects of linguistic preference on medical tests mediated by perceived interpersonal communication.

The initial results indicate that DHLEP patients' perceptions of factors related to interpersonal communication mediate at least 40% of the relationship between LEP status and medical test delays. Future research should assess if interpersonal communication mediates this relationship for other (e.g., patients who speak a language other than Spanish) LEP patient populations.

Chapter 1

INTRODUCTION

Research has shown that those who are Limited English Proficient[1] (LEP) have an increased risk of experiencing adverse health outcomes in hospital settings, including an increased likelihood of moderate to severe harm (Divi et al. 2007).

The United States has a diverse population of many different cultures, ethnicities, and languages and a thriving immigrant population. However, the healthcare system has yet to adapt to a multilingual nation. The latter can have dire consequences considering that as of 2021, 46% of the immigrant population in the US reported being LEP (Ward and Batalova 2023). Proven interventions to address barriers to care for LEP populations include encouraging bilingualism through pay incentives (Fernandez and Pérez-Stable 2015). For instance, the Kaiser Permanente health system provides pay incentives for Spanish-speaking physicians (Fernandez and Pérez-Stable 2015). Physician bilingualism can have a direct impact on patient care. One study found that physician and patient language concordance reduced LEP patients' diabetes-related hospitalizations and emergency room (ER) visits.

As of 2021, 19.9 million immigrants identify as Hispanic[2]; among all immigrants, 61% report speaking Spanish, including those who are bilingual (Ward and Batalova 2023). Not only do Hispanic populations make up a large portion of the LEP patient population, but they also are more likely to experience health barriers due to perceived immigration status, implicit

[1] Respondents' language preference was categorized according to their choice of the language used to complete the survey (English /Spanish)

[2] "Pew Research Center defines "Hispanic" as individuals who speak Spanish and/or are from Spanish speaking countries (Lopez et al. 2022).

racial biases, and high rates of uninsured status (Escobedo, Cervantes, and Havranek 2023; López et al. 2015).

In many instances, barriers to care are most pronounced within physician and patient language discordant interactions (Beach et al. 2010; Wilson et al. 2005). On the systemic level, a lack of interpreters and restricted physician schedules result in physicians "getting by" with the use of informal modes of interpretation (e.g., family and friends) (Diamond et al. 2009; Hsieh 2015).

On the interactional level, research has shown that Hispanic LEP patients report a lack of bilingual administrative staff as a barrier to care (Yeheskel 2019, Escobedo 2023). Hispanic LEP uninsured patients are less likely to be referred to specialists because of their uninsured status (Breathett et al. 2018). Research in this area reflects that Hispanic LEP patients are less likely to report that physicians listen to them (Schenker et al. 2010). Other research indicates that when relying on formal interpretation methods, Hispanic LEP patients are less likely to be knowledgeable about the potential adverse outcomes of uncontrolled diabetes (Wagner, Abbott, and Lacey 2005).

Recently, there has been a resurgence of studies that aim to understand Hispanic LEP patients' barriers to care due to the disproportionate impact of Covid-19 on Hispanic populations. For example, Black and Hispanic patients have been disproportionately affected by Covid-19, including higher death rates among Black and Hispanic populations (Mackey et al. 2021) and worse hospitalization outcomes for LEP patients (Wang et al. 2022). In their study, Wang et al. (2022) found that LEP patient status predicted hospitalization outcomes independent of other covariates (e.g., age, race/ethnicity).

In this study, I use a nationally representative sample of Hispanic LEP individuals to assess to what extent interpersonal communication mediates the effect of LEP status on delays

in medical testing. Additionally, to better understand the effects of interpersonal communication on chronic care management, my sample only includes individuals diagnosed with diabetes.

This study contributes to the literature in two primary ways: 1.) I utilize an inverse odds-weighted ratio mediation strategy to understand the natural -direct effects of Hispanic LEP status on medical test delays which assists in understanding the magnitude of the effect of interpersonal communication on medical test delays. 2.) My analytical model measures six aspects of physician interpersonal communication related to perceived listening habits, knowledge, respectfulness, time and attention, clarity of educational materials, and the ability to explain medical information. By assessing each of these aspects, I can identify the mechanisms most likely to predict delays in follow-up medical treatment.

In the literature review, my primary objective is to synthesize the literature of multiple disciplines that examine patient and physician interactions. More specifically, my framework is influenced by conceptions of the voice of the lifeworld (Mishler 1984; West and Mishler 1986) and cultural health capital (Shim 2010). My work is also influenced by Lutfey and Freese's (2005) research on the importance of care continuity and physician rapport in diabetes care management. Lastly, I include insights from Menjivar's (2022) axis of inequality framework.

The axis of inequality is a term coined by scholar Cecilia Menjivar (2022) to make sense of how binary conceptions of legal status contribute to chronic stress and lead to barriers in healthcare access for Hispanic populations. Similar to Menjivar's work, migration, medical sociology, and public health scholars are interested in identifying the most common causes of adverse health outcomes among LEP populations. The joint efforts of scholars in these areas highlight the importance of addressing these issues from multiple vantage points.

In the following section, I begin with an overview of the existing theoretical frameworks commonly used to explain the effects of implicit bias, cultural health capital (Shim 2010), and physician rapport on patient and physician interactions. This discussion will be followed by an overview of the "Hispanic Paradox" debate to consider the role of an alternative theoretical assumption that is relevant to research related to Hispanic LEP barriers to care. Lastly, I provide evidence to support my decision to limit my sample to diabetic patients.

In sum, an overview of the literature in these areas will provide additional context to the decision-making processes used to construct my analytical model. In the discussion section, after analyzing the results of the study, I introduce the concept of codified bias to illustrate the potential direction of future work on LEP barriers to care. Codified bias is a conceptual framework that considers the impact of the social construction of legality, systemic challenges, and implicit bias on the perceived interpersonal communication patterns between primary care physicians and LEP patients.

Chapter 2

REVIEW OF THE LITERATURE

Existing Theoretical Frameworks: Cultural Health Capital

The initial conception of cultural capital (Bourdieu 1984) refers to individual ascribed or achieved characteristics rooted in class-based tastes and preferences. Cultural health capital (Shim 2010) builds on Bourdieu's initial conception of cultural capital and refers to patients' ability to self-advocate for the best treatment. Patients with high levels of cultural health capital can utilize their knowledge of clinical practices and physician habits to advocate for better care (Shim 2010). Cultural health capital is often taken for granted and can impact how physicians view patients. An example of the latter can be found in Anspach's (1988) observation of physician life and death decision-making processes in critical care nurseries. Anspach (1988) notes:

> In both nurseries, staff consciously adjusted their vocabularies according to parents' perceived educational attainment, or what was called the parents' "medical sophistication. "In the medical metaphor used by an attending at rounds, "Let's find out the level of the parent's education, and according to that, we will titrate the information we give them. (105:1988)

In this example, when healthcare personnel "titrate" information (Anspach 1988) based on perceived levels of education, patients who cannot communicate end up making uninformed decisions. In this case, perceptions of cultural health capital are influenced by individual access to education and by the availability of organization-level tools (e.g., interpreter services) that alleviate communication barriers between LEP patients and healthcare personnel.

Other research highlights instances in which parents utilize cultural health capital to advocate and identify life-saving treatment options for their chronically ill children (Gengler 2014; Seid, Stevens, and Varni 2003; Sobo, Seid, and Gelhard 2006). The ability to leverage cultural health capital can impact life and death decision-making. Also, cultural health capital

and health literacy can benefit patients with complicated illnesses like diabetes (Lutfey and Freese 2005; Shim 2010).

