ABSTRACT

The Relationship Between Role-shifting and Errors in
Nurse-Interpreter Dialogue with Spanish-speaking Patients

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Interpretation in the United States is a profession of variance. In some places, healthcare employees double as interpreters when needed, and are called dual-role interpreters. Previous studies focused on error production and clinical consequence in interpreted medical consultations (Flores et al., 2003; Flores, Milagros, Pizzo Barone, Bachur & Lin, 2012; Nápoles, Santoyo-Olsson, Karliner, Gregorich, & Pérez-Stable, 2015). This study analyzed 30 transcriptions of video-recorded consultations of Spanish-speaking patients using dual-role nurse-interpreters. The goal was to better understand the contexts of error production by understanding the roles dual-role nurses played when generating the errors. The errors examined included omission, addition, and substitution, which are common in interpretation (Flores et al., 2003, 2012; Ana M. Nápoles et al., 2015). The roles or "voices" included in this study were those of nurse, interpreter, and fellow human, adapted from Cordella (2004). This study contributes to the literature on error production in dual-role interpreters in order to inform future training for nurse-interpreters by describing underlying reasons for some of their errors.

The Relationship Between Role-shifting and Errors in Nurse-Interpreter
Dialogue with Spanish-speaking Patients

by

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A Thesis

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DEDICATION

To my husband Sam, who inspires me through your selflessness, kindness, and great love
every day

CHAPTER ONE

Introduction

Effective communication between a patient and provider in a medical consultation permits patient-centered care by allowing providers to fully address the patient's health needs. What happens, however, when the patient and provider cannot communicate in the same language? In the United States, more than 16 million people speak English less than "very well" (U.S. Census Bureau, 2015) and therefore have the right to language assistance in health care (Chen, Youdelman, & Brooks, 2007). United States law requires health-care institutions to appoint and interpreter for Limited English Proficiency (LEP) individuals to facilitate communication between languages (Chen et al., 2007). Adding an individual to the consultation, however, inevitably changes the discourse in a patient-centered conversation. Furthermore, with a variety of interpretation methods available (Chan et al., 2010; Hsieh, 2016), a current concern in health care is classifying and standardizing language interpretation. One frequent method of interpretation involves using a dual-role interpreter, an employee who functions in two roles: as a healthcare professional and an interpreter (Barton Laws, Heckscher, Rachel, Mayo, Sandra J., Li, Wenjun, & Wilson, Ira B., 2004). The present study focuses specifically on dual-role nurse-interpreters and error production in medical encounters with Spanish-speaking patients. The objective of the study is to understand voices (Cordella, 2004), also known as roles, and shifts in voices that nurse-interpreters employ when producing omission, addition, and substitution errors.

The present study resulted from a pilot reading of several transcribed conversations including nurse-interpreters at a family medicine clinic in Central Texas. During the pilot reading, many errors seemed to relate to confusion in the nurse-interpreter's roles during consultations. After the pilot reading, three errors were defined for the present study, following research by Flores et al. (2003) and Flores, Milagros, Abreu, Pizzo Barone, Cara, Bachur, Richard, and Lin, Hua (2012). To contain the number of variables, the present study includes three error types (omission, addition, and substitution) and three general roles (nurse, interpreter, and fellow human), adapted from Cordella, (2004). The purpose of the study is to contribute awareness about accurate and clear interpretation, to highlight the unique linguistic complexity of dual-role interpreters, and to demonstrate possible relationships or patterns between error production and role-shifting.

Organization

This study consists of five chapters: an introduction, a critical review of published literature on the subject, methodology, results and discussion, and the conclusion. Chapter One presents an overview of the thesis. Chapter Two includes a review of literature regarding the legal framework and standardization of interpretation, types of interpreters and interpretation, and a review of previous empirical studies of nurse-interpreter errors. Chapter Three explains in detail how data were collected, defining different voices (roles) and error types identified in the study. The analysis and method for counting tokens are also included. In Chapter Four, final results are discussed, along with multiple examples for each variable. The last section of the chapter discusses the presence of different voices and errors with regard to previous research. The final

chapter discusses the research questions posited at the beginning of the investigation and

summarizes conclusions. Limitations, applications, and possible options for future

research are also included.

CHAPTER TWO

Critical Review of the Literature

Introduction

This chapter provides an overview on literature related to interpretation in the United States and Texas, the site of the present study. First, the legal framework and interpreter standards are delineated. The chapter then describes interpreted discourse before discussing types of interpreters, interpreter roles, and communicative functions. The chapter concludes with a review of research on interpretation.

Legal Framework

The legal framework related to medical interpretation services in the United States influences both standardization and research. Medical interpreters have a variety of routes to become interpreters due to the lack of one single standard. This section explores laws relating to medical interpretation.

Historically, (LEP) individuals have faced challenges when receiving health care in a language they understand due to a lack of available language services. The Supreme Court, however, now treats language as equivalent to national origin, according to Section 601 of Title VI of the Civil Rights Act, 1964 (Chen et al., 2007; Keers-Sanchez, 2003). Title VI is an unfunded general mandate prohibiting intentional discrimination by organizations receiving federal funding, therefore creating legal means for providing language services in healthcare settings. Consequently, hospitals and clinics have a legal obligation to provide interpretation services for patients.

The implications from Title VI have changed over the years, seeking a balance between providers and patients. In 2000, President Clinton issued Executive Order 13166 restating the requirements for providing LEP patients with translator services (Chen et al., 2007). From that order, the Office for Civil Rights subsequently issued a Policy Guidance that the Bush administration upheld but revised in 2003 (Chen et al., 2007). The revisions were intended to balance the requirements and help organizations take necessary steps to provide adequate interpreter services (Chen et al., 2007). Since the revisions, organizations must consider four different factors to better understand the appropriate need for language assistance in their area. The four factors include: (1) the proportion of LEP individuals served, (2) the frequency of organizational contact with LEP individuals, (3) the importance of the service provided, and (4) resources and costs involved (Chen et al., 2007). Finding the appropriate balance between the four factors provides health care institutions with the knowledge and ability to best serve the health needs of the community.

In addition to federal policies, individual states have created legislation and regulations regarding language assistance in health care. The present study focuses specifically on Spanish interpretation in Texas, where most healthcare legislation related to Title VI occurs. Programs in Texas related to interpreter services for patients began with the 2008 and 2009 interpreter pilot programs in five hospital districts across the state that provided Medicaid recipients with language services (Perkins & Youdelman, 2008). Additionally, organizations must provide healthcare information in languages that best serve the area; therefore, the Health & Human Services Commission operates a statewide toll-free assistance number with options for Spanish-speaking patients while encouraging

all clinics and institutions to also offer voice-recorded messages in Spanish (Perkins &

Youdelman, 2008). Disease-management vendors contracted with the Health & Human

Services Commission must provide educational materials in a language understood by

each client, have a 24-hour toll-free nurse consultation service, and have English and

Spanish speaking nurses (with other languages available). Furthermore, finding and

understanding specific information should not require an additional phone call by clients

(Perkins & Youdelman, 2008). Similar to disease-management vendors, mental health

facilities are also required to provide all handbooks and the Patient, Teen and Children's

Bill of Rights brochures in both English and Spanish as well as any other language used

by a significant percentage of the service area's population (Perkins & Youdelman,

2008). Finally, hospitals and facilities offering mental health, crisis stabilization,

rehabilitation, and alcohol and chemical dependency services must post notice of patient

rights, patient-abuse reporting responsibilities, and the right to be free from retaliation for

reporting violations of law in both English and a second language representative of the

community's demographic makeup (Perkins & Youdelman, 2008). These requirements

provide individuals with the appropriate information to make educated personal

healthcare decisions.

Standards for Interpretation

Although legislation related to language assistance in medical services is

increasing, no laws specifically outline the standards for interpretation. Most recently,

the National Council on Interpreting Health Care published the National Code of Ethics

for Interpreters and Standards of Practice in Health Care (hereafter, NCESP) (National

Council on Interpreting in Health Care, 2005). The document established a definition for

medical interpretation as a "distinctive and specialized area of practice" National Council

on Interpreting in Health Care, 2005 p. 2) and outlined 32 standards under the following

nine ethical principles depicted in Table 1 (National Council on Interpreting in Health

Care, 2005).

Table 1

National Code of Ethics for Interpreters and Standards of Practice in Health Care (NCESP)

Group	Objective	Related Ethical Principle
Accuracy	Enable other parties to know precisely what each speaker says	Strive to render the message accurately, conveying the content of original message, considering the cultural context.
Confidentiality	Honor the private and personal nature of the interaction and maintain trust among all parties.	Interpreters treat all information learned in the services of their professional duties while also observing relevant requirements regarding disclosure.
Impartiality	Eliminate the effect of interpreter bias or preference.	Maintain impartiality and refrain from counseling, advising, or projecting personal ideas.
Respect	Acknowledge inherent dignity of all parties.	Treat all parties with respect.
Cultural Awareness	Facilitate communication across cultural differences.	Develop awareness of cultures encountered in providing services.
Role Boundaries	Clarify the scope and limits of role of interpreter.	Maintain boundaries of the role.
Professionalism	Uphold the public's trust.	Act in a professional and ethical manner.

Note. Adapted from the National Council on Interpreting Health Care (2004)

The objectives and ethical standards included in the NCESP provide the most current and accurate consensus by medical interpreters. Table 1 includes ethical principles associated with each objective. All standards attempt to create appropriate and unbiased communication between participants.

The NCESP elaborates and provides examples for each objective to facilitate understanding and application of each standard and ethical code. For example, the standard of *accuracy* is expanded to include rendering "all messages accurately and completely, without adding, omitting, or substituting" (National Council on Interpreting in Health Care, 2005 p. 5). Addition, omission, and substitution are the most common errors found in empirical studies (Barton Laws et al., 2004; Elderkin-Thompson, Cohen Silver, & Waitzkin, 2001; Flores et al., 2003, 2012; Gany et al., 2007; Ana M. Nápoles et al., 2015) the details included for accuracy are relevant to interpretation. Supplementary details clarify the importance of register, tone and style and how to discuss errors in a professional manner, aspects that guide individuals to be trustworthy and transparent interpreters (also related to the standard of *respect*).

According to the NCESP, the standard of *impartiality* protects patients and maintains clear communication between participants by requiring interpreters to refrain from expressing bias towards a certain group of people. An example of partiality discouraged in the NCESP would be when family members serve as biased interpreters due to their close relationship to and emotional investment in the patient (Hsieh, 2015). Impartiality also entails utilizing the correct social norms in a medical consultation, thereby creating a comfortable environment for participants. For example, the correct use of titles communicates courtesy, politeness, and respect to all participants in the medical

encounter (National Council on Interpreting in Health Care, 2005) such as using the formal title *usted* (both pronominal and verbal forms) in Spanish.

Another aspect of courtesy is conveying *cultural awareness* by understanding participants' cultural norms and standards. Interpreters must appropriately and respectfully communicate different cultural ideas (National Council on Interpreting in Health Care, 2005). For instance, when obtaining pain ratings, the patient's cultural perceptions of pain must also be interpreted to better understand their symptoms. When patients' ideas seem contrary to information explained earlier in the conversation, interpreters do not always consider cultural differences to be the cause of confusion.

In summary, the NCESP proposes a comprehensive standard of practice in medical interpretation, affording organizations, interpreters, and patients the ability to experience an effective and trustworthy medical conversation.

Healthcare Communication

Patient and physician roles have changed. Whereas in the past, encounters were physician-centered, and doctors made all the choices for the patient, healthcare now includes dual decision-making for treatment and future action, with patients playing an important communicative role in helping physicians understand their health issues. Furthermore, physicians with a patient-centered approach encourage patient participation in the medical conversation (Ong, de Haes, Hoos, & Lammes, 1995; Rivadeneyra, Elderkin-Thompson, Cohen Silver, & Waitzkin, 2000; Roter, 2002). For example, a physician who takes time during a consultation to learn about a patient's cultural and social beliefs demonstrates patient-centered care, in the belief that the physician will have a better understanding of differing ideas involving symptoms, illnesses, and treatment

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options. Cordella (2004) illustrates these patient contributions in medical discourse at an outpatient clinic of the Pontificia Universidad Católica de Chile. Patients there spoke just as many words as the physicians in 22 encounters and explored topics outside the general discourse of patient history (Cordella, 2004). Patients contribute valuable information in a medical consultation, and proper facilitation of a patient's input is imperative.

Interpreted Discourse

When an interpreter is present, physicians adjust their communication methods with a patient due to the language barrier. As a result, information that is socially or culturally unknown can be perceived as strange or out of place, causing physicians to ignore information and continue through the encounter (Leanza, Boivin, & Rosenberg, 2010). The patient, on the other hand, may perceive that the physician is ignoring their personal cultural beliefs, and may ultimately harm the relationship.

