The International Journal for Translation & Interpreting Research
trans-int.org

# Simultaneous interpreting in healthcare: A Survey-based study on the frequency of use and nature of encounters

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DOI: 10.12807/ti.117201.2025.a03

**Abstract:** Simultaneous interpreting in healthcare settings is typically reserved for emergency situations only. Nevertheless, this technique or mode of interpreting is employed in a variety of medical settings and situations outside of the emergency department. This study explores the frequency of simultaneous interpreting encounters in healthcare settings, and the nature of appointments or interpreted events during which this mode of interpreting might be called for, negotiated or chosen by the interpreter, and utilized. The findings are based on a survey of 662 practicing, professional healthcare interpreters in the United States who have used the simultaneous interpreting technique at least once, or during a series of clinical and non-clinical encounters.

**Keywords:** simultaneous interpreting, healthcare interpreting, medical interpreting, interpreting modes, healthcare settings

## 1. Introduction

This study explores the use of simultaneous interpreting (SI) in healthcare or medical settings in the United States (US). More specifically, it examines the frequency of use of different interpreting modes, with special emphasis on simultaneous, and the nature of the encounter, or the interpreted event during which this mode or technique is or may be employed. To date, the use of SI in healthcare settings has largely been supported by anecdotal evidence, and often cited in reference to emergency situations, mental health, educational seminars and group classes (see Crezee, 2013; Bancroft et al., 2016; Mytareva, 2018) or pediatrics (see Kosack, 2022), to name a few. Healthcare or medical interpreting is a complex activity. It is a constant decision-making process in which the interpreter makes a series of conscious and subconscious choices in order to ensure effective communication between all parties in the interaction or communicative event. Over the course of an interpreted event, linguistic and cultural aspects are often the main considerations. All of these directly impact interpreter-mediated communication between two parties who belong to different speech communities (Angelelli, 2019). The contextual or situational aspects of interpreting (Pöchhacker, 2004) are of further significance in the

management of interpreter-mediated communication. The vast healthcare landscape, which includes many medical specialties, and subspecialties (see Tipton & Furmanek, 2016), places a series of demands on the interpreter. In addition to the lexical, cultural and contextual demands, interpreters are faced with determining the purpose or types of interactions or communications that are taking place (Roat & Crezee, 2015), and whether the purpose of the interpreted event is to inform, elicit information, or actively engage the party in the decision-making process. Therefore, they must determine which interpreting mode or technique best fits the communicative purpose of a given interpreted event or situation.

Roat and Crezee (2015) argue that "clear communication and understanding between patients and providers is at the absolute heart of good healthcare" (p. 247). Consequently, the role of the interpreter in the interpreted event is to ensure that communication is, in fact, effective. The three interpreting modes frequently associated with healthcare settings are consecutive, simultaneous, and sight translation. The consecutive interpreting (CI) mode has been deemed the default or the "standard mode for healthcare interpreting" (California Standards for Healthcare Interpreters, 2002, p. 72). This belief is shared by the community of practice and addressed by Angelelli (2019) as pertains to healthcare communication, which is patient-centered, whether it takes place between language concordant participants or is interpreter-mediated. This patient-centeredness is evidenced by the way in which health information is obtained or elicited in medical settings, which is typically done through the patient interview (see for example the Calgary-Cambridge Model, and Srivastava, 2014, for more on patient-centered care). The interview format is a discourse-based interaction, and interpreting in healthcare settings is therefore deemed an "interactionally oriented" activity (Wadensjö, 1998, p. 24). This, of course, is only true in healthcare encounters where the medical interview is used to elicit information from a patient, and assumes that the patient is an active participant in the interaction and the decision-making process. As such, it might suggest, and perhaps even perpetuate the existing belief that most healthcare communication is, in fact, dialogic, and would explain the consecutive mode of interpreting being considered the default mode and favored over others.

The latter idea centers around the communication triad (patient-interpreter-provider) which is based on a somewhat essentialist notion that healthcare interpreting only involves three adults, or three adult stakeholders who know, understand, and accept communication rules of their respective speech communities (Angelelli, 2019). Furthermore, it implies that all parties understand turn-taking, and that the interpreter is skilled in communication flow management. However, this does not account for interactions involving more than three participants including: children, caretakers of adult or pediatric patients, or other members of the care team, where a monolingual transfer model, or SI, might be appropriate or even necessary. It also does not take into account the communicative intent, the preferences of either party or the interpreter's judgement, the fact that not all participants are active participants in the interaction, or the spatial configuration and modality to name a few, which might render CI less effective. Although research on SI in healthcare settings is significantly lacking with only a small number of recent studies and reports, which are discussed in Section 2, shedding light on this mode, its presence and purpose in healthcare settings and its use beyond emergency and mental health contexts, is paramount.