Cultural health capital is an important tool and can be used effectively to close gaps in care management. LEP patients should be given an equal opportunity to utilize cultural health capital to buffer the potential effects of implicit bias or gaps in patient and physician communication. This study assists in identifying the gaps in patient and physician communication for Hispanic LEP patients diagnosed with diabetes. It is important to understand the mechanisms that lead to Hispanic LEP barriers to care.
This study can also assist in minimizing preventable adverse health outcomes for all LEP patient populations.

Furthermore, it is critical that we work toward providing a support system for LEP patients so that they can leverage their cultural health capital and effectively advocate for themselves. To this end, I aim to identify patients' perceptions of physicians' use of rapport-building because these types of insights can influence patients' advocacy habits and discourage follow-up care. Thus, in the next section, I explore Mishler's (1984) foundational conception of the voice of the lifeworld to situate my study within the broader literature on patient and physician communication habits. Mishler's work is especially relevant to my research because he provides a foundational basis for understanding the structure of medical discourse between patients and physicians. His conception of *voice of the lifeworld* simply aims to highlight the need for physicians to consider patients' unique and lived experiences (Mishler 1984). Effective interpersonal communication requires a joint effort between the patient and the physician. Studies that assess patients' perceptions of interpersonal communication underscore the continued importance of patients' individual experiences.

Existing Frameworks: Voice of the Lifeworld and Patient-Centered Care

In Mishler's 1984 manuscript, *The Discourse of Medicine,* his main objective is to challenge communication patterns that are based on the technical aspects of patient care (e.g., test results, medications, vital signs). He does not aim to undermine the importance of the technical aspects of care. His conceptualization of the voice of the lifeworld considers the relevance of patients' perspectives in healthcare decision- making (Mishler 1984).
Epstein (2005) builds on Mishler's insights and creates a formal model of patient-centered care that emphasizes a few important aspects related to this study: 1.) centering patients' needs and 2.) providing opportunities for joint care planning as well as considering the psychosocial needs of the patient. Both Mishler and Epstein (2005) agree that physicians must consider the social and psychosocial contexts of patient care. Mishler (1984) provides a relevant example of a potential motivation for physicians to ignore patients' insights. He notes, "for example, the strong tendency for physicians to ask closed- rather than open-ended questions is interpreted as serving the function of maintaining control over the content of the interview." (1984:295). In addition to utilizing close-ended questioning, Mishler notes that discourse between patients and physicians follows a strict structure that limits patients' expressions beyond technical aspects of care.

Epstein's (2005) research on the effectiveness of patient-centered care signals that physician and patient communication habits are becoming less strict and are moving beyond the habits first described by Mishler. However, for Hispanic LEP patients, physician and patient communication lacks the organizational support (e.g., physician training and reliable interpretation tools) to move beyond communication structures that prioritize the technical aspects of care. It is imperative that Hispanic LEP patient and physician communication habits move beyond the technical aspects of care to incorporate the voice of the lifeworld.

Recent evidence of this need is underscored by the fact that Hispanic LEP patients are

more likely to be affected by social determinants of health barriers that fall outside the biomedical influences of health and disease (Gulati and Hur 2022).

Additionally, an overreliance on the technical aspects of care reduces patient satisfaction (Roter et al. 1997). Research must continue to explore the lived experiences of Hispanic LEP patients to identify how lived experiences exacerbate barriers to care.

My research will add to the literature in this area by considering the dual mechanisms of LEP status and interpersonal communication habits. However, for Hispanic LEP populations, issues related to language barriers account for only one aspect that could influence barriers to care. For example, implicit racial bias can influence barriers to care, and health disparities related to medical decision-making. Research related to implicit racial bias will not serve as a primary focus of this study, but it is important to consider, nonetheless.

Implicit Racial Bias and LEP Patient Care

Implicit racial bias differs from explicit forms of racial bias, such as overt discrimination (e.g., denying services because of race). Implicit bias is often subconscious. Implicit racial biases also impact medical decision-making processes (Chapman, Kaatz, and Carnes 2013; Guedj et al. 2021; Hagiwara et al. 2017). Race scholars argue that implicit racial bias is more common because we live in a color- blind society (Bonilla-Silva 2003). In other words, most people know that racism is problematic and actively try to avoid being racist. However, perceptions about racial differences are often ingrained and influenced by individual experiences and belief systems that are racially biased.

Patient and physician interactions mediate implicit racial biases within the healthcare system (Jones 2000). There is limited research on the impact of LEP status on perceptions of implicit bias within the healthcare system. The data used in this study do not include variables related to perceptions of implicit bias. However, we can infer from the literature in this area that

LEP patients experience delays in treatment (Himmelstein 2022). Research in this area indicates a need for additional studies to understand how implicit biases relate to LEP status and impact patient and physician communication habits.

For example, in Chapman et al.'s (2013) review of research that utilizes the Implicit Associations Test[3] to predict physician bias, they note that in one study, Hispanic patients were seven times less likely to receive pain medication when assessed by emergency department physicians (Todd et al. 1993 as cited in Chapman et al. 2013). Racial disparities also exist in physician prescribing habits for opioid and analgesic therapy (i.e., pain medicine) (Benzing et al. 2020).

A study conducted by Shah et al. (2015) also reflects disparities in analgesic access among minority patients. In Shah et al.'s study, not only did Hispanic patients experience prolonged emergency department wait times, but the differences in wait times were almost equivalent for Black and Hispanic patients, with the weighted average among Blacks who experienced longer wait times at 30.6% and Hispanics at 30.5% compared to white patients. (Shah et al. 2015). Shah et al. hypothesize that for Hispanic patients, delays in care could be related to attempts to address the interpretation needs of Hispanic LEP patients. Other research in this area supports Shah et al.'s hypothesis. For instance, in his study that compared LEP patients' length of admission with English-proficient patients, Lopez (2015) found that out of 564 LEP patients in the sample, "65.8% never had a documented interpreter visit" (Lopez 2015:784). The latter indicates that delays in care are not necessarily indicators that efforts are being made to ensure equitable care access. Existing research provides a glimpse of the

[3] The Implicit Association Test predicts implicit bias by making physicians categorize photos of patients as "good" or "bad" and measures the speed of their association. For instance, if physicians are more likely to associate male patients with "bad" this would indicate an implicit bias against male patients. Nosek, B. A., Greenwald, A. G., Banaji, M. R. (2007)

influence of language differences and implicit racial bias on medical decision-making.

As additional evidence, the results of Breathitt et al.'s (2018) systematic evaluation of qualitative studies published between 2000-2017 exploring physicians' perspectives of the treatment of Black and Hispanic patients revealed that language differences (i.e., communication barriers with non-Hispanic speaking physicians) were not identified as a pertinent theme (Breathett et al. 2018). Existing research in this area has yet to identify the mediating effects of language alone and the impact of LEP status on perceived interpersonal communication patterns between patients and physicians.

After reviewing the literature on Hispanic health outcomes, it is clear that assumptions related to the Hispanic paradox shift research away from studies that assess barriers to care for Hispanic LEP patients. In the next section, I give a brief overview of the current debate centered on the Hispanic paradox in an effort to provide context to my analysis that addresses barriers to care for Hispanic LEP populations.