Some physicians also express a loss of intimacy with the patient when someone else is not only present but also interpreting their speech (Roter, 2002). Additionally, physicians voice concern about a loss of ability to orient the action during the consultation when a domineering interpreter takes over the conversation or does not properly interpret their messages (Brisset, Leanza, & Laforest, 2013). An example of losing intimacy with a patient might include typing information on a computer during a conversation while the interpreter is speaking, rather than looking at the patient. One study found that autonomous information exchange between the patient and interpreter often took place when the physician was not active in the conversation (Ticca, 2017). Furthermore, time on the computer might also lead to small talk between the patient and interpreter that is not communicated to the physician. Minimizing use of the computer

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and being active in the conversation therefore helps fluid communication between the provider and patient throughout the consultation. Another example of losing intimacy includes the provider and patient directing their speech to the interpreter instead of each other. To combat this, an interpreter can encourage participants to communicate with each other, even though they do not share a language (Angelelli, 2004).

When patients are supported linguistically and culturally, they reveal more helpful information to clinicians (Brisset et al., 2013). For example, a study of nurse-interpreters in in Switzerland reported that the most successful interpretations occurred with a professional interpreter or a native speaker of the patient's language (Bischoff et al., 2003). Additionally, patients only mentioned psychological problems with high-level interpreters (Bischoff et. al., 2003; Baraldi & Gavioli, 2017). A successfully interpreted medical encounter eases awkwardness regarding linguistic and cultural barriers that may exist and encourages the patient to return for follow-up visits or continued treatment. In contrast, dissatisfied patients do not respond well to treatment and may never return to a physician for a follow-up appointment or regular check-ups (Angelelli, 2004; Baker, Hayes, & Fortier, 1998; Bastien, 1987; Chan et al., 2010; Erzinger, 1991; Flores, 2000; Garcés, 2008; Ngo-Metzger et al., 2007). Other situations leading to patient dissatisfaction include lack of interpreters and situations with *ad hoc* interpreters, where at times health problems remain unaddressed resulting from inadequate interpretation and communication between the patient and provider (Baker et. al 1998). Well-trained interpreters create an environment where both the patient and provider are supported linguistically and culturally.

Types of Interpreters

The National Council on Interpreting in Health Care (NCIHC) defines

interpretation as the mediation between two parties speaking different

languages (National Council on Interpreting in Health Care, 2005). Translation, however,

refers to mediation that is exclusively written (National Council on Interpreting in Health

Care, 2005). Currently, interpreter standards in training and practice vary throughout the

U. S., resulting in a multiplicity of interpreter types and abilities. Because medical

interpretation encompasses more than simply orally transmitting utterances from one

language to another (Gregg & Saha, 2007; Hardt, 1992; Treumann, n.d.) ,the ability to

speak more than one language does not necessarily entail effective interpretation (Baraldi

& Gavioli, 2017; Barton Laws et al., 2004; Department of Health Minesota, 2015; Emma

Hadziabdic & Hjelm, 2013; Moreno, Otero-Sabogal, & Newman, 2007; Ticca, 2017).

Consequently, interpreter training helps individuals provide quality health care to LEP

patients by adequately communicating health problems, non-verbal communication

styles, and cross-cultural differences in treatment (Davidson, 2000, 2001; Department of

Health Minnesota, 2015; Treumann, n.d.).

The title "professional healthcare interpreter" in the current study refers to an

individual whose occupation is in healthcare, but who also interprets. In contrast, a

"trained professional interpreter" according to the current study is trained specifically in

interpretation and works as an interpreter. A "certified interpreter" in the present study

receives training and a nationally recognized form of certification. Currently, two

organizations in the U.S. offer certifications recognized by the National Commission for

Certifying Agencies: The Certification Commission for Healthcare Interpreters (CCHI)

and the National Board of Certification for Medical Interpreters (NBCMI) (Minnesota

Department of Health, 2015). The certifications cover topics such as the roles of an

interpreter, medical terminology, healthcare legislation, and regulations (Treumann, n.d.).

The NBCMI offers various certifications. Additionally, the NBCMI offers oral

proficiency exams in Spanish, Mandarin, Russian, Cantonese, Korean and Vietnamese

(see Table 2). Similarly, the CCHI offers certifications and oral proficiency exams in

Spanish, Mandarin, and Arabic (Treumann, n.d.; Minnesota Department of Health, 2015).

The certifications are active for four to five years (Treumann, n.d.).

Table 2

National Code of Ethics for Interpreters and Standards of Practice in Health Care

Credential	Organization	Written Exam	Oral Exam	Years Active
Certified Medical Interpreter (CMI)	National Board of Certification for Medical Interpreters (NBCMI)	Yes	Yes (No simultaneous interpretation)	5
Qualified Medical Interpreter (QMI)	NBCMI	Yes	Yes (No simultaneous interpretation)	
Screened Medical Interpreter (SMI)	NBCMI	Yes	No	
Certified Healthcare Interpreter (CHI)	Certification Commission for Healthcare Interpreters (CCHI)	Yes	Yes	4
Core Certification Healthcare Interpreter (CoreCHI)	CCHI	Yes	No	

Note. Adapted from "For Healthcare Interpreters" (Treumann, n.d.).

Trained professional interpreters or certified interpreters are necessary members

of any medical team serving LEP patients. Unfortunately, the terminology is sometimes

confused; many organizations use the term "professional interpreter" to describe an individual who is not trained, but rather "paid" (Hadziabdic & Hjelm, 2013). Individuals with the title "professional interpreter" without training are a danger to LEP patients (Flores et al., 2003; Nápoles et al., 2015)

One option for hospitals, clinics, and institutions is to use companies that connect the interpreter to the consultation through different methods such as telephone, video-conferencing, or in-person services (Chan et al., 2010; Hsieh, 2015). Organizations subscribing to a professional interpreting company may assume availability for the needed language at any time; however, the availability of interpreters does not always align with the needs of the organization (Hadziabdic, Heikkilä, Albin, & Hjelm, 2011). For example, a study investigated staff-reported incidents with an interpreter-servicing company (Hadziabdic et al., 2011). Problems included staff members feeling that they wasted precious time with the patient while waiting for an interpreter to become available and reality that interpreters did not always have the necessary language skills to appropriately and competently interpret the conversation (Hadziabdic et al., 2011). Although professional interpreting service companies can be a good resource, they may not always ensure a good product (Hadziabdic et al., 2011).

Dual-role interpretation presents another interpretation method involving staff members (such as physicians, nurses, assistants, or receptionists) taking on the additional role of medical interpreter (Barton Laws et al., 2004). This method can be advantageous in that the physician may already be familiar with the interpreter, and the physical proximity means an interpreter is usually available when needed. Consequently, dual-role interpretation can be useful for short conversations because some health issues can

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be communicated, understood, and resolved with a basic understanding of the language. Utilizing staff members as dual-role interpreters, however, does not always ensure high-quality interpretation (Barton Laws et al., 2004; Elderkin-Thompson et al., 2001). Institutions sometimes use individuals as dual-role interpreters who are doubtful of their abilities or who find playing two roles extremely difficult but are frequently called on due to a lack of interpreter options (Hadziabdic & Hjelm 2013; Moreno et al., 2007; Hsieh, 2015).

Dual-role interpretation is often used, despite a variety of competency levels and types of bilingual employees, including physicians, nurses, therapists, and administrative staff (Moreno et al., 2007). Moreno et al. (2007) found that licensed clinicians (physicians, nurses, and therapists) were unable to pass an interpretation exam at a *medical* level at a higher rate than other bilingual staff, even though they frequently relied solely on their skills to communicate with patients (Moreno et al., 2007). Additionally, many clinicians achieved a grade of *basic*, meaning they lacked a comprehensive grasp of medical terminology, and were unable to successfully translate terms such as "stroke," "uterus," or "contractions" (Moreno et al., 2007). While dual-role interpreters are common, incompetent individuals making their way through medical conversations without a high linguistic competency level can ultimately cause LEP patients harm (Flores et al., 2003, 2012).

Programs exist for individuals seeking further knowledge regarding connecting with language-discordant patients in health care settings. Programs in undergraduate, graduate, residency, and continuing medical education (CME) settings, however, do not necessarily succeed in providing individuals with the advertised skills (Hardin, 2015).

Some states have instituted requirements that promote training or continuing education about language access and cultural competency (Chen et al., 2007), whereas other training programs for clinicians focus on continued learning involving both medical interpretation and language instruction. Only a few programs have been reviewed, however, and such programs illustrate a lack of expectations over a variety of different features such as class size, learning goals, or competency goals (Hardin, 2015).

Historically, in clinics and hospitals with a shortage of dual-role interpreters, *ad hoc* interpretation was common. An *ad hoc* interpreter is an untrained bilingual or multilingual individual who interprets during a medical encounter and is often affiliated with the patient (Baker et al., 1998; Hsieh, 2016; Nápoles et al., 2010). Usually this person is a family member or friend, although in some research, the individual is a staff member who is not a trained or certified professional interpreter (Baker et al., 1998; Hsieh, 2016; Anna M. Nápoles et al., 2010). In some ways, an *ad hoc* interpreter can be beneficial given that a family member prioritizes the patient in the conversation, supports the patient mentally and physically, and acts as an advocate when necessary (Hsieh, 2015). Additionally, some physicians believe *ad hoc* interpreters better interpret empathy and compassion (Hsieh, 2015). Overall, however, *ad hoc* interpreters are not usually the preferred option because they lack interpreting skills, frequently interrupt the interview, or lack medical vocabulary (Minnesota Department of Health, 2015), with one study finding high counts of errors in encounters with *ad hoc* interpreters (Ana M. Nápoles et al., 2015). In another study, when an *ad hoc* interpreter was present, visits averaged 1-2 moderately or highly clinically significant errors (Nápoles et al., 2015), whereas clinically significant errors were notably lower for professional in-person interpreters

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(Ana M. Nápoles et al., 2015). When different satisfaction levels were studies with a variety of interpreting methods, clinicians reported less satisfaction with *ad hoc* interpreters than with video-conferencing or in-person professional interpreters (Nápoles et al., 2010). Empirical research demonstrates a lack of accuracy among *ad hoc* interpretation (Department of Health Minnesota, 2015; Ana M. Nápoles et al., 2015; Anna M. Nápoles et al., 2010)

Recent additions to medical interpretation involve technology; video and telephone-conferencing comprise the two most common modes. An important issue is the possibility that technical difficulties will arise, leaving patients without access to language services (Hadziabdic et al., 2011). Telephone interpretation provides a user-friendly resource. The clinician simply picks up a phone (or headset) and connects with an interpreter (Chan et al., 2010; Locatis et al., 2010). Nonverbal communication, however, is an important aspect of communication that can be missed, such as understanding and clarifying information based on gestures (Dysart-Gale, 2005) or the inability to see participants. Also, missed opportunities for clarification and understanding can take place when the interpreter only interprets what participants choose to say aloud (Dysart-Gale, 2005). Although easy to use, telephone interpretation has been rated lower than other methods due to the inability to communicate nonverbally (Chan et al., 2010; Hsieh, 2015; Locatis et al., 2010; Price, Pérez-Stable, Nickleach, López, & Karliner, 2012).

In contrast, video-conferencing interpretation possesses the visual component that telephones do not have. One study found that patients preferred video-conferencing to other modes of interpretation (Nápoles et al., 2015). Video-conferencing, however, is not

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the same as having someone physically in the room. For example, studies find that clinicians report better understanding of cultural values with an in-person interpreter than with video-conferencing (Locatis et al., 2010; Anna M. Nápoles et al., 2010; Price et al., 2012). Although technological advances increase the variety of interpretation services available to health care institutions, patients and clinicians agree that technology is not the same as an actual person (Hsieh, 2015; Nápoles et al., 2010).

Roles of Interpretation

Interpreters often learn to act in one specialized role using one specific method of communication during an encounter (Dysart-Gale, 2005; Hsieh, 2008). Different roles defined by different authors range from a literal interpreter to a social advocate (Hsieh, 2016).

Some programs exist to provide a general classification of interpreter roles. The Cross-Cultural Health Care Program (CCHCP), for example, is a nonprofit training and consulting organization with the mission to create communication between individuals and health care institutions with culturally and linguistically appropriate care (Cross Cultural Health Care Program, n.d.). Connecting the communities' needs with state-of-the-art educational materials and training, this organization provides valuable insights into the professional field of medical interpretation. To help interpreters distinguish their roles and responsibilities in healthcare, the CCHCP outlines four distinct interpreter roles (Hsieh, 2016). First, a *language conduit* describes the default role for most interpreters (Hsieh, 2008). Interpreters in this role focus on literal interpretation between languages (Hsieh, 2016), functioning more or less as a mouthpiece. Second, in the *clarifier* role, the interpreter changes registers and interjects explanations to help the patient and provider

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understand each other (Hsieh, 2016). Third, *cultural brokers* promote cultural

understanding during the interview between participants. Finally, *advocates* emphasize

the patient role both in and outside the boundaries of the medical conversation (Hsieh,

2008).