## 2. Literature review

Some of the topics in SI research include corpus-based studies on interpreting and interpreter performance (see Shlesinger, 1998; Setton et al., 2002; Bendazzoli, 2016), the complexity and difficulty of the simultaneous mode (Tommola & Hyönä, 1990; Gile, 2009), working memory (see Köpke & Nespolous, 2006; Köpke & Signorelli, 2011; Stavrakaki et al., 2012), syntax and word order (see Chernov et al., 2004), and interpreting errors, additions and omissions when using this mode (Barik, 1971; Napier, 2004; Barghout et al., 2015). As a cognitively demanding task, it has been studied from the perspective of cognition (Setton, 1999), with a cognitive theory introduced by Camayd-Freixas (2011), and conceptualized as a set of Efforts (Gile, 2009). For Gile (2009), these "efforts," all of which use a part of our processing capacity (the Listening and Analysis Effort, the Production Effort, the short-term Memory Effort, and the Coordination Effort), are named as such because "they include deliberate action which requires decisions and resources" (p. 160). These efforts, of course, are important in CI as well.

Other scholars have also focused on SI quality (see Kalina, 2005); and the effect of delivery speed in SI (see Lenglet & Michaux, 2020; Rosendo & Galván, 2019; Han & Riazi, 2017; Barghout et al., 2015; Korpal, 2012; Moser, 1978; Galli, 1989; Altman, 1990; Gerver, 1969/2002, 1976; Pio, 2003; Shlesinger, 2003). In their study on the impact of speed in SI, Barghout et al. (2015) wanted to learn how interpreters handled delivery speed, if they adopted any specific strategies to effectively manage speed, and which omissions made by the interpreters would result in the least amount of information loss. What they found was that speed is a factor in message completeness, however, the choices made by the interpreters regarding which content to omit, were both deliberate and unintentional. Similarly, Napier (2004) also found that omissions are used by Australian Sign Language (and can be applied to spoken language) interpreters to deal with the "discourse environment" (p. 136). The question of the SI input speed and its impact on accuracy has also been raised. While some findings suggest that consecutive interpreting might yield greater accuracy (Gile, 2001), others argue that accuracy is relative and depends on several factors including interpreter competence (Viezzi, 2013). Language combination, context and the unpredictability of topics and conversations (Gile, 2009) are all important factors to consider in determining the mode of interpreting. In healthcare contexts, the sheer number of specialties would inevitably lead to new and unpredictable topics and conversations regardless of the communicative intent, therefore it could be argued that the effect on the interpreter's production effort, namely, accuracy, resulting from unfamiliar topics, is an important consideration in all interpreter-mediated interactions.

### *2.1 Interpreting modes as communication tools*

Some scholars have argued and supported the idea that the interpreting mode or technique is a tool to achieve the communicative goal. For example, when it comes to negotiating which interpreting mode to use during an interpreted event, consecutive or simultaneous, Russell (2005) has argued that it is important to use the one that will allow the participants the most effective way to communicate with one another (p. 135). It is also a matter of which mode will yield the most accurate results. In line with Russell's (2005) argument that one should use the mode that is most effective, Viezzi (2013) has referred to the modes of interpreting as "means to an end" (p. 379). Moreover, Viezzi maintains that "if the text to be interpreted is clear, if the speed is right, if the

interpreter is well prepared and technically competent, the two modes are equally good and may indeed be equally effective" (2013, p. 380). Therefore, for Viezzi, the issue lies in the output or source text quality in SI, whereas the CI mode "permits greater autonomy" and "opportunity for restructuring" when needed (2013, p. 380). Although it is not specifically discussed in terms of simultaneous or consecutive modes, Roat and Crezee (2015) also emphasize the need for healthcare interpreters to use the appropriate interpreting techniques to achieve the communicative purpose in a clinical encounter.