Critiques of the "Hispanic Paradox"

The Hispanic paradox refers to the relative health advantages of Hispanic populations compared to non-Hispanic whites (Abraído-Lanza, Chao, and Flórez 2005; Boen and Hummer 2019; Fernandez, García-Pérez, and Orozco-Aleman 2023; McDonald and Paulozzi 2019). For instance, despite lower household income on average and lower rates of insured individuals, Hispanics have a life expectancy of 3 years longer than non- Hispanic Whites (Fernandez et al. 2023). Native-born Hispanic populations' health worsens the longer they reside in the United States (Boen and Hummer 2019; Read et al. 2012). Read, and Reynolds (2012) theorize that the latter occurs because of "[…] the erosion of cultural and protective factors" (2012:101). Including native-language health education literature as a potential protective factor could be

beneficial.

My study supplements the ongoing debate about the relevance of the Hispanic paradox (Abraído-Lanza, Chao, and Flórez 2005; Boen and Hummer 2019; Fernandez, García-Pérez, and Orozco-Aleman 2023; McDonald and Paulozzi 2019), particularly in regard to physician and patient interactions and barriers to care. It is important to challenge the relevance of this theory because assumptions about Hispanic health outcomes could diminish research in Hispanic LEP-related health disparities.

Emerging research specifically interrogates these assumptions of the Hispanic paradox. For example, McDonald and Paulozzi (2019) argue against the assumption that all Hispanics have reduced mortality rates because this assumption does not account for the disease-dependent variation in mortality rates. For instance, Hispanics may have lower mortality rates for those with some forms of cancer and respiratory diseases, but their results indicate higher mortality rates for those who suffer from diabetes and other diseases (e.g., liver disease) (McDonald and Paulozzi 2019).

Additional results of their model indicate the cause of death from diabetes is 20.12 per 10,000 among non-Hispanic Whites and 30.6 per 10,000 for Hispanics, after controlling for socioeconomic status and education (McDonald and Paulozzi 2019).

Additional research needs to analyze the specific mechanisms that contribute to the disproportionate rates of diabetes among foreign-born populations. Diabetes is a complicated disease, especially when individuals face barriers due to age or immigration to a new country.

Furthermore, diabetes causes diabetic kidney disease and end-stage kidney disease, which inhibit the kidneys from properly filtering the blood (Doshi and Friedman 2017). Diabetic kidney disease occurs in individuals with long-term unmanaged diabetes (Doshi and

Friedman 2017). Given these implications, analyzing factors that could function as barriers to care among LEP foreign-born individuals is vital to reduce the risks of chronic comorbidities. Lastly, it is important to consider how these differ among Hispanic ethnic groups. For instance, research indicates that Hispanic LEP patients have a higher likelihood of reduced blood glucose control overall (Aceves et al. 2022) and in the case of language- discordant physician- patient relationships (Fernandez et al. 2004). In my study, my sample only includes Hispanic LEP patients who have been diagnosed with diabetes. The last portion of the literature review provides rationale and evidence to underscore the need to study barriers to care for Hispanic LEP patients.

The Relevance of Diabetes Care for DHLEP Populations

Diabetes is a preventative disease affecting 11.3% of the US population (Centers for Disease Control and Prevention 2022); this percentage does not include undiagnosed individuals or those with prediabetes. Additionally, one study reports that the US Hispanic population has higher rates of diabetes than White, non-Hispanic populations, "Hispanics with type 2 diabetes represent an estimated 12.1% of the US Hispanic population or 6.5 million persons' (LeBrón et al. 2019). Additionally, studies have highlighted an increased prevalence of diabetes among foreign-born populations (Choi, Narayan, and Patel, 2022; Hsueh et al. 2020).

We must begin to work to better understand the barriers to care for the most vulnerable populations, including patients with LEP status. It is possible to have diabetes for years without knowing it, and without the proper treatment, uncontrolled blood glucose levels can lead to adverse health outcomes (Okemah, Peng, and Quiñones 2018). My last point directly relates to patients with LEP status in the following ways: 1.) Patients with LEP status may not have access to health education resources in their native language. 2.) To effectively manage

diabetes, it is imperative that patients have the ability to build strong interpersonal relationships with their primary care physicians. In one study, DHLEP patients' access to formal interpretation services significantly predicted their knowledge of heart disease risks related to diabetes (Wagner, Abbott, and Lacey 2005). Specifically, patients that used family members or friends as interpreters were less likely to be knowledgeable about heart disease risks (Wagner et al. 2005). An additional theme in the literature points to the impact of the social determinants of health on diabetes risks and management. Research in this area shows that social determinants of health barriers, including food insecurity, housing instability, and financial insecurity, worsen adverse health outcomes related to diabetes (Egede et al. 2022; Lutfey and Freese 2005). Notably, Lutfey and Freese (2005) studied the link between socioeconomic status and adverse health outcomes related to diabetes in their foundational case study of diabetes health clinics. The results of their study also highlight the importance of frequent and effective physician consultation, continuity of care, and rapport building in preventing diabetes-related adverse health outcomes (Lutfey and Freese 2005). Tellingly, in Lutfey and Freese's (2005) study, perceptions of non-compliance among diabetic patients were perceived by physicians as "psychological differences in patient motivation" (2005:29). Patient characteristics such as race or ethnicity and language influence these perceptions.

Recently there has been renewed interest in reorienting patient and provider communication as a focus within medical sociology. To be more specific, the main objective is to center the "social mechanisms" of inequality (Timmermans 2020, p.268). Research in this area should revisit the impact of perceived interpersonal communication among diabetic patients.

Diabetic Clinical Inertia and Patient Care

Research in diabetes care management underscores the importance of consistent care,

especially for patients who have difficulty managing their blood glucose levels. Clinical inertia, in sum, is a term used to indicate gaps in care continuity because "[…] health care providers often do not initiate or intensify therapy appropriately during visits of patients with these problems." (Phillips et al. 2001:825). Problems related to clinical inertia are especially relevant for LEP patient populations because, among patients with diabetes, Schenker et al. (2010) found that patients with LEP status reported that physicians were less likely to listen to their concerns. For example, suppose a patient with LEP status is unable to tolerate a prescribed medication and therefore does not take it. In that case, the physician may not listen to the patient's concerns and may even consider the patient to be non- adherent. In this case, the physician should listen to the patient's concerns and provide alternatives if possible. These are the sorts of actions that can reduce instances of clinical inertia.

Lastly, LEP patients were more likely to report being treated poorly due to their race or language preference (Schenker et al. 2010). Due to the compounding effects of language preference and perceived ethnicity, it is essential to consider the role of clinical inertia and patient and physician communication among DHLEP patients.

My research will fill a gap in the literature by building a model that explicitly assesses the mediating effects of perceived physician interpersonal communication on barriers to care among Hispanic LEP patient diabetic populations. The following questions will frame my analysis: 1.) To what extent do patients' LEP status and race (e.g., listening, knowledge, communication, etc.) with primary care physicians affect the ability to obtain follow-up medical tests? 2.) And to what extent do mechanisms related to interpersonal communication mediate such potential effects of LEP patients (Spanish/ English) and medical test delays? 3.) What are the interactional effects of perceived measures of dual-functioning interpersonal communication mechanisms?

Chapter 3

METHODOLOGY

The Developing PROMIS Preference Score for Monitoring Population Health Outcomes (Hanmer 2017) is a nationally representative survey with 4,142 respondents. The secondary data was collected via surveys administered online and over the phone. The survey includes self-rated measures of health. Additionally, the data includes information from a nationally representative survey of individuals aged 18 and older. This includes data from the National Opinion Research Amerispeak Panel and includes a language variable related to language preference. Additionally, the data includes demographic variables (i.e., income, age, education, and insurance status). The data were collected in December of 2017 and therefore are not reflective of the evident changes to patient care that may have occurred as a result of Covid-19.