The language conduit role is advantageous because it is straightforward and easily

understood. The role restricts interpreters from crossing boundaries and misusing their

connection with the patient while keeping communication open between the patient and

provider (Dysart-Gale, 2005; Hsieh, 2008). The role also protects all participants in the

consultation by keeping the conversation strictly between the physician and patient

(Dysart-Gale, 2005). Language conduits typically stay on track in interpretation,

maintain a strong focus on grammar and vocabulary, and avoid private interpreter-patient

conversations (Dysart-Gale, 2005). This role, however, can negatively affect

communication within the encounter because interpreters often need to act in other ways

than solely as literal interpreters (Baraldi & Gavioli, 2017; Davidson, 2000, 2001; Hsieh,

2008). Some critics of the language conduit role agree that an interpreter acting as a

neutral entity in a medical conversation is unrealistic, and that being invisible during an

encounter negatively affects the interpreter's ability to function as a communicator

(Baraldi & Gavioli, 2017; Dysart-Gale, 2005; Hsieh, 2008, 2016). For example, if

interpreters see participants' confusion by analyzing nonverbal cues, they may believe

more information is necessary to clarify a possible misunderstanding. Although such

information may be beneficial to the patient, adding information to explain a cultural

misunderstanding breaks the restrictions of the language conduit role (Dysart-Gale,

2005).

The role of cultural broker (also called advocate, institutional gamekeeper, or manager) involves using language to provide a cultural framework to facilitate understanding between participants (Davidson, 2000, 2001; Dysart-Gale, 2005; Hsieh, 2008, 2016). Being bilingual, however, is often insufficient to aid in cultural misunderstandings (Baraldi & Gavioli, 2017; Chen et al., 2007; Hadziabdic et al., 2011; Ticca, 2017). For instance, an interpreter acting as a cultural broker would appropriately interpret a patient's pain scale to an appropriate frame of reference, resulting in all participants understanding the patient's level of pain (Baraldi & Gavioli, 2017; Hsieh, 2015). Many patients view interpreters as being a cultural and linguistic ally, outside the institutional roles (Davidson, 2001; Hsieh, 2008). Social biases, however, can affect how individuals perceive different cultural practices, and the social relationship that individuals bring into the medical encounter can lead to misunderstandings with the interpreter (Davidson, 2001; Hadziabdic & Hjelm, 2013). Ultimately, the cultural broker bridges cultural gaps that might cause misunderstandings and miscommunications in the medical conversation.

Hsieh (2008) identifies the advocate role as similar to that of cultural broker; patients are empowered by an interpreter who acts on a patient's behalf. The interpreter assumes this role temporarily and in different ways. First, an overt advocate acts on the patient's behalf without discussing information with the patient. For example, interpreters ask questions they believe will provide the patient with important information, even if the patient does not request the information. When an interpreter assumes the overt advocate role, the patient becomes invisible because the interpreter judges their needs (Hsieh, 2008). In contrast, the covert advocate encourages patients to

act as self-advocates and use the interpreter as a tool in the conversation. For example, an interpreter in the covert advocate role instructs patients on how to ask questions, "reminds" patients about previous concerns, and tells patients to "speak up" (Hsieh, 2008). Some argue that the last advocate role is actually the conduit role, since it gives the patient complete autonomy and therefore provides patient advocacy (Hsieh, 2008). Hsieh (2008) further classifies common interpreter actions and calls attention to the unique linguistic situations found in medical interpretation.

The manager role (sometimes referred to as the provider role) encompasses different aspects of a medical interview in relation to the interpreter such as: conversing with the patient outside of the interaction with the health care provider, helping patients understand medical terminology, and deciding which information is most appropriate to interpret (Hsieh, 2015; White & Barton Laws, 2009). Communicative actions categorized under the manager role include investigating symptoms, evaluating the significance of symptoms, and filtering reports that are sometimes enacted without the provider's knowledge. Furthermore, Hsieh (2008) focused on positive outcomes when acting covertly in the manager role, such as discovering a symptom unbeknownst to a provider. The study also noted that an interpreter discouraged a first-time mother from seeking medical advice from a provider while in the waiting room (Hsieh, 2008). Interpreters in this study did not have medical training and were not equipped to make medical decisions or decide which symptoms were important to report to a provider. Nevertheless, interpreters are legally liable and responsible for making healthcare-related decisions, including deciding which symptoms are important to mention, or deciding if a child is sick. Each role encompasses positive and negative aspects, but the common goal

is to better provider and patient communication, ultimately leading to better health for the patient.

The professional role describes professional aspects of medical interpretation. It encompasses maintaining and claiming professionalism, clarifying information, and preserving understanding during the encounter (Hsieh, 2008). Additionally, the NCIHC outlines the standard of professionalism as upholding the public's trust (National Council on Interpreting in Health Care, 2005). As further described in the standards for practice, upholding trust entails that interpreters are prepared, accountable for their performance, respectful, and advocates for quality interpreting in every conversation (National Council on Interpreting in Health Care, 2005). Maintaining professionalism also involves being properly trained, and Hsieh (2008) found that interpreters reported 40 hours of training as the minimum level of instruction to prepare an individual to be a medical interpreter.

Communicative Functions (Voices)

During a medical encounter, doctors, nurses, interpreters and patients also assume different communicative functions. Cordella (2004) defines these communicative functions, or forms of talk, as "voices." She characterizes the voices present within a medical encounter in her study of Chilean medical interviews, entitled *The Dynamic Consultation*. First, the *patient voice* involves the patient's contribution in a medical encounter, where the primary communicative function involves introducing information into the discourse (Cordella, 2004). Cordella further classifies patient voices as health-related story telling, social communicator, and initiator (Cordella, 2004, p. 149). Additionally, Cordella (2004) found that almost every consultation included examples of

at least two voices in the communicative routines of history-taking, management, and treatment of health problems.

Physicians also assume different roles. The *doctor voice* involves three primary functions: seeking information, assessment and review, and alignment to authority (Cordella, 2004, p. 63). Clinicians also assume the doctor voice when assessing test results, recommending treatment, or reviewing a patient's adherence and progress (Cordella, 2004, p. 63). Next, the *educator voice* conveys knowledge of medicine from years of experience, communicates this medical information, and informs the patient about reasons for actions in the appointment such as running tests (Cordella, 2004, p. 87). Third, the *fellow human voice* displays empathy and learns about the patient with less medically focused discourse, helping the clinician understand facets of the patient's life (Cordella, 2004). Facilitating the telling of patient's stories, creating empathy with patients, showing special attentiveness to patient's stories, and asking questions unrelated to patient's health are the primary communicative functions of the fellow human voice (Cordella, 2004 p. 121). These different voices that the clinician and patient use contribute to effective medical conversations.

The use of different voices can also align with different contexts in a medical encounter. For example, Hardin (2017) found that a physician utilized different voices within the same medical conversation. For example, physicians used the fellow human voice in addition to another voice, such as the educator voice, to mitigate messages or to connect with patients. Furthermore, Nithiananda (2016) found that the use of different voices during a medical consultation related to patient adherence. The absence of a clinician utilizing the doctor voice was consistent with decreased adherence, but the

presence of that voice did not necessarily correlate with increased adherence (Nithiananda, 2016). Utilizing the educator voice and the fellow human voice, however, corresponded with increased adherence (Nithiananda, 2016). Where the voices were absent, a decrease in adherence occurred (Nithiananda, 2016).

Research on Interpretation

Interpreter expectations vary depending on the location and languages used in conversation; however, a few general expectations pertain to every medical encounter (Angelelli, 2004). First, interpreters must make expectations clear to all individuals present and create a natural flow of conversation while encouraging full participation from both patients and providers (Angelelli, 2004). Additionally, the dynamics should be managed within the conversation, encouraging both patients and providers to talk to each other, rather than to the interpreters (Angelelli, 2004). An interpreter bears the weight of responsibility to ensure effective communication between participants.

Angelelli (2004) also outlines different aspects of an interpretive medical communicative event. The interpreter is responsible for creating a clear discourse between an individual who represents society (the patient), and another who represents the institution (the provider) (Angelelli, 2004). Furthermore, the interpreter is subject to different linguistic norms and misunderstandings similar to other participants in an encounter, which can make medical interpreting confusing, especially when expectations, roles, and requirements are unclear and unstandardized.

Other studies have focused specifically on discourse within an interpreted medical encounter such as investigating error production in order to find the most common errors and propose a way to improve interpreter skills. Traditionally, authors classified errors

according to three main topics: omission, substitution, and addition (Gany et al., 2007).

Recently, a shift to more specific classifications of interpreter roles attempts to

understand and target potential areas for future learning and training of medical

interpreters (Flores et al., 2003, 2012). Although recent error type classification has

become more specified, studies continue to find omission errors to be the most common

(Flores et al., 2003, 2012; Ana M. Nápoles et al., 2015). Most researchers classify

omission as an error when an interpreter omits information, either from the patient to the

provider, or from the provider to the patient. Although omissions take place for a variety

of reasons, they have the potential to endanger patients due to information lost in

interpretation (Flores et al., 2003). The following empirical studies outline findings

related to interpretation.

Flores et al. (2003) recorded 13 medical encounters in a pediatric-care clinic with

a Spanish-speaking interpreter (both professional and *ad hoc*). Study participants

included three nurses untrained in interpretation, who acted as dual-role interpreters when

needed, and were classified as part of the *ad hoc* category. LEP mothers, adult caregivers,

and their children participated in the study (Flores et al., 2003). The study categorized

errors as: omission, substitution, addition, editorialization, and false fluency. Omission

errors comprised half of the total errors, followed by substitution errors, representing

13% of the total (Flores et al., 2003). Error classification also included "potential clinical

consequence", which is when a message altered or potentially altered one of the

following items: (1) history of present illness; (2) past medical history; (3) diagnostic or

therapeutic interventions; (4) parental understanding of a child's medical condition; (5)

plans for future medical visits including follow-up visits and specialty referrals (Flores et

al., 2003, p. 7). Overall, 63% of errors had potential clinical consequences, possibly leading to future medical problems (Flores et al., 2003).

Flores et al. (2012) also analyzed 57 interpreted medical encounters in which 35% included professional interpreters, 47% included *ad hoc* interpreters, and 18% included no interpreter. Like the previous study, interpreter errors were categorized by omission, addition, substitution, editorialization, and false fluency (Flores et al., 2012). The researchers reported omission as the most frequent error, comprising 47% of all errors in the study. The next most common errors made by professional interpreters included omission and addition, 42% and 18% respectively (Flores et al., 2012). For *ad hoc* interpreters, omission and false-fluency were most common, at 46% and 32% respectively. Finally, when no interpreter was present, the most common errors were omission and false-fluency—54% and 36%, respectively (Flores et al., 2012). Of the total errors, 18% had potential clinical consequences (Flores et al., 2012).

Nápoles, Ana M et al. (2015) studied nurse-interpreter error production in patient encounters including five sessions with in-person interpreters, 22 using video conferencing, and five encounters with *ad hoc* interpreters. The authors classified five types of errors: addition, substitutions, omission, editorializing, and false fluency (Nápoles et al., 2015). Omissions accounted for 65% of total errors, with double the frequency for *ad hoc* interpreters compared to in-person or videoconferencing interpretation (Nápoles et al., 2015). Furthermore, 7% of total errors were classified as moderate or highly clinically significant (Nápoles et al., 2015).

Investigations involving dual-role interpreters also have studied error production. One study found that when an interpreter acted as an interlocutor in a conversation, less

information was interpreted, leading to more errors, such as omission (Barton Laws et al., 2004). In 30% of encounters, the interpreter acted as an interlocutor, communicating with the patient outside the interpreter role, and passing on little or no information to the provider (Barton Laws et al., 2004).

Dual-role interpreters, in particular, perform two different roles in the same encounter, constantly moving back and forth between the two, making them both interlocutors and interpreters (Brisset et al., 2013). Barton Laws et al. (2004 p. 76) noted that "[w]hen the interpreter was a nurse, it may be said the he simply alternated from one professional role to another." Additionally, interpreter roles are fluid in nature and often differ and fluctuate within a medical encounter (Barton Laws et al., 2004; Brisset et al., 2013; Garcés, 2008; Moreno et al., 2007; Ticca, 2017).

In a study focusing specifically on nurse-interpreters, Elderkin-Thompson et al. (2001) found more errors when nurse-interpreters interpreted new information that seemed contradictory to previous information and focused on one line of thought (Elderkin-Thompson et al., 2001). Additionally, analysis showed that nurses misinterpreted patients' comments to provide information for the physicians' hypotheses (Elderkin-Thompson et al., 2001). Nurse interpreters seemed to respond to expectations from both parties, which sometimes resulted in putting down the patient (Elderkin-Thompson et al., 2001). Nurse-interpreters also did not interpret cultural idioms or norms to the provider, restricting clinicians' abilities to better understand patient symptoms (Elderkin-Thompson et al., 2001). In contrast, understanding and interpreting cultural norms leads to satisfied patients who are willing to return for a follow up or routine visit

(Baker et al., 1998; Chan et al., 2010; Erzinger, 1991; Flores, 2000; Ngo-Metzger et al., 2007).

To minimize error production, sufficient interpreter training is required to yield confident, prepared, and effective interpreters is necessary (Flores et al., 2012). A recent study of 20 encounters utilizing an in-person interpreter found statistically significant data supporting a "cut line" where the number of hours of training for professional interpreters impacted the number of errors (Flores et al., 2012). That is, interpreters with 100 or more hours of professional training made a median number of 12 errors, while those with fewer than 100 hours had a median of 33 per encounter (Flores et al., 2012). Results suggest that minimal instruction is not sufficient for interpreter training and that having at least one hundred hours makes a significant difference. Additionally, interpreters should continue training throughout their careers.