### *2.2 Healthcare interpreting research*

Most notable research on interpreting in healthcare has been done through the lens of cross-cultural discourse and communication (see Angelelli 2004, 2019), interpreter education (Crezee et al., 2013; Ferner & Liu, 2009; Fischbach, 1998; Crezee, 2013; Napier, 2009, 2011; O'Neill, 1991; Pöchhacker, 2004; Roat, 1999, 2000; Roy, 1999; Sultanic, 2018; Sultanić, 2020), and the interpreter role in the patient-provider interaction (Wädensjö, 1998; Cambridge, 1999; Bolden, 2000; Meyer et al., 2003; Flores et al., 2003; Suarez et al., 2021). It has also been explored from an interactionist perspective under the term "dialogue interpreting," where "meaning is conceptualized as co-constructed between speaker and hearer(s) in interaction" (Wadensjö, 1998, p. 114). This dialogic approach is contrasted against another major communication model, the transfer model (see Reddy, 1979), which is a unidirectional process where the speaker's perspective is at the forefront while the other participants present are seen as recipients of information. In the transfer model, the meaning of utterances results from the speaker's intent. It is precisely the transfer model that is often overlooked in healthcare settings. However, with SI being a transfer mode since it is unidirectional, some have argued that it could be utilized as a way to ensure equity or achieve linguistic presence (Hale et al., 2017), similar to its benefits in legal settings (see González et al., 1991, for more on linguistic presence).

### *2.3 Understanding the lack of healthcare interpreter research*

Some of the reasons for the lack of scholarship on interpreter-mediated interaction in healthcare have been illuminated by Crezee (2013) and include considerations such as ethical or institutional review board (IRB) approval or lack thereof, patient consent, and large versus small scale studies and their statistical (in)significance (pp. 6-7). Other considerations in the US also include patient privacy laws such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA),[1] interpreter employment status (hospital staff or contract), and potential risks to the participants. All of these present a barrier to entry into the medical context for researchers and access to different groups of participants or stakeholders. Another reason for the lack of research on interpreting in healthcare is that interpreters are performance observation or recording averse (Viezzi, 2013). Yet, despite the low risk and high significance as well as impact of healthcare interpreting research "in terms of their importance on patient outcomes," clinical studies tend to be granted approval "because the perceived benefits are seen to outweigh possible objections" (Crezee, 2013, p. 7). One of the most recent and only studies on SI in healthcare in the US done to date, at the time of this writing, which corroborates this, is the study by Kosack and colleagues (2022), discussed in Section 2.5.

[1] A Privacy Rule issued by The U.S. Department of Health and Human Services to implement the requirement of HIPAA regarding disclosure of patient health information.

### *2.4 SI and healthcare interpreter certification in the US*

One critical perspective in understanding SI in healthcare interpreting in the US, its significance or lack thereof, is through the lens of the two main healthcare and/or medical interpreter certifying bodies. This is an important consideration since the requirements of the two certifying bodies for the oral portion of the exam, show conflicting positions on which interpreting modes the candidates should be tested. The Certification Commission for Healthcare Interpreters (CCHI) tests on all modes (including translation) and their oral proficiency exam includes: consecutive, simultaneous, and sight translation. Conversely, the National Board for Certification of Medical Interpreters (NBCMI), does not, citing the lack of statistical significance from a "job analysis" as the reason for only testing interpreters on a consecutive mode (NBCMI Candidate Handbook, November 17, 2021, p. 2). The CCHI oral exam breakdown is also based on a Job Task Analysis (JTA). And their oral exam percentage distribution is as follows: consecutive mode 75% simultaneous mode 14%, sight translation 9%, and translation of health documents 2% (CCHI Candidate's Examination Handbook, 2023, p. 10). The CCHI Job Task Analysis (JTA) report from 2010 showed SI use in healthcare within the 10-15% range, and the SI portion of the oral exam was based on this data. CCHI's follow-up JTA report from 2016 showed an even higher percentage of SI use in healthcare settings by certified healthcare interpreters on a regular basis, "with over 54% of respondents interpreting simultaneously on a weekly or daily basis" (p. 24). Their 2022 JTA report has not yet been published.