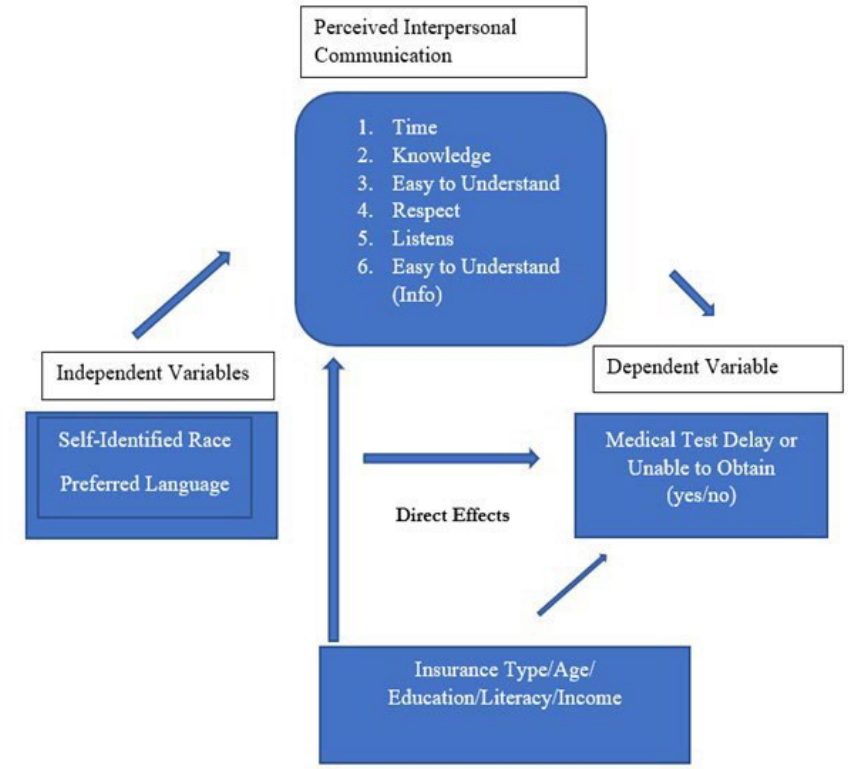
This study will assist in conducting an analysis that explores the effects of patients' perceptions of their interpersonal relationships with their primary care physicians and medical test delays. This study takes a two-step process. In the first step, it explores the associations between self-identified race and LEP and medical test delay through a logistic regression modeling approach. In the second step, it assesses the mediating effects of elements of interpersonal communication on the direct effects of race/ethnicity and LEP on medical test delays through an inverse odds-weighted ratio strategy. This type of approach is meant to highlight these complex pathways.

Inverse odds ratio weighted mediation assesses the causal effects of linguistic preference and racial identity on delays in medical treatment mediated by perceived interpersonal communication. The analytical technique conceptualized by Tchetgen Tchetgen (2013) is influenced by the foundational work of Pearl (2012) and expands upon their causal mediation formula that centers on the natural direct and indirect effects of, in this case, linguistic preference and racial identity, in my example, on the medical delays. My analysis

technique is also influenced by the work of Nguyen et al. (2015) and Hossin et al. (2019), and Plante (2022**).** Specifically, Nguyen et al. (2014) note that the inverse odds-weighted ratio method assists in maintaining the assumption that the treatment and mediators are independent.

To summarize the logistic regression and mediation analysis, I introduce figure one. 1. Figure 1 shows the direct effects of race and LEP on medical test delays. The direct effects in this case refer to the effects of race or language on medical test delays after controlling for variables that could influence the relationship. These are traditionally shown in a logistic regression model (table 2). Figure 1, however, further demonstrates that these effects of race/LEP could be mediated by IPC. The IORW approach allows us to mary martdetermine the magnitude and size of these mediating effects on experiencing a medical test delay.

Figure 1. Directed Graph of the Assumed Relationship Between Variables



Outcome Variable

This study relies on one outcome variable: medical test delay. The medical test delay variable was created from combining two binary variables related to medical test delays. The first variable asks respondents, "*In the last 12 months, were you delayed in getting medical care, tests, or treatment."* The second variable asks respondents "*In the last 12 months, were you unable to obtain medical care, tests, or treatments you or a doctor believed necessary?* The combination of the two variables resulted in a simplified binary variable in which respondents indicate yes if they have experienced a delay or were unable to obtain follow-up care and no if they were not.

Key Independent Variable

This study focuses on two independent variables that measure direct effects: race/ethnicity and preferred language. This primary focus on this paper is to assess the effects of Hispanic LEP status on medical test delays. The secondary independent variable includes respondents' self-identified *race.* Each respondent was required to select their race. Next, respondents' *language preference* was categorized according to their choice of the language used to complete the survey. To be more specific, the respondents had the choice to complete an online, or telephone survey in English or Spanish. While it is true that language preference does not equate to proficiency, the results of the logistic regression indicate the probable influence of language preference on medical test delays given the differences between White English preferred respondents and Spanish preferred respondents. The two variables were selected in an effort to assess Hispanic LEP barriers to care, and the race model is only used for comparison but is not the central focus.

Key Mediating Variables

Next, this study takes interest in six mediating variables between the relationships of the key independent variables of race/ethnicity and preferred language on the outcome of medical test delay. The six mediating variables include binary variables that are indicative of respondents' perceptions of interpersonal communication with their primary care physicians. The six mediating variables include:

1. How often does the following occur with the health care provider you see most *(The provider listens carefully to you)?*
2. How often does the following occur with the health care provider you see most *(The provider shows respect for what you have to say)?*
3. How often does the following occur with the health care provider you see most? *(The provider knows about your health)?*

4. How often does the following occur with the health care provider you see most *(The provider spends sufficient time with you)?*
5. How often does the following occur with the health care provider you see most *(The provider explains things in a way that is easy to understand)?*
6. How often does the following occur with the health care provider you see most (The provider gives you easy-to-understand information about these health questions or concerns)?

The respondents answered on a scale of 1-5 (i.e., 1=Always, 5=Never); thus, higher scores are associated with lower ratings of positive perceptions of interpersonal communication.

These six variables are related to one another. To illustrate, as a robustness check, descriptive polychoric factor analysis showed that the six variables factor loading scores ranging from .668 to .71, pointing to the idea that these responses are related to one another. A factor score of 3.33 further serves as evidence that the following question variables allude to underlying concepts related to perceived interpersonal communication as aspects of patient care.

Control Variables

The study introduces six control variables. Covariates include age as a continuous variable and income, a binary variable for individuals who make above or below $59,000 per year. This amount was selected because 85% of the sample had an income that was at or below $59 000 per year. Additionally, the model includes education as a categorical variable (i.e., No high school diploma, high school graduate, some college, and bachelor's or above), literacy level, and insurance status. Insurance status will include Medicare,

Medicaid, and private insurance. Research that explores population-level indicators of health disparities indicates socioeconomic status as important in predicting long-term health disparities (Link and Phelan 1995). Theoretical insights regarding leveraging *cultural health capital* (Shim 2010) indicate that education is also important in predicting barriers to care and health disparities. Insurance status could be an additional contextual factor affecting the analysis results.