This chapter has considered previous literature relating to interpretation in the U.S. and Texas. Studies included the legal framework and standardization for interpretation as well as types of interpreters and methods of interpretation. Finally, the chapter discussed empirical research on interpretation. The following chapter will outline the method and procedures used in the current analysis of interpreted medical interpretations.

CHAPTER THREE

Methodology

Introduction

This chapter presents the context for the present study along with the procedure for data collection and analysis.

Context

Research on both interpreters and dual-role interpreters are well-represented in the literature (Barton Laws et al., 2004; Brisset et al., 2013; Elderkin-Thompson et al., 2001; Flores et al., 2003, 2012; Nápoles et al., 2015). When patients feel dissatisfied with their health care experience, they are less likely to adhere to treatment or return for a follow-up appointment (Angelelli, 2004; Baker et al., 1998; Bastien, 1987; Chan et al., 2010; Erzinger, 1991; Flores, 2000; Ngo-Metzger et al., 2007). This study analyzed 30 previously transcribed video-recordings that were part of a larger corpus of 75 interpreted medical consultations with Spanish-speaking patients at a family medicine clinic in Central Texas. The study included individuals from a group of 52 clinicians (16 faculty physicians/mid-level clinicians and 36 residents), 40 dual-role interpreters serving as nurses or other roles in the clinic, and an undetermined number of patients who preferred Spanish during their clinical visits (Allison, 2016). All interpreters in the present study, however, were licensed vocational nurses working in the clinic who also doubled as interpreters. These nurse-interpreters were employed as nurses; however, when patients requested Spanish-language services, these nurses took on the additional role of

interpreter. Since all conversations were previously transcribed using a Conversation Analysis methodology (Schegloff, 1999) by the four researchers from the original study in 2013[1]; tokens (instances of errors) were documented within the parameters of a prescribed conversational turn. In general terms, a conversational turn includes one participant speaking at a time with coordinated transitions (Sacks, Schegloff, & Jefferson, 1974). To avoid misrepresenting the data, instances were not recorded when the transcriber denoted unclear speech, since they signaled nonspecific errors associated with the transcriber's inability to hear or understand participants in the videos.

This study was informed by several pilot observations. First, in the fall of 2017, as part of a project in a Semantics and Pragmatics course at Baylor University, 13 hours of videotaped medical consultations with Spanish-speaking patients and an interpreter were observed while noting Spanish pragmatic devices utilized in conversations. Next, after examining the literature involving interpreter errors in medical encounters, a pilot study was conducted of a small group of transcripts to investigate instances of the most common error is previous studies (Flores et al., 2003, 2012; Ana M. Nápoles et al., 2015). The aforementioned errors were studied during the consultations to better understand their frequency and whether the frequency aligned with previous studies (Flores et al., 2003, 2012; Nápoles et al., 2015). Table 3 illustrates the error types and definitions used. The current study focused specifically on the most frequent errors in previous studies: omission, addition, and substitution errors (Flores et al., 2003, 2012).

Table 3

Interpreter Errors (Flores et al., 2003, 2012)

Error Type	Definition
Omission	The interpreter did not interpret a word/phrase uttered by the clinician or patient.
Addition	The interpreter added a word/phrase to the interpretation that was not uttered by the clinician or patient.
Substitution	The interpreter substituted a word/phrase for a different word/phrase uttered by the clinician or patient.
Editorialization	The interpreter provided his or her own personal views as the interpretation of a word/phrase uttered by the clinician, parent, or child.
False Fluency	The interpreter used an incorrect word/phrase, or word/phrase that does not exist in that particular language.

Research Questions

The following research questions guided the current study.

1. Which was the most common type of nurse-interpreter error: omission, addition, or substitution?

2. Was there a pattern between the type of error and type of voice utilized at the time of error production?

3. Were omission, addition, or substitution errors related to a shift in nurse-interpreter voices?

In reference to empirical studies cited in Chapter Two (Flores et al., 2003, 2012), it was hypothesized the errors of omission, addition, and substitution would be present in most of the transcripts. Additionally, since several studies reported omission to be the most frequent type of error (Flores et al., 2003, 2012; Nápoles et al., 2015), it was posited omission might be the most common error of the three investigated in the current study.

Questions Two and Three examine the "voices" present in medical consultations, specifically during nurse-interpreter error production. Recall that Cordella (2004) used the word *voice* to refer to forms of talk, or roles, employed by both physicians and patients during medical encounters. The fellow human voice was hypothesized to occur with errors of omission. Since nurse-interpreters in the present study did not have training, it was posited that individuals might act as a participant, or interlocutor, in the conversation and therefore neglect to interpret all information when focusing on conversations just with the patient. This interlocutor role was associated with error production in some studies (Barton Laws et al., 2004; Brisset et al., 2013). By noting type of voices that nurse-interpreters demonstrated immediately before committing an error, and the voice when generating the error, a relation might exist between error production and a shift in the type of nurse-interpreter voice. The investigator hypothesized that a relation would exist specifically in a shift between the interpreter and fellow human voices while making an omission error, meaning that the nurse-interpreters in the present study would connect with patients on an individual level, yet without interpreting the personal information to the provider.

Definition of Variables

In her data analysis of Spanish medical conversations in Chile, Cordella (2004) describes various physician and patient roles, specifically noting the physician's doctor, educator, and fellow human voice. The doctor voice includes functional roles such as seeking information, assessment and review, and alignment to authority (Cordella, 2004). An individual explaining medical information to patients and consultation-related details employs the educator voice while the fellow human voice typically encompasses

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information unrelated to the medical discourse such as family and school activities (Cordella, 2004). Table (4) provides further details about the voice classification by Cordella (2004).

Table 4

Voices in Medical Consultations (Cordella, 2004)

Voice	Action	Explanation
Doctor voice	Seeking Information	Talk related to patient's symptoms, tests, treatments, medication, compliance, or lifestyle.
	Assessment and review	Management and treatment routine of follow-up visits. Talk includes test results, assessment of further tests or treatment, and determines patient compliance.
	Alignment to authority	Talk includes asserting roles and obligations of individuals in the discourse, dictating future actions for the patient, and the patient's role of providing information.
Educator voice		Talks includes explaining information to aid in the patient's understanding, outlining potential causes for symptoms, reasoning for certain medications and procedures, and responding to the patient's discomfort.
Fellow Human voice		Talk resembles everyday talk and includes developing empathy by interacting with the patient in a friendly and co-operative way.

Unlike Cordella's research, the current study did not take place in a monolingual situation and therefore a third participant took part in every consultation. The present

study focuses on interpreter voices during the medical interview, whereas Cordella (2004) did not analyze voices with respect to nurses or interpreters. For this reason, the classification of voices from Cordella (2004) had to be adapted and applied to the investigation, specifically to the dual-role functions of participants who served as nurse-interpreters.

First, the functions of the doctor voice were adapted in order to create the nurse voice for this study. Since nurses work alongside physicians to record patient history, discuss medication and lifestyle, and aid in discussing health-related obligations with patients (such as the importance of providing accurate information and discussing future actions), the nurse voice was identified as having similar functions to Cordella's (2004) definition for a doctor voice, albeit with less authority. Additionally, the doctor voice and the educator voice are similar in that both are utilized in discourse with medical content (Cordella, 2004). For this reason, aspects of the educator voice also were included with the classification of the nurse voice in the present study. That is, the nurse voice encompassed both Cordella's doctor and educator voices.

Second, since the nurses in the current study also served as interpreters, an interpreter voice was identified. In this role, an individual interprets utterances between two different languages as a language conduit (Dysart-Gale, 2005; Hsieh, 2016). The interpreter renders language in the same way that participants express their messages, such as utilizing first-person pronouns and verb forms. The overarching goal of the interpreter voice is essentially that of a mouthpiece, creating a natural two-way flow of discourse between patients and providers. In summary, three voices were included in this study because the nurse-interpreters were only aware of general roles they were assigned

rather than complex classifications. (Recall that they had not received any interpreter

training). All utterances included in the transcripts fit into one of these three general

categories, creating a manageable taxonomy for counting errors. Table 5 details the

voices as classified in this thesis.

Table 5

Roles of Nurse-Interpreters (adapted from Cordella, (2004))

Role	Definition
Nurse voice	Talk includes taking patient history, discussing lifestyle and medication, health obligations, explaining procedures and treatments, outlining possible causes for symptoms, and responding to patient discomfort.
Interpreter voice	Talk includes interpreting participant utterances, creating a natural conversation between patient provider, and partaking in other roles while maintaining fluid communication between participants creating accurate messages that reflect what is said.
Fellow Human voice	Talk resembles everyday talk and includes developing empathy by interacting with the patient.

The following examples illustrate the classification of different voices that nurse-

interpreters employed during medical encounters. All examples contain transcriptions

using an adapted Conversation Analysis methodology[2] (see Appendix A for the key to

symbols).

(1a)
   C: Yeah that's normal in pregnancy as long as it's not more than what you
   normally have
   I: *Okay es normal nada más que no sea mucho, o ha sido mucho?*
   Okay it's normal, nothing more, that might not be a lot, <u>or has it been a lot?</u>
   P: *Ahh de repente sí si me viene así como si estuviera haciendo pipi.*
   Ahh, suddenly, yes, if it comes out of me like that as though I were peeing.
   (214-2)

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(1b)   C: Okay, so you can uh:: get your clothes back on and then come out to the
        nurses' station and get your check out papers/ and your lab papers, and-
        I: (())
        C°Oh, I'm sorry.°
        I: *Se va a vestir/ y luego nomás sale para aquí afuera donde está la estación de*
        enfermera/ y le damos sus papeles para entonces haga su próxima visita, ¿ya?
        You're going to get dressed then just leave from here out where the nurse station
        is and we will give you your papers so you can make your next visit, okay?
        P: *Sí.*
        Yes. [Not interpreted]
        I: *Pero no se vaya porque tiene que esperar una hora para que vaya al*
        laboratorio.
        But don't go because you have to wait an hour to go to the laboratory.
        P: (())?
        I: *El azúcar. Mm-hmm.*
        The suguar. Mm-hmm. (205-1)

(1c)   C: Okay. And how long do they last?
        I: *Y cuánto lo duran.*
        And how long do they last.
        P: *Ah quince o veinte minutos.*
        Ah fifteen or twenty minutes.
        I: Fifteen or twenty minutes.
        C: Okay. And how many times in one day.
        I: *Y cuántas veces en un día.*
        And how many times in one day. (128-2)

(1d)   C: Oh okay. Sometimes you can a- it's- she may have some cramping, down there
        it's important to drink water and stay hydrated.
        I: *Dice que tal vez sí es posible que pueda tener un dolor, pero siempre debes*
        tomar bastante agua y se mantenga hidratada a veces he escuchados <u>*de (()) eso*</u>
        <u>*es normal porque yo lo tuve.*</u> *De niños estaba embarazada y pensaba que iba a*
        caerme el bebé.
        She says that perhaps yes it is possible that you [formal] can have pain, but you
        [informal] should always drink enough water and stay hydrated. <u>Sometimes I
        have heard that (()) that is normal because I had it.</u> I was pregnant and thought the
        baby was going to fall out of me.
        P: *Sí porque me queda unos dolorcitos.*
        Yes, because I still have a little pain.
        I: Hmm

Example (1a) depicts a nurse-interpreter using the nurse voice to explore a patient's

symptoms and clarify (in the underlined portion), whereas example (1b) shows a nurse-

interpreter informing a patient about a lab test and explaining what will be tested, the

educator aspect of the nurse voice. In example (1c), the interpreter voice communicated utterances between participants by simply stating exactly what the patient says, functioning as a language conduit or mouthpiece. Lastly, in example (1d) the nurse interpreter used the fellow human voice when she shared her personal experience in pregnancy with a patient (underlined).

In addition to the nurse-interpreter voices, this thesis classifies three principal errors in the transcripts: omission, addition, and substitution reproduced below in Table (3) (Flores et al., 2003, 2012).

Table 3 Reproduced

Interpreter Errors (Flores et al., 2003, 2012)

Error Type	Definition
Omission	The interpreter did not interpret a word/phrase uttered by the clinician or patient.
Addition	The interpreter added a word/phrase to the interpretation that was not uttered by the clinician or patient.
Substitution	The interpreter substituted a word/phrase for a different word/phrase uttered by the clinician or patient.
Editorialization	The interpreter provided his or her own personal views as the interpretation of a word/phrase uttered by the clinician, parent, or child.
False Fluency	The interpreter used an incorrect word/phrase, or word/phrase that does not exist in that particular language.

The procedure for analysis focuses on the different voices (roles) the nurse-interpreters employed in relation to their error production during consultations. In the pilot reading of the transcripts, three variables were noted: (1) each instance of a nurse-interpreter error, (2) the voice used immediately before the error (3) while the nurse generated the error), and (4) the voice employed immediately after the error. In the pilot study, a pattern seemed to be present between voice (role) shifting and error production.

Consequently, a system was formulated to categorize voices and errors in the conversations.