### *2.5 SI in community and healthcare contexts*

Even though SI is included in the CCHI certification oral exam, and there is data from the JTA reports that confirms its use in healthcare settings, there is still insufficient empirical research examining the types of interpreter-mediated communicative events in medical contexts during which this mode is employed. A review of available materials establishing guidelines and recommendations for healthcare professionals and interpreters also mentions SI in relation to *chuchotage* or whispered interpreting. The Healthcare Interpretation Network (2007) mentions that the simultaneous mode "is used in cases where it may be inappropriate to interrupt the session such as mental health encounters or emotionally charged situations […] in the whispering mode for group meetings and educational sessions" (p. 35). Moreover, research on community or public service interpreting (PSI) (see Hale, 2007, 2017), also discusses SI in the context of the whispered or *chuchotage* form. One such example, is a recent study conducted by Gonzalez and Lai (2022), and to our knowledge the only study to date, on the use of the *chuchotage* or whispered interpreting technique in community settings in the Australian context. According to Gonzalez and Lai (2022), the conditions under which chuchotage is performed "are difficult and more demanding" than those of SI which is "performed in interpreting booths" (p. 2). Even with the cited difficulties, Gonzalez and Lai (2022) found that the SI mode or *chuchotage* was used in the following medical interactions or healthcare settings: aged care, counseling, family conferences, workcover[2]/insurance, medical consultations, and mental health (p. 11).

The study that does focus on SI in healthcare, is a study conducted by Kosack and colleagues (2022) which examines the impact of SI on the patient experience. More specifically, their study used the Child Hospital Consumer Assessment of Healthcare Providers and Systems (Child HCAHPS) experience

[2] Commonly known as "workers' compensation" in the United States.

scores to measure patient satisfaction with in-person simultaneous interpretation during family-center rounds (FCR) in pediatrics. Kosack and co-authors (2022) used a Spanish Equipment-Assisted Simultaneous Medical Interpretation (EASMI), which consisted of a noise-cancelling microphone, which the interpreter wore, a transmitter for the receiver and an earpiece worn by the family and the patient. Their study (Kosack et al., 2022) elicited responses from Spanish-speaking families prior to and following its implementation. They also conducted surveys with medical professionals and follow-up semi structured interviews with the families. Their findings were statistically significant with both the Spanish-speaking families and the members of the care team demonstrating satisfaction, and the experience scores were comparable to those of their English-speaking counterparts. Moreover, the open-ended responses regarding EASMI also yielded results that indicated "multiple care benefits," "perceived reduction of communication errors," as well as "increased family participation" (Kosack et al., 2022, p. 2). Their findings also deemed SI an important contribution to healthcare equity for speakers of languages other than English. Their study corroborates Crezee's claim that clinician-led studies on interpreter-mediated interactions are granted approvals for the "perceived benefits," in this case, the patient experience scores, "outweigh the objections" (2013, p. 7). That said, this study is the first of its kind to demonstrate the effectiveness of the transfer model with Spanish-speaking families during rounds, in pediatric settings. The present study, however, seeks to address SI from the perspective of practicing healthcare interpreters.

## 3. The study

As previously stated, the study reported on here explores the frequency and nature of medical encounters that call for the simultaneous mode of interpreting, and how the use of this particular mode is determined or negotiated by the interpreter. The goal is to gain a deeper understanding of the use of SI in healthcare in order to begin building frameworks and establishing foundational parameters for the training and education of healthcare interpreters. It was designed in response to the limited literature on SI in healthcare and the situations in which it is used. Frequently posted questions in public forums, professional social media groups, and by members of professional healthcare interpreter organizations regarding SI, demonstrate this lack of literature. Research on this topic, to date, and aside from a limited number of recent publications (see Kosack et al., 2022; Gonzalez & Lai, 2022), presentations at professional events that address the challenges of SI (see for example, Mytareva, 2018) has been minimal. Thus, the main goal of this study was to gather information to address some of the questions posed by the community of practice, and to help bring the question of SI in the US healthcare context and requisite skill development to the forefront.

Using a mixed methods approach, this study set out to explore the current practices of SI use by healthcare interpreters in the US. More specifically, the findings presented in this paper are part of a larger study on Simultaneous Interpreting in Healthcare in the US which seeks to answer questions regarding: 1) frequency of use of the simultaneous technique in healthcare settings, 2) how the mode is determined, 3) situations in which it is used, or nature of clinical encounter, and 4) interpreter education and training in the simultaneous technique, as well as their comfort level with this and other interpreting modes.