Current research highlights delayed or forgone care instances among Black and Hispanic populations in states that opted out of Medicaid expansion (Clark et al. 2016). Lastly, age will be included because research highlights age as a potential protective factor in instances of negative interpersonal experience during physician and patient interactions (Vervaecke and Meisner 2021).

Analysis Method

Inverse Odds Weighted Mediation

Inverse odds ratio weighted mediation assesses the causal effects of linguistic preference and racial identity on delays in medical treatment mediated by perceived interpersonal communication. The analytical technique conceptualized by Tchetgen Tchetgen (2013) is influenced by the foundational work of Pearl (2012) and expands upon their causal mediation formula that centers on the natural direct and indirect effects of, in this case, linguistic preference and racial identity, in my example, on the medical delays. My analysis technique is also influenced by the work of Nguyen et al. (2015) and Hossin et al. (2019), and Plante (2022). Specifically, Nguyen et al. (2014) note that the inverse odds-weighted ratio method assists in maintaining the assumption that the treatment and mediators are independent.

The first six models of my analysis include a language (i.e., English/Spanish)

preference variable results as the exposure and delays in medical treatment as the binary outcome variable. Each of the six question variables recoded into binary variables serve as the mediators. The next set of models include the results of the self- identified race (i.e., binary variable White=1) variable as the exposure and delays in medical treatment as the binary outcome variable. Additionally, each of the six question variables were utilized as a mediator. The last model consists of the interaction of the mediated effects of perceived communication related to the question variable related to interpersonal measures of knowledge and respect.

Table 1. presents the descriptive statistics of persons with chronic diabetes in the sample. The statistics are weighted, according to the survey administraters. This weighting allows for the generalizability of the findings to the population.

Variable	Observation	Weight	Mean	Standard Deviation	Min	Max
DelayedorUnable	309	290.24	.156	.363	0	1
White	309	290.24	.671	.470	0	1
Hispanic	309	290.24	.135	.342	0	1
Black	309	290.24	.114	.319	0	1
Spanish	309	290.24	.033	.180	0	1
					0	
Education						
No HS	309	290.24	.136	.344	0	1
HS	309	290.24	.288	.453	0	1
Some College	309	290.24	.322	.468	0	1
Bachelors	309	290.24	.252	.435	0	1
Insurance						
Private	309	290.24	.540	.499	0	1
Medicare	309	290.24	.507	.500	0	1
Medicaid	309	290.24	.172	.378	0	1
Military	309	290.24	.051	.221	0	1
Age	309	290.24	60.3	13.4	21	90
HighTrustorNot	309	290.24	.404	.491	0	4
Explains	309	290.24	1.47	.638	1	5
Listens	309	290.24	1.55	.730	1	5
EasytoUnderstand	309	290.24	1.57		1	5
Know		290.24	1.50	.650	1.	5
Respect	309	290.24	1.37	.645	1	5
Time	309	290.24	1.58	.781	1	5
Literacy Difficulty	309	290.24	.271	.445	0	1
IncomeBelow59k	309	290.24	.850	.356		
DiabetesCases	309	290.24			1	0

Chapter 4

FINDINGS

The results of the binary logistic regression model, which included Spanish as the exposure and delays or inability to complete medical treatment as the outcome, indicate that the odds of the respondent reporting that they had been unable to obtain medical treatment/testing or experienced a delay in receiving treatment increased by 97%. The latter is true specifically for respondents who completed the survey in Spanish net of education, literacy level, age, insurance type, and income. The latter is not a significant result, but this result can give insights into the role interpersonal communication plays in mediating barriers related to care among DHLEP populations. In this model, age is the only significant result and appears to serve as a protective factor against medical test delays.

Table 2. Results of Logistic Regression Model of Medical Test Delays and Race

DelayorUnable	OR	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
White	1.054	.48	0.12	.907	.432	2.575	
Hispanic	1.024	.566	0.04	.966	.347	3.025	
Literacy Difficulty	.778	.3	-0.65	.516	.365	1.658	
Private	.633	.272	-1.06	.287	.272	1.471	
Medicare	.876	.351	-0.33	.742	.4	1.921	
Medicaid	1.98	.874	1.55	.122	.833	4.705	
Military	1.261	.88	0.33	.739	.322	4.947	
Age	.968	.014	-2.26	.024	.94	.996	**
IncomeBelow59k	.774	.334	-0.59	.553	.333	1.802	
Constant	1.74	1.612	0.60	.55	.283	10.692	
Mean dependent var		0.162	SD dependent var			0.369	
Pseudo r-squared		0.072	Number of obs			309	
Chi-square		19.701	Prob > chi2			0.032	

*** p<.01, ** p<.05, * p<.1

Table 3. Results of Logistic Regression Model of Medical Test Delays and Spanish

DelayorUnable	OR	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Spanish	1.976	1.341	1.00	.316	.522	7.475	
Literacy Difficulty	.715	.284	-0.85	.398	.328	1.556	
Private	.671	.288	-0.93	.352	.289	1.556	
Medicare	.91	.366	-0.23	.815	.414	2.001	
Medicaid	1.956	.863	1.52	.129	.823	4.645	
Military	1.315	.918	0.39	.695	.335	5.164	
Age	.967	.014	-2.32	.02	.94	.995	**
IncomeBelow59k	.774	.331	-0.60	.548	.334	1.789	
Constant	1.776	1.579	0.65	.518	.311	10.144	
Mean dependent var		0.162	SD dependent var			0.369	
Pseudo r-squared		0.075	Number of obs			309	
Chi-square		20.633	Prob > chi2			0.014	

****p<.01, **p<.05, *p<.1*

The results of the binary logistic regression model, which included white (other as the reference category) and Hispanic (other as the reference category) as the exposures and medical delays or inability to complete medical treatment as the outcome, indicate that the odds of the respondent reporting that they had been unable to obtain medical treatment increased by .02 % for Hispanics and .05% for whites.

These results were insignificant; however, similar to the Spanish model, age was again significant at the .05 level.

Table 4. IORW Mediation diabetic cases=1 (Spanish)

Mediators Included	Effect Indirect Direct Total	Coeff	Beta	[95% Conf (BC)	Interval]	Percent Total Effects
	Indirect	-.46	.63	-2.04	1.12	49.77%
Respect	Direct	1.54	4.68	-1.38	6.57	
	Total	1.08	2.95	-1.44	3.60	
						61.39%
Listen	Indirect	-.647	.52	-2.11	4.27	
	Direct	1.73	5.64	-1.60	- 5.06	
	Total	1.08	2.95	-1.01	1.01	
	Indirect	-.46	.63	-3.49	.325	42.55%
Time	Direct	1.54	4.68	-.59	-6.30	
	Total	1.08	2.95	1.42	3.18	
	Indirect	-.82	.44	-2.81	1.17	75.73%
Knows	Direct	1.90	6.71	-1.67	5.48	
	Total	1.08	2.95	2.11	4.27	
	Indirect	1.08	99	-1.11	1.09	1.01%
Easy	Direct	1.09	2.99	-2.25	4.44	
	Total	-.010	2.95	-2.11	4.27	
	Indirect	-.645	.52	-2.30	1.01	59.63%
Explain	Direct	1.72	5.63	-1.60	5.05	
	Total	1.08	2.95	-2.30	1.01	
KnowsxListen	Indirect	-.885	.041	-3.62	1.23	81.80%
	Direct	1.96	7.16	-1.02	4.85	
	Total	1.08	2.95	-.939	3.181	

Table 5. IORW Mediation diabetic cases=1 (White)