Procedure

Data for the actual study included 30 of 75 available transcripts of video-recorded consultations with Spanish-speaking patients obtained with institutional approval in January and February 2013 at a family medicine clinic in Central Texas.[2] Participants included clinicians, interpreters, Spanish-speaking patients, and any family members or other medical staff present at a visit. Transcripts were between three and 19 pages in length. Selection criteria included only analyzing transcripts longer than three pages, since they were more likely to contain sufficient information for analysis (Allison, 2016). Furthermore, all transcripts used represented complete clinical visits.

As previously mentioned, individuals in the medical encounters came from a pool of 52 clinicians (16 faculty physicians/mid-level clinicians and 36 residents), 40 dual-role interpreters also serving as nurses, and an undetermined number of patients who preferred Spanish during their clinical visits (Allison, 2016). All interpreters in the present study were licensed vocational nurses working in the clinic who also doubled as interpreters. The nurse-interpreters primarily served as nurses; however, when a patient requested Spanish-language services, the nurse took on the additional role of interpreter. Based on a survey conducted at the time of data collection in 2013, the nurses had not undergone any interpreter training, nor had they been formally tested on their level of Spanish proficiency or knowledge of medical terminology in Spanish. All nurse-interpreters were heritage speakers of Spanish who had self-identified as capable of interpreting.

Analysis

For this study, a Microsoft Excel spreadsheet was utilized for calculations and tables to document instances of omission, addition, and substitution errors. Additionally, the spreadsheet included tabulation of different voices (Cordella, 2004) that nurse-interpreters employed both immediately before and during the production of errors. Voices (roles) that the nurse-interpreters used after making an error were not included in the present study simply to contain the scope of the investigation. Only one person documented the errors and voices present in the transcripts due to time restrictions.

All conversations previously had been transcribed using a Conversation Analysis methodology (Schegloff, 1999) by the four researchers from the original study in 2013; therefore, tokens (instances of errors) were documented within the parameters of a prescribed conversational turn. A conversational turn includes one participant speaking at a time with coordinated transitions, and when coordinating transitions, speakers generally follow that one individual speaks at a time although the size and order of turns vary (Sacks et al., 1974). In the present study, a conversational turn according to Sacks et al. (1974), included an individual speaking several sentences, or one word. To avoid misrepresenting data, instances were not recorded when the transcriber had denoted unclear speech, since they signaled nonspecific errors associated with the transcriber's inability to hear or understand participants in the videos.

Furthermore, when different types of errors took place in the same conversational turn, each type of error was counted as an individual token. When the same type of error occurred more than once in a conversation turn, however, only one token was counted. That is, one error type was not double counted within a conversational turn. When a

conversational turn included two different types of errors, however, two tokens were counted. Example (2) contains a turn that includes both an addition and substitution error; therefore, two tokens were counted for this turn.

(2)   P: *Pues nada más que pastillas para el dolor. Nada más la Advil, no más cada vez que me duele. Yo sé que estoy tomando más cada seis horas. Casi dos horas me estoy tomando dos. Cuando me duele. Es que me da el dolor.*
Well, nothing more than pills for the pain. Nothing more than Advil, no more each time I hurt. I know that I am taking more every six hours. Almost two hours I'm taking two. When I hurt. It's that it makes me hurt.
I: Every two hours she's taking Advil. She says it hurts a lot. She knows she's taking more than she should be taking. (204-6)

In the above example (2), the patient offered specific information about the dosage of medication she was taking and the amount of pain she was experiencing. The interpreter, however, substituted concise phrases for the original message. The addition errors in the above example also include reported speech. The nurse-interpreter added that "she" is in pain, and in a sense the nurse-interpreter added a person to the consultation rather than being the patient's voice. Consequently, the physician heard symptoms different than those presented in the patient's original message.

Omission errors occurring over several conversational turns that ultimately resulted in the interpreter rendering a simplified message were counted as just one token of substitution. In example (3), the patient's information from several conversational turns was interpreted to the provider in a different way than the original message.

(3)   C: Okay. Any medicines?
I: *¿Medicina que le ha dado?*
Have you given him medication?
M: *Dado uno que es de México que traigo que estaba para las flemas*
Given that one that is from Mexico that I'm bringing that was for phlegm.
I: *La flema.*
Phlegm.
M: *Es Ambrosol, Proxol, algo así como parece que tenía (()) aquí, tiene un osito como algo así.*

It's Ambrosol, Proxol, something like that that seems that it had (()) here, it has a small bear or something like it.
I: Oh, okay. It's a Mexican uh, uh medication. Obviously they're selling it here, too. I don't know what the name is of the medicine though. It's a little bear at the front of the box. (205-2)

The nurse-interpreter did not include that the Mexican medicine was used to relieve the symptom of phlegm nor that the mother stated a technical name that may have aided the physician in understanding which medication the child had taken.

Note that the following words were not counted when omitted by nurse-interpreters, due to their high frequency and the likely ability of all participants to understand these basic expressions: *mhmm, yes, no, sí, okay, está bien, gracias, por favor, adiós*. Despite being in English, at no time did it appear that these items were misunderstood, as presented in example (4).

(4)   I: *Todos están enfermos, ¿verdad?*
         Everyone is sick, right?
         P: *Sí.*
         Yes. [No interpretation] (213-6)

Within the consultations, the patient's level of English proficiency varied. In situations where patients made obvious their understanding of an utterance in English, the omission was not counted. Examples (5a) and (5b) include the patients' responses in English, illustrating their comprehension.

(5a)   C: Ahm, Spanish or English today?
         P: Is better the Spanish. (124-2)
(5b)   C: Okay, good. What's your child in the hospital for?
         P: *Ahh neumonía.*
         Ahh pneumonia. [No interpretation] (116-2)

Errors were not included in situations where a doctor attempted to communicate with the patient in Spanish as a method of building rapport if it was obvious that the

patient understood. In example (6), the patient responded positively to the physician's use of Spanish during the consultation.

(6)   C: Frío huh?
         P: Haha. (204-7)

Often, when the patient was a child and was also proficient in English, the nurse-interpreter was present to interpret for a parent or guardian. In these situations, omission errors were counted when clinicians and children communicated in English without Spanish interpretation for the parent or guardian. The rationale for considering non-interpretation to be an error was that the parent or guardian has legal responsibility for the child and must be aware of any and all healthcare concerns and needs of their children.

During some consultations, clinicians physically left the room for a variety of reasons including printing information, procuring equipment, or speaking with another clinician. If conversation arose between the patient and nurse-interpreter during such moments, it produced a monolingual situation where interpretation was not necessary. Consequently, this omission of interpretation was not counted as an error to avoid inflating the data. If the physician was present during a monolingual situation, non-interpretation was counted as an error. This thesis focuses specifically on nurse-interpreter errors in situations where all participants are present, and interpretation is necessary for communication between participants.

In conclusion, this chapter has outlined the research questions, procedures for data collection, definitions of variables, and the type of analysis utilized for the transcribed medical encounters. Chapter Four will provide results of the analysis.

CHAPTER FOUR

Results and Discussion

Introduction

This chapter presents the analysis and results regarding the research questions outlined in the previous chapter and provided below.

1. Which was the most common type of nurse-interpreter error: omission, addition, or substitution?

2. Was there a pattern between the type of error and type of voice utilized at the time of error production?

3. Were omission, addition, or substitution errors related to a shift in nurse-interpreter voices?

Each question will be addressed in order. First, overall results are presented to address research question one, followed by a comparison of each error type and voice used at the time of production. Next, shifts in voice are analyzed to see if there is a pattern between error production and a shift in voice. That is, what proportion of errors occurred when there was a shift in the nurse-interpreter's role?

Overall Errors

As discussed in Chapter Three, omission, addition, and substitution errors formed the variables selected for analysis. Additionally, the voice of the nurse-interpreter immediately before making an error and when producing an error were labeled with one of three defined roles: nurse, interpreter, or fellow human. Table 6 provides a summary

of results for each error type. Overall, the most frequent error was addition that

comprised 34.4% of the total errors, followed by omission (48.1%) and substitution

(17.5%) errors.

Table 6

Overall Errors Including Reported Speech

Error	(n)	%
Omission	709	34.4
Addition	993	48.1
Substitution	361	17.5
Total	2063	100

Note. n= number of tokens

Reported Speech

Although addition errors comprised the greatest overall number of errors, upon

further analysis, it was apparent that many of these addition errors were, in fact, instances

of reported speech. Results will therefore be discussed both including and excluding

reported speech as part of the category of addition errors in order to further clarify and

avoid misrepresenting the data. Recall reported speech occurs when an individual

recounts something said in the past (Pöchhacker & Shlesinger, 2005), often changing the

pronouns and verb forms to reflect the third person, even when the original utterance

occurs in first person. For example, instead of stating a physician's exact words in the

phrase, "you should take an antibiotic," in reported speech, an interpreter might say, "*she

said that* you should take an antibiotic," thereby changing and adding to the statement in

order to relate the information in third person.

When including reported speech errors, the most frequent error overall was

addition. When excluding errors containing reported speech, however, a drastic decrease

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in tokens was noted, leaving addition errors as the second most common (a reduction from 48.1% to 31.3%). Table (7) reports overall errors excluding reported speech.

Table 7

Overall Errors Excluding Reported Speech

Error	(n)	%
Omission	708	45.5
Addition	487	31.3
Substitution	361	23.2
Total	1556	100

Question Two

The second research question asked whether there was there a connection between the type of error and type of voice utilized at the time of error production.

Overall Errors Excluding Reported Speech Errors

The most common error when excluding reported speech errors was omission using the nurse voice, followed by addition using the nurse voice. Substitution using the interpreter voice was the third most common error, with the error of omission in the interpreter voice being the fourth most common error. All other errors and voice combinations revealed fewer than 40 tokens each, with the error of substitution using the fellow human voice having zero errors. Table 8 presents results for error and voice combinations in the present study.

Table 8

Error Totals and Voice Production

Error	Nurse		Interpreter		Fellow Human		Total	
	(n)	%	(n)	%	(n)	%	(n)	%
Omission	461	29.6	218	14	29	1.9	708	45.5
Addition	437	28.0	36	2.3	16	1.0	487	31.3
Substitution	9	0.6	352	22.6	0.0	0.0	361	23.2
Total							1556	100

Note. Excludes reported speech errors.

Omission

  Nurse voice. Recall that an omission error took place when an "interpreter did not interpret a word/phrase uttered by the clinician or patient" (Flores et al., 2003, 2012). Additionally, aspects of the nurse voice include taking patient history, discussing lifestyle, medication and health obligations, explaining procedures and treatments, outlining possible causes for symptoms, and responding to patient discomfort. Examples (7a-c) illustrate omission errors while using the nurse voice, the most common error and role combination, accounting for one third of all errors in the data.

(7a) I: *Parece que tiene alrededor de cinco semanas y ahh*, five weeks and how many days?
  It seems that you have around five weeks and ahh. Five weeks and how many days?
  C: I gotta figure that out real' quick. Looks like i::t's five weeks and two days.
  I: *Cinco días*, I mean *cinco semanas y dos días*.
  Five days, I mean five weeks and two days. (207-4)

(7b) I: *Ahm pero como ya tiene– ya ha tenido– ya tiene otros tres hijos* or how many kids does she have?
  Ahm but like you already have– you already have had– you already have three other kids or how many kids does she have?
  P: *Sí*, [*tengo tres*].
  Yes, I have three. [No interpretation]
  C: [Uh five] ((looks at paper and holds up 5 fingers)). (208-2)

(7c)   C: Okay. Okay, good. Well, we'll check her urine today. ((Looking at computer))
       Uhm, all right, any headache or vision changes?
       I: *¿Usted no ha tenido dolor de cabeza o cambio de la visión?*
       Have you had a headache or a change in vision? (211-4)

The nurse-interpreter in example (7a) interprets some information to the patient but

excludes part of the physician's utterance. Example (7a) is also an instance of a frequent

occurrence in the present study in which a nurse-interpreter only interpreted information

related to the medical conversation. In example (7b) the interpreter did not interpret the

patient's answer to the nurse-interpreter's question, and miscommunication took place:

the patient stated that she had three children, and at the same time, the physician stated

that the patient had five children. Unfortunately, the nurse-interpreter did not interpret

what either participant said, and the miscommunication remained unresolved. When

interpreting for the physician in example (7c), the nurse-interpreter did not include

information involving the patient's appointment, but rather only the direct question.

Interpreter Voice. The following examples illustrate omission errors that occurred while

the nurse-interpreter used the interpreter voice, found in 14% of all errors (excluding

reported speech).

(8a)   C: Ohhh. (..) How do you say, does she go to daycare?
        I: *¿Ella va a la guardaría?*
        Does she go to daycare? (213-6)

(8b)   C: I don't think that it's vertigo.
        P: Oh.
        C: Based- based on what you told me, I don't think that it's vertigo.
        P: Oh:: (124-2)

(8c)   C: Okay, okay. Good, good, good, all right. Ahm, I'm going to ask you some
          more questions, the normal routine ones. All right, so (.) any complaints?
         I: (.) *Mm– ¿una queja o preocupación o algo?*
         Mm– a complaint, worry, or anything? (208-1)

The first example (8a) depicts the nurse-interpreter interpreting the physician's question but omitting part of the utterance. In example (8b), the nurse-interpreter omitted the physician's utterance even though the patient did not necessarily understand. In this situation, the nurse-interpreter may have restricted the patient from finding an answer to her question. In example (8c), the nurse-interpreter related the physician's question but leaves out the physician's preamble meant to prepare the patient for the ensuing questions.