Question 4 is a topic of a separate paper (Sultanić, in preparation), while this paper addresses questions 1, 2 and 3:

1. How frequently do healthcare interpreters perform simultaneous interpreting?
2. How do they determine when to use the simultaneous mode?
3. What is the nature, situation, or type of medical interaction/encounter during which simultaneous interpreting is used?

With question one, and based on the percentage of SI on the CCHI oral exam and their 2016 JTA report, we explore our belief that the simultaneous mode is used less frequently than the consecutive, but more frequently than the anecdotal evidence or widely held belief that it is not suitable for the healthcare context, might suggest. Since, to our knowledge, this is the first study on this topic, this question aims to shed light on the frequency of use of SI in relation to the consecutive mode, and sight translation, as experienced and reported by practicing healthcare interpreters in the US. While we do not have a hypothesis with regard to question two, by asking practicing healthcare interpreters how they determine when to employ this technique we hope to gain insight into how these decisions are made, when, and why. With question three, we hypothesize that healthcare interpreters use the simultaneous mode in a variety of highly specialized healthcare encounters beyond the frequently cited settings.

## 4. Methodology

A survey instrument was designed, and study data were collected and managed using REDCap electronic data capture tools (Harris et al., 2009, 2019) hosted by Virginia Commonwealth University. After gaining Institutional Review Board (IRB) approval from Virginia Commonwealth University, a call for participants and a survey link were shared via publicly available email addresses of interpreting or language services departments at different hospitals across the United States (US), and through the National Council on Interpreting in Health Care (NCIHC), and the California Healthcare Interpreting Association (CHIA) member listservs. The hospitals included a range of research and teaching or university hospitals, and pediatric or children's hospitals in the US, to account for the diversity of contexts and types of clinical encounters. Further data collection resulted from snowball sampling through other healthcare (medical) interpreting associations, organizations, professional groups, and hospital language departments. Following the initial call, two additional reminder emails were sent to the same contacts, and through the above-mentioned listservs. The first reminder was sent a week later, and the second, a week after that. The survey remained open for a total of 30 days from its original call for participants.

The participants in this study were both spoken and signed language healthcare interpreters. Participation criteria were based on the existing national criteria for an individual to become a healthcare interpreter in the US. It required that participants be at least 18 years old, actively working as healthcare interpreters, have at least one year of healthcare interpreting experience, and have interpreted using the simultaneous mode in healthcare settings. As a way to minimize the number of participants who were not currently active as healthcare interpreters, a screening *Yes* or *No* question regarding their current status was introduced at the beginning of the survey. Those who answered *Yes* were then redirected to complete the survey, while those who answered *No* were

thanked for their interest, with no additional action required on their part. Participation in the study was voluntary, and participants could opt out at any point. A total of 827 participants took the survey. Out of 827, a total of 662 completed the survey while 165 did not complete it. Of those participants who completed the survey, a total of 6 were disqualified through further data cleanup for they revealed later in their written responses that they were not currently healthcare interpreters ($n$ = 1) and/or have not interpreted using the simultaneous mode ($n$ = 5).

The survey questions were structured around professional background information that encompassed: language combinations, training, professional experience, and certification, and more targeted questions pertaining to frequency of each mode of interpreting in healthcare settings: simultaneous, consecutive, and sight, as well as how the mode was determined, and the nature of appointment or situations in which simultaneous technique was called for or used in clinical encounters.

Since the data collection was both quantitative and qualitative in nature, with the questions consisting of multiple choice, written responses to questions, and open-ended questions, additional data analysis and cleanup were required. First, the incomplete answers were removed. Then, charts were created for multiple choice questions. Once those were finalized, using thematic analysis (Braun & Clarke, 2006) and open coding, the written answers were then categorized. After the initial data analysis and thematic categorization of written answers, and given this unprecedented number of participant responses, a second and a third pass through the data were completed allowing for the overarching themes that initially emerged to be further refined and categorized.

## 5. Results

This section presents the survey findings from interpreter participants. First, the participants' professional background information (language combination, years of experience, education and training, certification, etc.) is shared, followed by the presentation of results pertinent to the questions on frequency of use of SI, how the mode of interpreting is determined, and the situational aspect of each interpreted event. All answers were self-reported by the participants. Since this study used a mixed-methods approach, the quantitative data is presented in charts, while the qualitative data is thematically organized and presented in tables. To help further exemplify the use of the simultaneous mode in different situations, and how interpreters determine when to employ this technique, several insightful answers by a number of participants are provided in their respective sections.