Mediators Included	Effect Indirect Direct Total	Coeff	Beta	[95% Conf (BC)	Interval]	Percent Total Effects
Respect	Indirect	.001	1.00	.-0625	.294	1.13 %
	Direct	-.101	.90	-1.14 -	.678	
	Total	-1.365	.91	1.40	.812	
Listen						.93%
	Indirect	.001	1.00	-.084	.288	
	Direct	-.190	.83	-1.09	.577	
	Total	-.188	.83	-.084	.288	
Time	Indirect	.001	1.00	-.084	.288	.93%
	Direct	-.190	.83	.971	.577	
	Total	-.188	.83	.972	.588	
Knows	Indirect	-.007	.99	-.441	.135	3.74%
	Direct	-.181	.83	-1.40	.515	
	Total	-.007	.83	-1.35	.540	
Easy	Indirect	.121	1.13	-.972	.588	64.25%
	Direct	-.310	.73	-1.48	4.23	
	Total	-.188	.83	-2.11	4.27	
Explain	Indirect	.-.128	1.14	-.094	.554	68.06%
	Direct	-.317	.73	-1.12	.607	
	Total	-.188	.83	-1.35	.540	

Perceived Listening Habits as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 61.39% of the total effects are mediated through the patient's perception of whether or not their physician listens to them. The direct effects indicate that medical test delays are less common among respondents who identified as white compared to those who identify as another race. Additionally, only .9% of

the total effects are mediated through the patients' perceptions of whether or not their physician listens to them.

Perceived Respect as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 49.77% of the total effects are mediated through the patient's perception of whether or not their physician shows respect for what they have to say. The direct effects of this model indicate that medical test delays are less common among respondents who identified as white as compared to those who identified as another race. Additionally, only 1.3% of the total effects are mediated through the patients' perceptions of whether their physician shows respect for what they have to say.

Perceived time and attention as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 42.55% of the total effects are mediated through the patient's perception of whether or not their physician spends sufficient time with them. The direct effects of this model indicate that medical test. delays are less common among respondents who identified as white compared to those who identified as another race. Additionally, only .93% of the total effects are mediated through the patients' perceptions of whether their physician spends sufficient time with them.

Perceived of Knowledge as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 75.73% of the total effects mediated through

the patient's perception of whether or not their physician knows about their health. The direct effects of this model indicate that medical test delays are less common among respondents who identified as white as compared to those who identified as another race. Additionally, only 3.74% of the total effects are mediated through the patients' perceptions of whether their physician knows about their health.

Perceived Patient Education Efforts as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 59.63% of the total effects are mediated through the patient's perception of whether or not their physician gives them medical information that is easy to understand. The direct effects of this model indicate that medical test delays are less common among respondents who identified as white compared to those who identify as another race. Interestingly, 64.25 % of the total effects are mediated through the patients' perceptions of whether their physician knows about their health.

Perceptions of Verbal Explanation as a Mediator of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 59.63% of the total effects are mediated through the patient's perception of whether or not their physician adequately explains medical information. The direct effects of this model indicate that medical test delays are less common among respondents who identified as white compared to those who identified as another race. Interestingly, 68.06 % of the total effects are mediated by the patients' perceptions of whether physicians provide medical information that is easy to understand.

Perceptions of KnowledgexListening Habits as Mediators of Medical Test Delays

The direct effects of this model indicate that medical test delays are more common among Spanish-speaking patients and that 81.80% of the total effects are mediated through two mediators related to patients' perceptions of physicians' listening habits and perceptions regarding whether or not the physician knows about their health.

Chapter 5

DISCUSSION

The results of my analysis center on three different themes related to the perceived interpersonal communication habits of physicians. These themes include patients' perceptions of trust, rapport building, and patient education efforts. The analysis results also indicate that factors related to perceived interpersonal communication mediate the effects of LEP status on medical test delays. In the following discussion, I utilize the theoretical framing introduced in the literature review to identify how the results relate to perceptions of trust, rapport building, and patient education and influence interpersonal communication habits. Furthermore, I will discuss why these factors especially matter for DHLEP patient populations.

Trust

Perceptions of trust can influence cultural health capital (CHC) use among DHLEP populations. Specifically related to CHC, negative perceptions of physician knowledge can impact DHLEP patients' comfort and ability to self-advocate for equitable care. As a result, physicians can interpret a lack of comfort as disinterest or a lack of "medical sophistication" (Anspach 105:1988). However, perceptions of medical sophistication are highly reliant on the tools available to aid LEP patient communication. The study's results indicate that perceptions of physician knowledge mediate 75.73 % of the relationship between DHLEP patients and medical test delays.

Furthermore, DHLEP patients' perceptions of physician knowledge influence the ability of patients to utilize cultural health capital by discouraging open dialogue. It is essential to encourage open dialogue because patient-centered care, as defined by Epstein (2005), relies on shared communication and patient empowerment. Efforts to promote DHLEP patient empowerment influence patient trust and promote accountability. Additionally, a lack of physician knowledge about DHLEP patients' health status can be

perceived as a general disinterest in the patient. From the patient's perspective, perceived physician mistreatment or disinterest indicates system-wide mistreatment or disinterest.

Physicians are perceived as proxies of the healthcare system. Lutfey and Freese (2005) support this view and identify differences in the continuity of care practices of low-resourced diabetes clinics. In their example, physicians in low- resourced clinics spend less time with patients (Lutfey and Freese 2005). Low- resourced clinics often struggle with establishing efficient continuity of care practices due to factors like high physician turnover (Lutfey and Freese 2005). Physicians' ability to build trust with DHLEP patients is especially important due to the noted health barriers of DHLEP individuals. The example provided by Lutfey and Freese (2005) helps to highlight why patients assume that physician knowledge deficits are indicative of knowledge deficits within healthcare institutions.

As an additional example, the results of this study indicate that perceived interpersonal communication habits related to physician knowledge serve as a reliable indicator of DHLEP patients' ability to complete follow-up care. To this end, it is not uncommon for patients to utilize past experiences and knowledge to navigate healthcare systems and pursue informal forms of self-advocacy, such as choosing not to pursue follow-up care. In this case, cultural health capital extends far beyond the exam room and includes unconventional self-advocacy methods. Patients also use past experiences and knowledge to build rapport with physicians.

The results of this study indicate that nuances in interpersonal communication can substantially influence the ability of DHLEP patients to obtain follow-up care. Additionally, this study can give insight into the specific mechanisms of patient- centered care and care continuity that can impact clinical inertia. These findings are applicable to all patients and can be used by healthcare institutions to improve the overall quality of care.

Rapport Building

Patient and physician communication patterns become imbalanced when physicians focus patient relationships on the technical aspects of care. Relying on the technical aspects of care can be beneficial in the case of acute emergencies due to time constraints. However, LEP patients often deal with time constraints as a result of factors that are outside of their control, such as a lack of interpreter services (Diamond et al. 2009; Hsieh 2015) or lack of physician attention (Schenker et al. 2010). One of the beneficial aspects of technical patient care is that it is reliable. However, despite potential efficiency or reliability, an over-emphasis on the technical aspects of care diminishes physicians' efforts to build rapport with DHLEP patients. A lack of rapport-building reduces motivation to pursue additional treatment.

For instance, the results of this study indicate that 43.55% of the relationship between DHLEP status and medical test delays are mediated by patients' perceptions of the duration of time spent with their physician. The results suggest that rapport building is essential in convincing patients to commit to treatment plans and requires physicians to consider DHLEP patient populations' unique needs.