Fellow human voice. As discussed in Chapter Three, the fellow human voice involves information not pertaining to healthcare, but rather every-day life (Cordella, 2004). Of the errors made while using the fellow human voice, omission was the most common error when the data both included and excluded reported speech. The following examples include omission errors while using the fellow human voice. Such errors were infrequent, accounting for less than two percent of the data.

(9a)   I: *También va a estar frío. (..) ((esta)) es su hijo?*
         [It's also going to be cold. (..) this [sic])) is your son?
         P: *Sí:: es ((la)) más chico.*
         Yes, he's the youngest. (214-2)

(9b)   P: *Sí.* (all three women laugh) (()) *por cobarde.*
         Yes. (all three women laugh) (()) because [he's] a coward.
         C: Sometimes it's hard to decide whether they're a supporter or a <u>pain</u>. (P is still laughing) Okay. All right. [Well, that was] (211-4)

(9c)   I: *Dijo que la otra era niña, ¿verdad?*
         You said the other was a girl, right?
         P: *Es otro niño.*
         It's another boy.
         I: *¿Niño? Entonces ella va a ser la única/*
         A boy? So she is going to be the only one
         P: *Sí/*
         Yes.

In example (9a), the nurse-interpreter asked the patient about the child who was also

present during the consultation. The nurse-interpreter connected with the patient over a

topic unrelated to healthcare and the current medical encounter: her children. Although

the nurse-interpreter connected with the patient, the physician remained unaware because

the information was not interpreted. The second example (9b) included all three

participants laughing at a joke, but the patient's comment pertaining to the joke was not

interpreted for the physician. In the last example (9c), the nurse-interpreter asked the

patient about her children, but the conversation that continued between the nurse-

interpreter and patient was not interpreted to the physician.

Addition

   Nurse voice. Chapter Three defines addition errors as when an "interpreter added

a word/phrase to the interpretation that was not uttered by the clinician or patient" (Flores

et al. 2003, 2012). Similar to omission errors in the nurse role, addition while using the

nurse voice accounted for almost one third of all errors as presented in eexamples (10a-

c).

(10a)   P: *Y cuando luego me vine para acá (()) un problema con asma y me siento bien.*
        And when I later came here (()) a problem with asthma and I feel well.
        I: *Okay. ¿A qué edad? ¿Le diagnosticaron?*
        Okay, At what age? They diagnosed you? (204-7)

(10b)   C: She– you did have gestational diabetes? With which child?
        I: *¿Con cuál bebé (()) su último?*
        With which baby (()) your last? (205-1)

(10c)   P: *Mmm, no, pues no, o sea me voy a esperar hasta el viernes. Es lo único que le*
        puedo decir.
        Mmm, no, well no, or rather, I'm going to wait until Friday. It's the only thing
        that I can tell you.
        I: *¿No quiere que le pone en el hospital?*

You don't want to be put in the hospital?
P: *No, tampoco.*
That either.

In example (10a), the nurse-interpreter asked an additional question to the patient, perhaps hoping to gather more information to report to the physician. In example (10b), the nurse-interpreter asked the physician's original question, but added information to relate specifically to the patient's most recent child. This type of addition lead the patient to answer a question in a more specific way and was misrepresentative of what the physician originally asked. The last example (10c) depicts a nurse-interpreter asking the patient a clarifying question about going to the hospital; however, the physician is unaware of the additional question.

Interpreter voice. Examples (11a-c) include addition errors while using the interpreter voice. Such errors only accounted for 2.3% of all errors (excluding reported speech).

(11a)   C: Uh I am the med student, I'm going to examine your (()) and Dr. X will come and see you soon.
        I: *Él es el estudiante de medicina, este, le va a examinar y le va a hacer preguntas y luego la doctora va a venir a verla.*
        He is the medical student, um, he is going to examine you and he is going to ask questions and later the doctor is going to come see you. (204-6)

(11b)   P: *E:: esta* ((indicates fist)) *a veces un poquito que estoy haciendo* (()) *un dolor*
        Uh:: it's ((indicates fist)) sometimes a little bit when I'm doing (()) a pain
        I: A little bit in that (()) she says when she's doing something she'll just get a little pain. (204-2)

(11c)   C: And then when did he, did he start school just in August/?
        I: Of this year/?
        C: Ah ha
        I: *Okay, ¿él ahh, el niño apenas empezó yendo a la escuela el agosto que pasó/?*
        Okay, he ahh, the child barely started going to school last August? (202-1)

In example (11a), a resident spoke in first person, but the interpretation was rendered in third person. Similarly, the patient in example (11b) also used first person, but the message to the physician took place in third person. To accurately portray the physician's question, the nurse interpreter in example (11c) asked the physician "of this year?" to clarify information but did not inform the patient.

Fellow Human Voice. When asking questions or providing information to patients as a fellow human, nurse-interpreters rarely committed errors of addition (1% of tokens), outlined in the following examples (12a-c).

(12a)   I: *Dijo que la otra era niña, ¿verdad?*
         You said the other was a girl, right?
         P: *Es otro niño.*
         It's another boy.
         I: *¿Niño? Entonces ella va a ser la única.*
         A boy? Then she is going to be the only one.
         P: *Sí.*
         Yes. [No interpretation] (208-2)

(12b)   C: Oh okay. Sometimes you can a– it's– she may have some cramping, down
         there it's important to drink water and stay hydrated.
         I: *Dice que tal vez sí es posible que pueda tener un dolor, pero siempre debes*
         tomar bastante agua y se mantenga hidratada. A veces he escuchado de (()) eso
         es normal porque yo lo tuve.
         She says that sometimes yes, it is possible you can have a pain, but you always
         should drink enough water and stay hydrated. Sometimes I have heard of (()) that
         is normal because I had it. (207-4)

The first example, (12a), the nurse-interpreter discussed the gender of the patient's child and concluded that the patient's daughter would be the only female child in the family. The nurse-interpreter asked additional questions not uttered by the physician nor the patient. In example (12b), the nurse-interpreter shared personal experience with the patient after interpreting the physician's utterance.

Substitution

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Nurse voice. Substitution is when an "interpreter substitutes a word/phrase for a different word/phrase uttered by the clinician or patient" (Flores et. al 2003, 2012). The following examples (13a-b) include substitution errors while nurse-interpreters used the nurse voice. Such errors were almost non-existent, occurring in less than one percent of the data.

(13a) P: *Ya está pic, como quebrada ya nomás un poco, un poquito más, pos quería ver si me pueden dar también un papel que dice que pueda ir al dentista.*
It is already, like broken already, only a little bit, a little bit more, well I was wanting to see if you [plural] can also give [me] a paper that says I can go to the dentist.
I: *¿Al dentista?*
To the dentist?
P: *Al dentista.*
To the dentist.
I: Okay it does burn when she urinates, and also she's having trouble with her teeth, if we could just, you know how we do a consent to send over to the dentist. (123-1)

(13b) P: *Ahh es lo que le iba a decir, ayer me estaba bañado, ya se me cayó solo pero, pos, me dijeron que viniera y por eso vine.*
Ahh it is what I was going to say, yesterday I was bathing, and it already fell out on me by itself, but, well, they told me to come [in] and so I came.
I: Okay. Ah it came out by itself. It was packed. (208-4)

In example (13a), the nurse-interpreter substituted information to create a concise message from several of the patient's utterances. When interpreting information to the physician, only basic medical information was communicated. In the second example (13b), the nurse-interpreter rendered a different message with the same general idea that the patient originally expressed. The nurse-interpreter, however, used different vocabulary to explain the process that the patient has described.

Interpreter Voice. Recall that the interpreter voice creates a natural conversation between the patient and provider and maintains fluid communication between participants through accurately interpreting information (Flores et al., 2003, 2012), and that substitution errors

occur when an "interpreter substitutes a word/phrase for a different word/phrase uttered

by the clinician or patient" (Flores et. al 2003, 2012). Examples (14a-c) demonstrate

substitution errors while nurse-interpreters employed the interpreter voice; such errors

accounted for almost one quarter of errors (excluding reported speech).

(14a)   P: *Ahh, como me duele la garganta*
        Ahh, like my throat hurts.
        I: Sore throat. (116-2)

(14b)   C: Okay, um have you had a lot of fluid come out, like a big gush of fluid come
        out/?
        I: ¿No ha sentido que le haya salido así bastante/?
        Have you felt something that has come out sort of like that?

(14c)   P: *Mmm-hmm. Muy ligero pero sí, que yo digo no.*
        Mmm-hmm. Very light but yes, I say no.
        I: A little bit but yeah, she does ((C is writing)). (124-2)

In example (14a), the nurse-interpreter changed what the patient said while still

maintaining a similar message. The nurse-interpreter in example (14b) asked the patient a

non-specific question. Excluding the exact term changed the question from the provider

and ultimately the patient's response. The nurse-interpreter in the last example (14c) used

a different phrase to interpret the patient's answer, making it shorter, but without

correctly representing the patient's utterance.

     Fellow human voice. No examples of the error of substitution while using the

fellow human voice were found in the data, both including and excluding reported speech

errors.

     In summary, when excluding reported speech errors, omission errors occurred

most frequently when using the nurse voice. Errors of omission using the interpreter

voice included 14% of the total data, and omission while using the fellow human voice only occurred in 2% of the data.

For the error of addition, the voice with the highest count (when excluding reported speech errors) was the nurse voice, comprising 28% of errors. Addition errors with the interpreter voice occurred in just 2% of the data and with the fellow human voice in only 1%.

Finally, the interpreter voice yielded the highest numbers of substitution errors. The lowest number occurred when using the nurse voice while making a substitution error. Of note, the fellow human voice was never used when making a substitution error.

Question Three

Question Three asks whether omission, addition, or substitution errors were related to a shift in nurse-interpreter voices. Recall from Chapter Three that both the voice used immediately before and at the time of error production were recorded. Overall, shifts in voice when making an error comprised 28% of total errors, almost one third of all errors. When excluding reported speech as an addition error, shifts in voice were reduced to 22% of total errors, approximately one fifth of all errors. Tables Nine and Ten present the totals for all possible shifts in voice and error production including and excluding reported speech as an interpreter error.

Table 9

Shifts in Voice and Error Production Including Reported Speech

Voice Before Error	Voice After Error	Error	(n)	% Of Total Shifts	% Of Total Errors
Nurse	Interpreter	Omission	15	2%	< 1%
		Addition	117	19%	6%
		Substitution	101	16%	5%
	Fellow Human	Omission	1	0%	< 1%
		Addition	2	0%	< 1%
		Substitution	0	0%	< 1%
Total			236	38%	11.5%
Interpreter	Nurse	Omission	186	30%	9%
		Addition	172	28%	8%
		Substitution	6	1%	< 1%
	Fellow Human	Omission	2	0%	< 1%
		Addition	6	1%	< 1%
		Substitution	0	0%	< 1%
Total			372	60%	18.1%
Fellow Human	Nurse	Omission	2	0%	< 1%
		Addition	1	0%	< 1%
		Substitution	0	0%	< 1%
	Interpreter	Omission	0	0%	< 1%
		Addition	4	1%	< 1%
		Substitution	4	1%	< 1%
Total			11	2%	0.5%

Table 10

Shifts in Voice and Error Production Excluding Reported Speech

Voice Before Error	Voice At Error	Error	N	% Of Shifts	% Of Total Errors
Nurse	Interpreter	Omission	15	2.0	0.7
		Addition	8	1.0	0.4
		Substitution	101	16	5.0
	Fellow Human	Omission	1	0.0	0.0
		Addition	2	0.0	0.1
		Substitution	0	0.0	0.0
Total			127	19	6.2
Interpreter	Nurse	Omission	186	30	9.0
		Addition	169	27	8.0
		Substitution	6	1.0	0.3
	Fellow Human	Omission	2	0.0	0.1
		Addition	6	1.0	0.3
		Substitution	0	0.0	0.0
Total			369	59	17.9
Fellow Human	Nurse	Omission	2	0.0	0.1
		Addition	1	0.0	0.0
		Substitution	0	0.0	0.0
	Interpreter	Omission	0	0.0	0.0
		Addition	0	0.0	0.0
		Substitution	4	1.0	0.2
Total			6	1.0	0.3
Total			503	100	100

Omission

In the overall data (including reported speech errors), moving from the interpreter voice to the nurse voice comprised 30% of all shift-related errors and 9% of the total errors. Examples (15a-c) illustrate omission errors and shifts in voice.

(15a)   I: This happened at work. She said she was putting up like groceries or whatever, and the boxes of sour cream fell on her.
C: The boxes of what?
I: Sour cream. (204-6)

(15b)   I: *¿Todo suena bien?*
Everything sound good?
P: *Sí.*
Yes. [No interpretation]
C: Okay, uhm let's see how far along you are today. (looks at computer)
I: She's for sure, for sure (()). (205-1)

In the first example (15a), the nurse-interpreter initially provided an interpretation of the patient's message. When the physician asked a follow-up question to the patient, however, the nurse-interpreter omitted and then answered for the patient. The nurse-interpreter knew the answer to the physician's question and gave an answer as a nurse providing information that could aid in the physician's diagnosis. In example (15b), the nurse-interpreter initially interpreted the physician's message to the patient. When the physician briefly explained what would happen next the nurse-interpreter did not interpret the physician's utterance, leaving the patient unaware of what would happen next during the consultation. In this moment, the nurse-interpreter acted as a nurse and contributed to how pregnant the patient might be instead of interpreting the physician's utterance.