### *5.1 Language combination*

Out of the 662 participants who completed the survey, 638 answered the question on their working language combination. Out of 638, a total of 636 entered a language value, while two did not. One participant responded "consecutive, simultaneously at times" while another participant only entered "English" while no other language was provided. The language combinations are provided in Table 1 below. The table is organized as such with the main language combination being presented on the left, with secondary and tertiary language combinations being displayed in columns 2 and 3 on the right. The last column shows the number of participants with said language combination. The total number of participants with the same primary language combination

is shown at the top, and the number of participants with the secondary and tertiary combinations shown below. The language combinations are not organized in alphabetical order, but by the number of speakers, from highest to lowest. Unsurprisingly, given the high population of Spanish speakers in the US, the English-Spanish language combination is shown at the top, with the highest number of professional healthcare interpreters working in this language combination ($n$ = 463). Of those 463, 452 interpreters reported English-Spanish as their only language combination, with 11 reporting other working language combinations shown in Table 1.

Table 1: Healthcare interpreter working language combinations

| Primary Working Language Combination | Secondary Language Combination | Tertiary and Other Language Combinations | Number of Participants |
|---|---|---|---|
| English-Spanish | | | $n$ = 463 ($n$ = 452)* |
| *English-Spanish only | English-Portuguese | | $n$ = 6 |
| | English-Russian | English-Ukrainian | $n$ = 1 |
| | English-Russian | | $n$ = 1 |
| | English-French | | $n$ = 1 |
| | English-French | English-Haitian | $n$ = 1 |
| | English-Italian | | $n$ = 1 |
| English-Arabic | | | $n$ = 28 |
| | English-French | | $n$ = 1 |
| | English-Assyrian | | $n$ = 1 |
| English-American Sign Language (ASL) | | | $n$ = 22 |
| English-Mandarin | | | $n$ = 21 |
| | English-Cantonese | | $n$ = 2 |
| English-Russian | | | $n$ = 15 |
| | English-Ukrainian | | $n$ = 3 |
| | English-French | | $n$ = 1 |
| | English-Armenian | | $n$ = 1 |
| English-Portuguese | | | $n$ = 12 |
| | English-Spanish | | $n$ = 1 |
| | English-French | | $n$ = 1 |
| English-Cantonese | | | $n$ = 10 |
| | English-Mandarin | | $n$ = 6 |
| | English-Mandarin | English-Taishanese | $n$ = 1 |
| English-Japanese | | | $n$ = 8 |
| English-Hmong | | | $n$ = 5 |
| English-Chinese | | | $n$ = 5 |
| | English-Taiwanese | | $n$ = 1 |
| English-Haitian Creole | | | $n$ = 5 |
| | English-French | | $n$ = 1 |
| English-Nepali | | | $n$ = 4 |
| | Hindi - English | | $n$ = 1 |
| English-Vietnamese | | | $n$ = 3 |
| English-Cape Verdean Creole | | | $n$ = 3 |
| | English-Portuguese | | $n$ = 1 |
| | English-Spanish | English-Portuguese, English-Krio, English-Jamaican Patois, English-Nigerian Pidgin | $n$ = 1 |
| Primary Working Language Combination | Secondary Language Combination | Tertiary and Other Language Combinations | Number of Participants |
| English-Polish | | | $n$ = 3 |

| | | | |
|---|---|---|---|
| English-Urdu | | | *n* = 3 |
| | English-Punjabi | English-Hindi | *n* = 1 |
| | English-Pashto | English-Hindi | *n* = 2 |
| English-Serbian | | | *n* = 2 |
| | English-Croatian | English-Bosnian | *n* = 1 |
| English-Korean | | | *n* = 2 |
| English-Somali | | | *n* = 1 |
| English-Lingala | | | *n* = 1 |
| English-Ukrainian | English-Russian | | *n* = 1 |
| English-Italian | | | *n* = 1 |
| English-Gujarati | English- Hindi | English-Marathi | *n* = 1 |
| English-Pashto | | | *n* = 1 |
| English-Lao | | | *n* = 1 |
| English-Thai | English-Lao | | *n* = 1 |
| English-Turkish | English-French | | *n* = 1 |
| English-Khmer | | | *n* = 1 |
| English-Burmese | | | *n* = 1 |
| English-Georgian | English-Russian | | *n* = 1 |
| English-Yoruba | English-Pidgin | | *n* = 1 |
| English-Oromo | English-Amharic | English-Somali, English-Andare | *n* = 1 |
| English-Hebrew | | | *n* = 1 |
| English-Romanian | | | *n* = 1 |
| English-Tagalog | | | *n* = 1 |