Rapport building requires that physicians respect patients' lived experiences by listening and responding in a manner that encourages partnership. Promoting these types of relationships, specifically between physicians and DHLEP patients, can work to buffer the compounding effects of implicit racial bias and structural barriers to care that disadvantage DHLEP patient populations. An example of structural barriers includes delays in treatment due to underinsured status (López et al. 2015). To this end, Mishler (1984) notes that physicians can build rapport by encouraging the use of the voice of the lifeworld. By encouraging patient-led interpretations of the technical aspects of care, physician and patient relationships can work to move beyond the constrained structure of the biomedical model and towards communication models that prioritize rapport building.

Additional evidence of the importance of DHLEP patients' perceptions of respect and attentiveness on rapport building is indicated in the results of this study. For example, they indicate that DHLEP perceptions of respect mediate 49% of the relationship between DHLEP status and medical test delays. Furthermore, perceived attentiveness (e.g., time) mediates 42% of the relationship between DHLEP status and medical test delays.

In sum, at the basic level, all patient populations have the right to be listened to and to be respected. Diabetic LEP patient populations are no different. To this end, healthcare institutions should not only work to alleviate physician time constraints, but also healthcare personnel should be made aware of the potential influence of interpersonal communication habits on structural barriers to care. To start, physicians could incorporate educational techniques into their interpersonal communication habits. The final part of my discussion of relevant themes will briefly give insights into perceptions of physician education and how the mediated effects of LEP status on medical test delays.

Patient Education

The results of the mediation models related to perceptions of patient education and physicians' explanation of medical information are both also related to aspects of

patient education. It is important to note that, in the case of diabetes, physician perceptions of patient competence can impede educational efforts. For instance, Lutfey and Freese (2005) point out that physicians sometimes blame patients who cannot demonstrate acceptable forms of compliance and, as a result, conflate a lack of education with patient motivation. The literature on DHLEP health disparities provides clear evidence that DHLEP patients are routinely ignored within healthcare settings (López et al. 2015). Thus, it is likely that, due to barriers in communication, DHLEP patients are unjustly viewed as non-compliant and unmotivated. As a result, physicians may not prioritize educational efforts. Physician education is an important factor in diabetes care management. In the case of diabetic patients, clear communication about medication regimens, dietary restrictions, and blood sugar goals is important in preventing complications related to diabetes. For instance, for patients with type two diabetes, depending on blood glucose goals, the medication regimen may include a combination of short-acting and long-acting injectable insulin (Petznick 2011). Managing blood glucose level is a multi-step process. Research has shown that administering too much or too little insulin can cause a dangerous drop or spike in blood glucose levels (Petznick 2011).

Basic care management plans that include minimum dietary changes and medication can be complex for those with limited resources and health literacy. In the case of DHLEP, the results of this study indicate the importance of patients' perceptions of patient education efforts. The results of the models (table 3) indicate that almost 60% of the relationship between DHLEP patients and medical test delays is mediated by perceptions of patient education. Similar to trust, and rapport building, an emphasis on patient education efforts can improve patient-centered care and help to prevent adverse health outcomes among DHLEP populations. To this end, interventions that support education related to cultural competence and language skills aid in increasing physician confidence in managing Hispanic DHLEP (Ortega et al. 2022).

Contribution and Significance

Prior to my discussion on the direction of future work in the area of immigrant and ethnic health disparities, it is important to underscore the relevance of assessing the barriers to LEP patient care from the patient's perspective. Firstly, this study contributes to the literature because it consists of an intersectional analysis of perceived interpersonal communication habits. This study specifically assesses the influence of LEP status and perceived racial and ethnic identity. For instance, Do and Frank's (2021) study of Covid-19 and workplace vulnerability among Hispanic subpopulations indicated an increased mortality rate among all Hispanics compared to whites; however, mortality rates were lower among those who identified as Cuban. The latter is important because Cubans are shown to have higher rates of education and income which can lead to lower rates of LEP individuals within the population (Noe- Bustamente Flores and Shah 2017). However, their study did not include a language variable and did not discuss the potential mechanism of LEP status. As another example, Ortega et al.'s (2007) research on healthcare access among Hispanic patients found that undocumented status was associated with less

favorable physician experiences. However, in this study, language was not an included covariate. These two examples are indicative of research in the area that falls short of considering the compounding factors of perceived nationality, ethnicity, and language ability.

Additionally, it is important to note that the analytical model is limited due to possible omitted variable bias; it does not explicitly account for other factors that may contribute to medical test delays. However, research that assesses the role of interpersonal communication habits is especially important to establishing issues related to the continuity of care. To this end, Lutfey and Freese (2005) highlight the importance of clear communication in establishing care goals, specifically for patients with diabetes. Thus, this study attempts to identify the specific mechanisms that inhibit clear communication between DHLEP patients and primary care physicians. Future work in this area should attempt to assess the effects of multi-level mechanisms related to codified biases that impact patient and physician communication patterns.

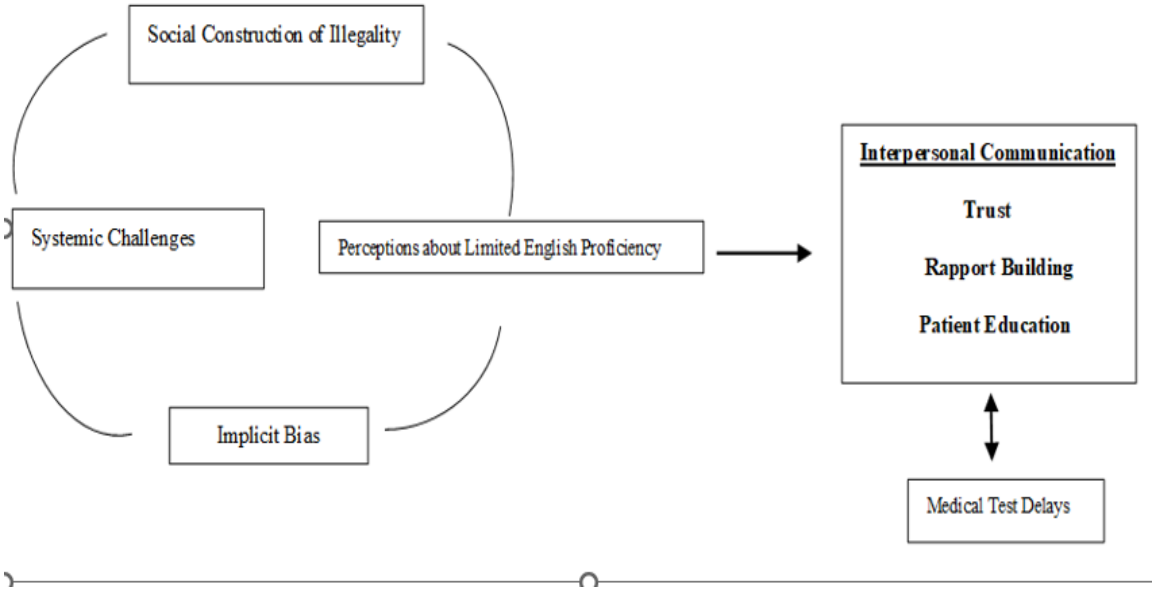
Future work: Codified bias

The codified bias framework gives insight into the contextual factors that influence unsatisfactory communication between DHLEP patients and physicians. For example, reports of perceived discrimination among LEP populations (Magaña 2020) are influenced by system-level challenges such as the lack of physician language training and the limited availability of interpreters. Also, perceptions of English proficiency and implicit bias all underscore Menjivar's (2021) conceptualization of social illegality. These contextual factors influence perceived interpersonal communication and, as a result, can lead to delays in medical testing.