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Addition

The most frequent shift involving addition errors occurred when a nurse-interpreter shifted from using the interpreter voice to using the nurse voice, which comprised 28% of the total shifts in voice and 8% of overall errors. Examples (16a-c) illustrate the shift from interpreter to nurse voice while making an addition error.

(16a)   C: Math/ oh I like math too. What are you guys learning? (.) adding? Okay. (.) any concerns you have?
I: *¿Alguna preocupación que tiene?*
Any concerns that you have?
P: No no.
I: *¿Todo está bien?*
Everything is good?
P: *Todo está bien.*
Everything is good
I: Everything's good. *¿No se ha enfermado ni nada?*
Everything is good. Have you been sick or anything?
P: No ((laughs a little)). (214-6)

(16b)   C: Okay. [To I] What medicine did she take?
I: *¿Cuál medicamento tomó por el dolor de cabeza?*
What medicine did she take because of the headache?
M: *Le di unas como Mejoralitas se llaman, Mejoralitas algo como rosas así (())*
se llaman Mejoralitas.
I gave her some like *Mejoralitas* they are called *Mejoralitas* something like pink like this (()) they are called *Mejoralitas*.
I: *¿Es producto de México?*
Is it a product of Mexico?
M:Uh-huh. *Sí.*
Uh-huh. Yes. [No interpretation] (213-3)
   Key: Henceforth M= mother

In the first example (16a), the nurse-interpreter initially interpreted the physician's questions, thereby fulfilling the interpreter role. Later, however, the nurse-interpreter asked additional questions about the health condition of the patient's family, playing the nurse role. In example (16b), the patient's utterances about the medication were initially interpreted, but then an additional question was asked by the nurse-interpreter about the

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origin, thus shifting into the nurse voice. Nurse-interpreters in the present study often

asked additional questions to gain more information as a nurse, which sometimes blocked

the patient and provider from communicating to one another.

Among addition errors, the second most common shift was from the nurse voice

to interpreter voice, that comprised 19% of all shifts in voice and 6% of total errors.

(17a) P: *En la mañana*.
In the morning.
I: *¿Apenas una*?
Barely one [o'clock]?
P: *Como a las dos de la mañana estaban retirados, pero ahorita está más, como más cerca*.
Like at two in the morning they stopped but now it is more, like closer.
I: She's saying today in the morning around two. (208-2)

(17b) P: *Es que estaba levantando el* (()) *y estaba, se cayó un este donde iba a poner la caja de la* (()) *se me, se ((), entonces vino junto eso con la caja esa, la esta, y me cayó así en el pie*.
It's that I was lifting the (()) and it was, it fell a, uh, where I was going to put the box of the (()) it (()) on me, so I came with that, with that box, that one, and it fell on me like that on my foot.
I: *¿En el trabajo verdad*?
At work, right?
P: *Sí*.
Yes. [No interpretation]
I: This happened at work. She said she was putting up like groceries or whatever, and the boxes of sour cream fell on her. (204-6)

In examples (17a-b), the nurse-interpreter used reported speech as she asked questions.

Reported speech errors made up the majority of addition errors when shifting from using

the nurse voice to using the interpreter voice. When reported speech errors were excluded

from the data, the shift in voice from nurse to interpreter while making an addition error

decreased from 19% to 1% in total shifts in voice, and from 6% to less than 1% of overall

errors. The large disparity in tokens when excluding reported speech is important

because reported speech comprised the majority of the addition errors present when

nurse-interpreters shifted between the nurse and interpreter voices.

Substitution

Shifting from the nurse to interpreter voice while making a substitution error

encompassed 16% of total shifts and 5% of total errors and is represented in the

following examples (18a-b)

(18a)   C: [Keep doin' them and] keep taking Tylenol, okay?
        I: *Que siga* [(())] *y también tratar de moverse lo más que pueda.*
        Keep on (()) and also try to move as much as you can.
        C: [And try and keep moving] as best you can.
        P: *Sí, es que cuando me acuesto, tengo que buscar el modo. No puedo irme a
        voltear. Me acuesto a un lado y luego para volverme al otro lado, me pongo acá
        arriba/, luego agarro el (( )) pa' ponerme al otro lado porque me duele esta parte*
        ((indicates lower back)).
        Yes, it's that when I'm going to bed, I have to look for a way. I can't go to turn
        over. I go to bed on one side and later to return to the other side, I have to sit up
        over here, later I grab the (()) to get myself on the other side because this part
        hurts ((indicates lower back)).
        I: She just says that she has to at night whenever she's sleeping she has to find a
        way to turn 'cuz it hurts. (211-4)

(18b)   C: Yeah, for some reason it just hasn't come back yet, but that's okay. Uhm, we
        might have to get those re-signed. All right, so and did we ever get the three-hour
        glucose tolerance test where you (motions drinking something)
        I: *Ya le hizo el examen de 3 horas, ¿del azúcar? ¿De las 3 horas?*
        Did [they] already do the 3-hour exam, of sugar? The 3-hour one?
        […]
        I: *Tuvo que ir cada hora al laboratorio para que le sacara sangre.*
        You had to go every hour to the lab to get blood taken.
        P: *Pos, no sé. Nomás vine ahm.*
        Well, I don't know. Only that I came um.
        A: Oh, okay. Hold on, I'll be right back. (leaves room)
        I: *Porque hay uno de una hora y hay uno de tres horas.*
        Because there is one for one-hour and there is one for three hours.
        C: All right, and we-
        P: *Creo que la de una hora.*
        I think it was the one-hour one.
        I: She's only done the one hour. (208-1)

In example (18a), the nurse-interpreter initially added information to the doctor's utterance to give the patient advice as a nurse. After the patient explained her problems and discomfort while trying to sleep, however, the nurse-interpreter condensed many of the details into one phrase. In contrast, the nurse-interpreter in example (18b) recognized that the patient may not have been aware of the different types of blood tests and therefore provided more information. While explaining the tests, the nurse-interpreter took on the nurse voice. When the nurse-interpreter provided information to the physician using the interpreter voice, however, not all of the patient's answers were included, resulting in a substitution error.

Shifts in voice related to errors of omission took place when a nurse-interpreter already knew information (15a) or did not include all parts of the physician's utterance (15b). Nurse-interpreters shifted into the nurse voice to contribute to the consultation, but in shifting to the nurse voice, omitted information to the patient, and ultimately left them out of the conversation.

Addition errors related to shifts in voice included two different shifts in voice. First, nurse-interpreters in the present study often shifted from fulfilling their role as interpreters to the nurse voice to ask additional questions to gain more information. Asking additional questions as a nurse, however, may have impeded the patient's ability and provider's ability to communicate with each other. The other salient shift related to addition errors included shifting from the nurse voice to the interpreter voice, where reported speech errors made up the majority of the errors.

Lastly, nurse-interpreters in the present study shifted from the nurse voice to the interpreter voice in relation to substitution errors. This frequently occurred when the

nurse-interpreters asked additional questions to gather information as a nurse then substituted the patient's answers to concise phrases as an interpreter.

Additional Trends

In several cases, a monolingual conversation took place between nurse-interpreters and other participants over several conversational turns after shifting voices that was not interpreted to the other participants present in the consultation. Such conversations took place both in English and Spanish as represented below (19a-b).

(19a) C: Why- (.) so, have you been taking these?
P: (()) *se me la dieron como penicilina. Estas y* (())
(()) they gave them to me like penicillin. These and (())
I: *¿Y estás sí está tomando?*
And you are [informal], yes you are [formal] taking them?
P: *No: no* (()) *por esos los traigo para preguntarles para que sirven. Y luego las ponemos las ponemos* [(())
No: no (()) for those I brought them to ask you [plural] what they are for. And later we put them, we put them [(())
I: [*y esto es un analgésico para disminuir el dolor o la fiebre que se puede presentar en la gripa =*
[and that is an analgesic to lessen pain or fever that can happen with the flu=
P: =oo=
I: =*Infecciones de garganta, bronquitis, dolores de cabeza o* (()) *muscular.*
= throat infections, bronchitis, headaches or muscular (())
P: Oh okay.
I: *O sea o dental.*
I mean or dental.
P: *¿Oh sí?*
Oh really?
I: mm-hm.
C: Which one is that one/
I: This is like a:, like a pain (.) medication like a um. (204-7)

(19b) C: Okay, I'm going to pull it up here, do you have the-
I: Yes.
C: Good deal. This is baby number three/?
P: Mhmm.
C: Is that right is this your third=
I =mhm=
C: Okay.

P: ((to son)) *va acá* (()). (.) *Me hicieron un análisis* (()) *¿me salieron bien?*
((to son)) Go over there (()). (.) They did an analysis on me (()) did everything
come out okay?
C: Okay.
P: *No me hablaron* ((*ni nada*)).
They didn't talk to me ((or anything)).
I: *No sé qué pasó.* [*ahorita checqueo.*
I don't know what happened. [Ill check it.
C: [((one))
P: O:h.
C: O:::kay lean all the way back. (214-2)

In example (19a), the nurse interpreter carried on conversation with the patient to explain
the different functions of a medicine; the conversation takes place only in Spanish. That
is, during the conversation, the physician was not informed about the content of the
patient's utterances nor the nurse-interpreter's explanations. In example, (19b), two
conversations occurred at the same time. The primary conversation occurred in English
between the nurse-interpreter and physician, while the secondary conversation existed
between the patient and nurse-interpreter in Spanish. Both the patient and provider
communicated with the nurse-interpreter rather than each other.

The only visual aspect included when reading and analyzing transcripts were
notes added by transcribers. Language use, however, provided clues that body language
affected the interpretation in several conversations. For instance, some omission errors
were coded with comments about gestures, even though the utterance itself was not
communicated. Consequently, some understanding may have been possible due to
gestures that were not recorded and therefore unavailable to the investigator. The
following examples contain incidents where body language likely took place.

(20a)   C: Does this hurt?
P: *No. No, ahí no. Ahí es que no. Cuando le hace así pa' bajo, eso me duele más.*
No. No, not there. There it does not. When it goes like this downward, that hurts
me more.

C: Ok (…) you said this hurts?
P: *Sí, ahí. Ahí no. Es más a este lado.*
Yes, there. There, no. It's more to this side.
C: It's more on this side?
P: *Mhmm. No. Ahí sí.*
Mhmm. No. There, yes.
C: Mmkay. Nothing with this right?
P: No.
C: Have you taken anything for this?
I: *¿Ha tomado algún medicamento?*
   Have you taken any medicine? (204-6)

(20b)   C: Okay, all right. Well lemme start with looking at your neck real fast. (()) Show me where this lump is.
I: *Enséñele* (())
Show her (())
P: *Aquí está la bolita. Aquí donde tengo dedo.* ((C examines P's neck))
Here is the little lump. Here where I have my finger.
C: °Okay° Does it hurt?
I: *¿Le duele?*
Does it hurt?
P: *No.*
No. [Not interpreted] (204-2)

In example (20a), participants continued through the conversation unaware that

misunderstandings were taking place. A patient uses oral expressions in example (20b) in

addition to body language to communicate with the physician. By saying, "here where I

have my finger," the patient also probably provided a physical explanation. Therefore, in

situations with body language, not all utterances were interpreted.

Overall Results

In the current study, results indicate that when reported speech errors were

included, the most frequent error was addition, specifically when using the interpreter

voice. When excluding reported speech errors, however, omission was the most common

error, aligning with previous studies of error production types and frequencies (Flores et

al., 2003, 2012; Ana M. Nápoles et al., 2015). In the category of addition errors, while

using the interpreter voice, reported speech comprised a large number of tokens (496 out of 53, or 93%). Reported speech errors are probably common because nurse-interpreters see themselves as participants in the conversation rather than mere interpreters. Additionally, with regard to role-changes, when excluding reported speech errors from the data, shifts in voices fell from 28% of overall error tokens to 22%.

In summary, this chapter has discussed results from 30 transcripts of interpreted medical interviews. Overall, nurse-interpreters frequently report speech between participants during the medical consultation and most commonly omit information. Additionally, nurse-interpreters commit errors when taking part in the conversation as participants; that is, when they change between the roles of nurse, interpreter, and fellow human.

Discussion

Regarding Question One (the most common type of errors), it was hypothesized that the errors of omission, addition, and substitution would occur in most of the transcripts. Following results from previous studies (Flores et al., 2003, 2012; Ana M. Nápoles et al., 2015), it seemed that omission would be the most common error, a finding that concurred with the present study once reported speech was omitted. Results indeed showed all three types of errors in each encounter. Within each conversation, however, not every voice and error combination were present. For example, not every encounter included an omission error while using the fellow human voice.

When analyzing addition errors, asking clarifying questions and reporting speech were frequent ways that information was added. Nurse-interpreters asked additional questions and reported speech in the present study as an attempt to fulfill both the nurse

and interpreter roles at the same time. The data show that nurse-interpreters and other dual-role interpreters have complex linguistic and institutional roles to fulfill during any conversation.