### *5.2 Years of professional experience*

A total of 639 participants responded to the question *How long have you been a healthcare interpreter?* They reported the following: 0-5 years (*n* = 139, 21.7%), 6-10 years (*n* = 188, 29.4%), 11-15 years (*n* = 114, 17.8%), 16-20 years (*n* = 91, 14.2%), 21-25 years (*n* = 54, 8.4%), More than 25 years (*n* = 53, 8.3%). The count is shown in Figure 1.

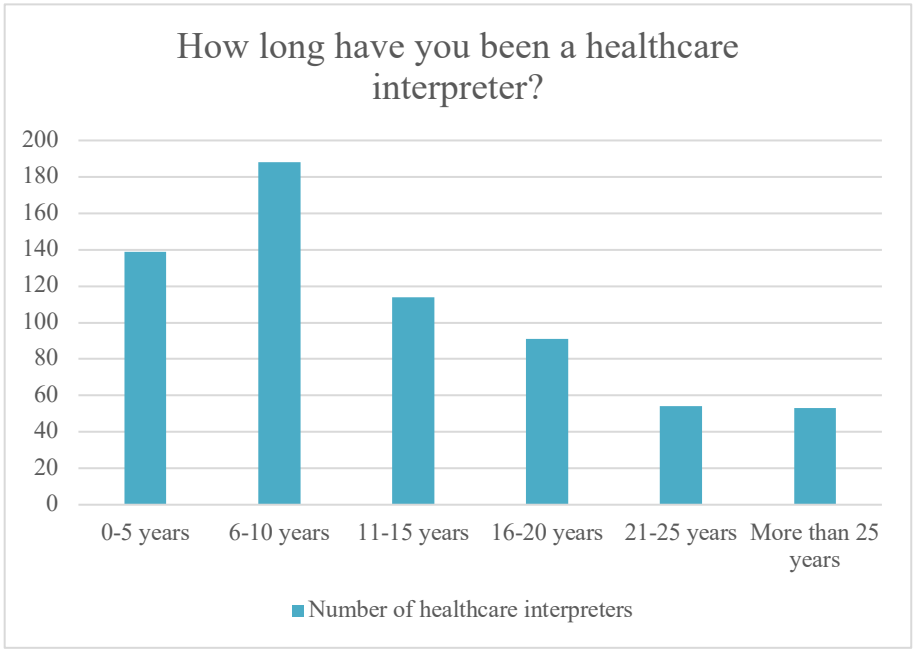


*Figure 1: Years of professional healthcare interpreting experience*

### *5.3 Interpreter training and certification*

A total of 636 participants reported having some form of interpreter education and training or having completed a combination of the following: academic program (*n* = 277), non-academic program (*n* = 308), on the job training (*n* = 303), other (*n* = 58). This portion of the data is explored in more detail in a separate study on SI education and training (Sultanić, in preparation). When asked about their certification status, out of the 636 participants who responded to the question, 489 (76.8%) said *Yes* while 147 said *No* (23.1%). The types of healthcare interpreter certifications (CHI (*n* = 333, 65.7%), Core-CHI (*n* = 117, 24.2%), CMI (*n* = 67, 14.7%), Hub-CMI (*n* = 11, 2.5%), DSHS Medical Interpreter Credential (*n*= 12, 3.2%), Other (*n* = 40, 10.2%)
are provided in Figure 2.