Figure 1. includes a conceptual model that I use to address the effects of the social

construction of legality, systemic challenges, and implicit bias, including perceptions about LEP patients on interpersonal communication with healthcare physicians. I also explore how factors related to codified bias may impact medical test delays.

Figure 2. Conceptual Framework (*Codified Bias*)



Systemic issues serve as a factor of the codified bias framework and include challenges that influence the preparedness of physicians to work with DHLEP patients. We know these factors begin at the macro level, but there is limited knowledge about how these factors influence interpersonal communication between Hispanic DHLEP and physicians.

The analytical model used in this study is limited because it only addresses the relationship between DHLEP patients in the sample and the mediating effects of interpersonal communication on medical test delays. Importantly, we know from the results that interpersonal communication mediates much of the relationship between these two variables. The analyses do not give insight into the social and sociohistorical mechanisms (e.g., social legality, historical immigration patterns); thus, my theoretical contribution aims to think outside the discussed analytical model and interpret the

results by utilizing literature in the area of migration research and medical sociology. Research in this area highlights the importance of interpersonal communication in patient care. However, we do not know to what extent the combination of systemic challenges, implicit bias, perceptions about LEP populations, and the social construction of legality (Menjívar 2021) influence interpersonal communication between physicians and patients. I will frame my analysis of the results by building Menjívar's (2022) conceptualization of the axis of inequality to elaborate on my theoretical framework, codified bias. Codified bias in healthcare refers to taken-for-granted assumptions within the healthcare system that are tied to language differences and are influenced by historical contexts (e.g., immigration patterns) or other social contexts. These systems are biased toward LEP patients. Within healthcare institutions, bias is codified, meaning that it is embedded within the structures of the healthcare system. Bias is codified within the educational curriculum used to train physicians, and healthcare personnel (Olsen 2019; Ortega et al. 2021), healthcare systems (Breathett et al. 2018; Wang et al. 2022), and, as this study suggests, even within interpersonal interactions.

The codified bias framework functions as a result of systemic challenges, implicit bias and perceptions of legality, and negative perceptions of DHLEP populations. Below, I briefly discuss each aspect of the framework.

Systemic Challenges

Codified bias is not only relevant in the context of the exam room, but its relevance extends to other structural mechanisms of healthcare, such as medical schools. For instance, one study found that out of the 78% of US medical schools that report offering Spanish language classes, only 21% met basic standards (Ortega et al.

2021). The basic standards were related to curriculum format, course credit, faculty quality, and effective learner assessments (Ortega et al. 2021). Furthermore, most classes were linked to student clubs or extracurricular activities (Ortega et al. 2021). The medical school curriculum is biased toward English-speaking patient populations. The latter is an example of a structural form of implicit bias.

Implicit Bias and the Social Construction of Legality

LEP Hispanic patients within the healthcare system are vulnerable to incorrect assumptions of racial and ethnic origins, legality, and comprehension. To this end, previous research shows that these assumptions significantly impact patient care (Chapman, Kaatz, and Carnes 2013; Schulman et al. 1999). Menjivar (2021) notes that "The strong association between "illegality" and being Mexican or Latina/o produces a spillover effect that reaches Mexicans and other Latinas/os who hold lawful permanent residence, those who are naturalized, and even those who are U.S.-born." (2021:96). This "spillover effect" is even more likely to occur for those with LEP status. LEP status can further limit access to health education literature. If institutional frameworks to assist patients with LEP status are non-existent, it can increase systemic challenges during crises and has also been shown to impact mortality rates (Wang et al. 2022). For example, in their study, Giglio et al. (2020) conclude that after being exposed to Covid-19, "[…] LEP persons were 3.2 times as likely to report difficulty obtaining supplies for quarantine" (2022:1). In the time of crises LEP patient populations are especially vulnerable to forms of explicit and implicit bias.

Furthermore, presumptions of linguistic, racial, and ethnic origins can dictate a mode of care that limits patient populations and can results in linguistic health disparities. Compounding factors contributing to health inequities include socioeconomic status, which is especially relevant in the context of chronic disease (Cené et al. 2009; Lutfey and Freese 2005).

Lastly, the assumption of language preference can be tied to perceived stigmatized statuses such as legal status, educational status (i.e., low education), and national origin. For example, Flores and Schachter (2018) found evidence that traits related to immigrant status were often dictated by subtle differences in accent and English fluency. Similar to their assertions, in my view, the social construction of stigmatized identities is directly tied to perceptions of English proficiency and has a impact on interactions within the healthcare system. Furthermore, the social and historical context in which these interactions occur is also highly relevant. To this end, Menjivar states, "The racialization of legal status is a dynamic process; it is geographically conditioned and historically specific. Given the centrality of racial systems in the organization of social life, the process itself will exist at different historical junctions and across contexts and societies, but the expressions and hierarchies produced will be context-specific and historically situated." (94:2021) The healthcare system, as it exists now, limits access to language-based services that could work to enhance equitable care access for LEP patients with diabetes and other chronic conditions. Research in this area could benefit from recentering interpersonal communication as a mechanism of health inequities among LEP populations.

Recentering Interpersonal Communication

The call to recenter patient and physician communication as a focus of research in this area of LEP patient barriers to care is influenced by the rise in racial health disparities related to COVID-19 mortality (Mackey et al. 2020). These disparities were also influenced by higher transmission rates (Van Dyke et al. 2020) due to occupational health risks among low-income minority populations. The systemic and policy measures (i.e., stimulus checks) relieved the healthcare system and allowed healthcare organizations to rebound. The latter generally reduced linguistic and race-related disparities and, as Wang et al. (2022) note, improved second-wave outcome measures for Hispanic patients.

However, likely, diabetic patients who had an increased risk of mortality had already suffered the effects of delays in medical treatment due to inequities related to the interpersonal communication habits of healthcare physicians. In sum, future research should aim to consider the impact of codified bias on LEP barriers to care.

CONCLUSION

The main objective of this study is to identify barriers to care related to interpersonal communication between DHLEP patients and physicians. The main findings indicate that future work in this area should strive to identify why mechanisms related to physician trust, rapport building, and patient education mediate the relationship between LEP patients and medical test delays.

Future research should also continue to assess the effects of interpersonal communication on chronic disease management. This type of research is vital because LEP populations are less likely to have conventional healthcare insurance and lower levels of education (Gulati and Hur 2022). The scope of this study was limited in many aspects. The primary theoretical limitation is that the sample did not include a variable that specified the participants' national origin. It is important to note that the term Hispanic encompasses various ethnic groups. However, biases tied to language are primarily dependent on characteristics such as national origin, accent, and perceived ethnic identity. Language preference is not explicitly tied to minoritized status; thus, the data and models do not reflect the intersection of racial and linguistic characteristics.

The models presented only address barriers to medical test delays for Hispanic LEP patients with diabetes. The sample was small, and future studies should confirm the validity of the results for Hispanic LEP patients with other chronic conditions or healthy patients. Furthermore, the medical test delay variable does not specify the patients' reported reasons for not obtaining follow-up medical testing.

The models show that factors related to interpersonal communication mediate the relationship between DHLEP and medical test delays but fall short of proving

causality. Lastly, the data does not include physician language skills or demographic information. In sum, future research should continue to explore mechanisms related to LEP patient perceptions of barriers to care. In order to reduce health disparities among LEP populations, physicians, patients, and healthcare systems must work together.

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