When studying instances of omission errors, nurse-interpreters frequently communicated only parts of a physician's conversational turn, excluding information unrelated to medicine. Although including all utterances creates transparency between participants during the consultation (Dysart-Gale, 2005; Hsieh, 2008), including only the medically-related parts of utterances could be related to nurse-interpreters in the present study seeing themselves primarily as medical professionals and only secondarily as interpreters. In a sense, the nurse-interpreters believed that the medical information was the most important information to convey in the discourse, rather than the patient-provider communication. This finding is corroborated by the fact that nurse-interpreters were paid for their job as nurses and were only paid 50 additional cents per hour for serving as interpreters.

Regarding Question Two, a connection between the fellow human voice and the production of omission errors was hypothesized. Nevertheless, results demonstrate that the fellow human voice had the least number of errors. Additionally, no examples were found of substitutions errors while using the fellow human voice, both including and excluding reported speech errors. In using the fellow human voice, the possibility of substituting information may be reduced due to the subject matter pertaining to more personal information. Low numbers of tokens in the fellow human voice could also be related to nurse-interpreters in the current study seeing themselves primarily in two roles: both nurse and interpreter, rather than as a person connecting with the participants on an

individual level. It is also possible that the cognitive load of shifting between two primary roles overshadowed the role of fellow human.

In the present study, the nurse voice includes taking patient history, discussing lifestyle, medications, and health obligations, explaining procedures and treatments, outlining possible causes for symptoms, and responding to patient discomfort (adapted from Cordella, 2004). In some institutions, these actions are performed by a provider or physician (Cordella, 2004; White & Barton Laws, 2009). Therefore, the nurse voice in the present study possibly could be further classified into other roles, such as co-diagnostician, manager (Hsieh, 2008, 2016), or provider (White & Barton Laws, 2009). Indeed, it appears that the provider voice utilized by the nurse-interpreters was frequently related to addition errors. Nurse-interpreters often asked patients additional questions and explored information outside of what the physician originally asked, thus gaining more information regarding a variety of topics such as symptoms or health history.

Of the total addition errors in the interpreter voice, 93% comprised reported speech errors and could be related to nurse-interpreters viewing themselves as participants in the conversation (Barton Laws et al., 2004; Brisset et al., 2013). For example, when using third person pronouns and verb conjugations, the nurse-interpreter does not interpret the message as a participant in the conversation. The amount of reported speech suggests that another communicative function could be created either within the interpreter voice category or as a new voice, that of a "reporter".

A pattern occurred in relation to addition errors. In many situations, the shift from interpreter to nurse voice lasted more than one turn. Nurse-interpreters sometimes created monolingual conversations with participants when using the nurse voice while

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attempting to perform the duties expected of a nurse during a medical encounter. One reason for the such conversations may be the ability to act most efficiently as a nurse in just one language. The findings in the current study align with previous studies in that when dual-role interpreters become individual participants in a conversation instead of a means of communication (a mouthpiece), information is added, omitted, and substituted without participants being aware (Brisset et al., 2013; Barton Laws et al. 2004).

Regarding research Question Three, it was posited that a relationship might occur between error production and shifts in voice (or role). Specifically, omission errors were expected when changing between interpreter and fellow human voices. The original hypothesis included nurse-interpreters omitting information in order to connect with patients on a personal level. The most common shifts, however, turned out to be between the nurse and interpreter voice rather than the fellow human voice. Instead, the data suggest that nurse-interpreters made omission errors because they primarily focused on fulfilling two roles (nurse and interpreter) during the consultation.

The study's overall purpose was to identify errors and voices used among untrained nurse-interpreters in a primary care setting. One of the most important aspects of the study was to better understand if role-shifts were present and whether a relationship existed between error production and shifts. Nurse-interpreters indeed switched roles multiple times during an encounter, attempting to fulfill different sets of duties at the same time. Although the official language conduit role for interpreters is important, equally important is patient satisfaction. In fact, research suggests that when patients are dissatisfied, they often do not return for follow-up appointments or visits (Angelelli, 2004; Baker et al., 1998; Chan et al., 2010; Ngo-Metzger et al., 2007; Flores,

2000; Erzinger, 1991; Bastien, 1987; Garcés, 2008). Language use, however, can be improved through training (Flores et al., 2003), and the nurse-interpreters in the present study could improve their interpretation skills while maintaining an already strong relationship with patients in the Spanish-speaking community. Adequate healthcare includes providing language interpreters (Chen et al., 2007); therefore, trustworthy and culturally proficient language interpreters encourages patients to return for follow-up appointments and to receiving health care. This study suggests that targeted training might benefit these dual-role interpreters. First, they could be trained to avoid using reported speech in order to eliminate (24%) of errors. Second, they could be educated to understand the three main types of errors. Third, training could include discussion of the different roles that these interpreters need to fulfill and the fact that many interpretation errors specifically occur when shifting from one role to another and specifically when functioning as a nurse.

Chapter Five concludes the present study and includes limitations, applications, and topics for future research.

CHAPTER FIVE

Conclusions and Implications

Introduction

In the previous chapter, results from the analysis of the 30 transcripts were

discussed. This chapter addresses the research questions posed at the beginning of the

study and summarizes conclusions. Limitations are discussed in addition to applications

and suggestions for future research.

Research Questions

The study began with three research questions. Each question is listed below

with a summary of results.

(1) Which was the most common type of nurse-interpreter error: omission, addition, or

substitution?

It was originally hypothesized that all three types of errors would be present in

each encounter, and analysis demonstrated all three types of errors were present in each

encounter. Within each encounter, however, not every voice and error option occurred.

Results indicate that when including reported speech as an addition error, addition was

the most frequent error. When excluding reported speech errors, however, omission was

the most common error, a finding that aligns with previous studies (Flores et al., 2003,

2012; Ana M. Nápoles et al., 2015). Additionally, among omission errors, a pattern

emerged in which omission errors sometimes related to nurse-interpreters only

interpreting medically-relevant information. For example, physicians might apologize for

taking time to look up a piece of information and then continue with a question relating to

the patient's symptoms; however, only the question relating to the patient's symptoms was interpreted.

(2) Was there a pattern between the type of error and type of voice utilized at the time of error production?

Results demonstrated that the fellow human voice contained the smallest number of errors in the data, both including and excluding reported speech, a finding contrary to the original hypothesis that the fellow human voice would comprise the largest number of tokens. The interpreter voice, however, presented high numbers in all three categories of errors and was the voice most effected by excluding reported speech, specifically addition errors.

(3) Were omission, addition, or substitution errors related to a shift in nurse-interpreter voices?

It was originally hypothesized that shifts between the interpreter and fellow human voices while making an omission error would be the most common shift with error type. Role shifts between the nurse and interpreter voices and the errors of addition and substitution, however, contained the highest numbers of tokens of all possible shifts. Additionally, removing reported speech from the data resulted in a decrease in shifts in voice from 28% to 22% of the total number of errors. Removing reported speech errors specifically affected the shift in voice from nurse to interpreter while making an addition error, which decreased from 6% of total errors to less than 1% of total errors.

Among shifts in voice and error production another pattern arose: in situations where nurse-interpreters communicated with a participant monolingually in the nurse voice without interpreting to other participants, the transition to the interpreter voice included

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reporting the information in third person and substituting a word or phrase to make the message general and concise.

Despite finding several thousand errors among the 30 transcriptions of interpreted medical encounters with Spanish-speaking patients, it is important to remember the context at the time when video-recordings were made. The dual-role nurse interpreters were licensed vocational nurses and self-identified bilinguals without any prior training in interpretation. The categorization criteria for error production, however, was the same used for interpreters of varying levels, including trained professional interpreters (Flores et al., 2003,2012). It is also important to distinguish that many of the nurse-interpreters in the transcripts were able to communicate an appropriate message between participants speaking different languages, although not always the optimally accurate message. Additionally, interpreters in the present study connected well with the patients and formed strong social bonds, creating a comfortable and trustworthy consultation experience. While ideally, interpreters would provide both rapport and accuracy, Spanish-speaking patients at the clinic had previously indicated in surveys regarding interpretation that they were happy with the service provided. One might ask whether the Spanish-friendly, relational element that these interpreters provided offset some of the less than perfect accuracy. In many hospital settings, for example, remote interpretation is professional and accurate, but lacks the warmth and personal connection that Latino patients often desire. With training and awareness of interpretation, error production can decrease significantly (Flores et al., 2003), and these nurse-interpreters could also continue to maintain their already strong social ties while receiving future education. Nurse-interpreters in the present study were able to balance the linguistic and

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institutional demands of acting as both nurses and interpreters at the same time, while creating consultations that satisfied patients. In conclusion, nurse-interpreters in the current study did produce certain types of errors; however, they also provided Spanish-speaking patients at this location comfortable and safe healthcare communication.

Limitations

Four transcriptionists had previously viewed videos of the conversations and typed them into Microsoft Word documents. Given the large quantity of information to transcribe (75 consultations) along with the challenges of precise transcription, some spelling errors occurred in the transcripts. Additionally, words and phrases may have been accidentally overlooked or not transcribed, which could have affected the data. The impact of human error in the transcription, however, is unlikely to have changed the overall results. Inaudible speech and loud background noises also prevented transcription of certain words and phrases that may have slightly modified the data. An additional limitation regarding the transcripts was the lack of visual context in understanding the conversation (numerous researcher notes were, however, available for the current study).

Another possible limitation includes individual differences. The duration of the medical encounter as well as differences relating to the physician, nurse-interpreter, and patient may have also affected both the medical encounter and the amount of errors produced in each encounter. For example, different durations of transcriptions and the varied proficiency levels of nurse-interpreters likely added variability to the data. Reliability would have increased with additional data analysis of more transcripts by additional researchers and statistical analysis. Unfortunately, time limitations and the scope of the study did not permit an additional researcher.

Applications

The study yielded results supporting previous studies on cross-cultural interpretation and error production. When excluding reported speech errors, the error of omission was most common, a finding that corresponds to previous studies on medical interpretation (Flores et al., 2003, 2012; Ana M. Nápoles et al., 2015).

Regarding future implications for interpreters, this study reinforces the idea that training is necessary, especially for dual-role interpreters (Flores et al., 2003, 2012) and that roles do indeed fluctuate during a consultation (Barton Laws et al., 2004; Brisset et al., 2013), adding both complexity and the introduction of errors. This thesis suggests that interpreters should receive some training; more than 100 hours has been proven to decrease errors by 50% (Flores et al., 2003). Although training to produce fewer errors is important, connecting with patient and creating a satisfactory consultation is also important because dissatisfied patients may not return for follow-up visits or appointments (Angelelli, 2004; Baker et al., 1998; Bastien, 1987; Chan et al., 2010; Erzinger, 1991; Flores, 2000; Garcés, 2008; Ngo-Metzger et al., 2007).

Furthermore, patients have the right to language services in healthcare and both federal and state mandates create regulations for healthcare organizations (Chen et al., 2007; Keers-Sanchez, 2003; Perkins & Youdelman, 2008). Institutions serving in the healthcare field can provide patients with accurate and clear interpretation by hiring adequately trained interpreters or providing training for bilingual employees.

Future Research

This study could be replicated in the future by providing nurse-interpreter participants with professional training and later analyzing videos or *post-training* transcripts to see if the number of errors decreased and if the type of error changed. Additionally, the number of voices (roles) could be amplified to include more than three voices, such as a "reporter" voice and a "doctor" voice to create a more detailed analysis of error production. The data could also be codified to permit a researcher to analyze for how many conversational turns a nurse-interpreter stayed in a specific voice before shifting again. Such analysis might provide more nuanced information about uninterpreted single-language conversations noted in the current study. Finally, patient satisfaction surveys could be included to measure positive aspects of dual-role employees and understand areas for improvement.

In summary, this study finds the error of addition while using the interpreter voice to be the most common error overall when including reported speech errors. When excluding reported speech errors, however, the error of omission while using the nurse voice was most common. Overall, shifts in nurse-interpreter voices comprised almost a third of total errors when including reported speech errors and 22% without. Consequently, training only on how to avoid reported speech would greatly reduce error production. Furthermore, nurse-interpreters may not be aware of the fact that they are shifting in and out of different functions in a clinical setting. To help decrease the amount of errors, training of dual-role employees is necessary in order to create clear communication between participants and ultimately a medical consultation resulting in patient adherence and optimal communication. This study illustrates both the unique

linguistic complexity of dual-role interpreters and the importance of interpreter training

and preparation for medical consultations with Spanish-speaking patients.

Notes

[2] Symbols for conversational analysis:

[	Beginning of overlap
]	End of overlap
=	Latching (continued utterance between two speakers with no pause in between or continued utterance by the same speaker)
(.) (..)	Pauses
((cough))	Researcher's comments about actions; e.g., (sigh) or (laugh)
(())	Unclear or unintelligible utterance
? or /	Rising intonation
. or \	Falling intonation
,	Continuing intonation
::	Lengthened or prolonged sound (e.g., right)
-	Hyphen indicates utterance that is cut off or interrupted
WO	Increased loudness
°	Markedly quiet or soft

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