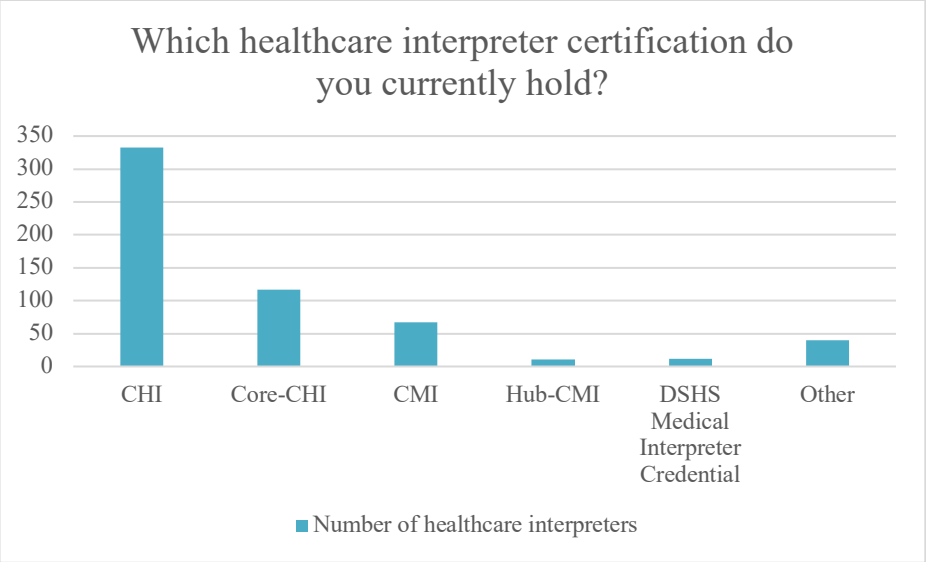


*Figure 2: Types of interpreter certification*

The answers provided under *other*, appear in Table 2.

Table 2: Values provided by participants under *other* types of certifications

| Certifications Reported Under "Other" | Number of Participants |
|---|---|
| Registry of Interpreters for the Deaf (RID)<br>NIC<br>NAD (QMHI EIPA) | *n* = 7<br>*n* = 5<br>*n* = 1 |
| National Board of Certification for Medical Interpreters<br>NBCMI | <br>*n* = 3 |
| Certification Commission for Healthcare Interpreters<br>CCHI | <br>*n* = 1 |
| *Academic Training Programs and Certificates<br>City College of San Francisco Certificate<br>Defense Language Institute Foreign Language Center<br>Bachelor's Degree in Translation and Interpretation<br>Reedley Community College Fresno, CA<br>University of MN Medical Interpreting Certificate<br>MICS Masters MO<br>Northern Virginia Area Health Education Center (AHEC)<br>Medical degree | <br>*n* = 1<br>*n* = 1<br>*n* = 1<br>*n* = 1<br>*n* = 1<br>*n* = 1<br>*n* = 1<br>*n* = 1 |

| Certifications Reported Under "Other" | Number of Participants |
|---|---|
| *Non-academic Training Programs and Certificates | |
| Bridging the Gap | *n* = 2 |
| Found In Translation Certification [sic] | *n* = 1 |
| Cross Cultural Communication System | *n* = 1 |
| 65-hour training | *n* = 1 |
| 40-hour training | *n* = 2 |
| Language Bridge | *n* = 1 |
| Interpretered.com | *n* = 1 |
| Curriculum for Interpreting Lou [sic] In Health Care | *n* = 1 |
| *Additional Certifications and Responses | |
| California Administrative Hearing Certified | *n* = 1 |
| Certified Healthcare Interpreter in Oman, Sudan | *n* = 1 |
| Trainings | *n* = 1 |
| NCIC [sic] | *n* = 1 |
| Bu [sic] | *n* = 1 |
| Oregon healthy [sic] | *n* = 1 |
| On file with department | *n* = 1 |

As seen in Table 2, and annotated by an (*), some of the answers provided by the participants do not constitute a certification credential, but rather types of interpreter education and training obtained – academic, non-academic, and otherwise.

### *5.4 Interpreting mode frequency: consecutive, sight, and simultaneous*

This section reports on the findings related to the question of frequency of interpreting mode use among the participants. Although the focus is on simultaneous, it first reports on the frequency of use of the consecutive mode, followed by sight translation, and finally, it presents the findings related to the question of how frequently healthcare interpreters employ the simultaneous mode in different medical encounters. A total of 639 participants responded to the question related to the frequency of use of the consecutive mode. The responses pertained to the following ranges: in 0% to 25% of encounters (31, 4.8%), in 25% to 50% of encounters (34, 5.3%), in 50% to 75% of encounters (83, 12.9%), in 75% to 100% of encounters (491, 76.8%), and are shown in Figure 3.

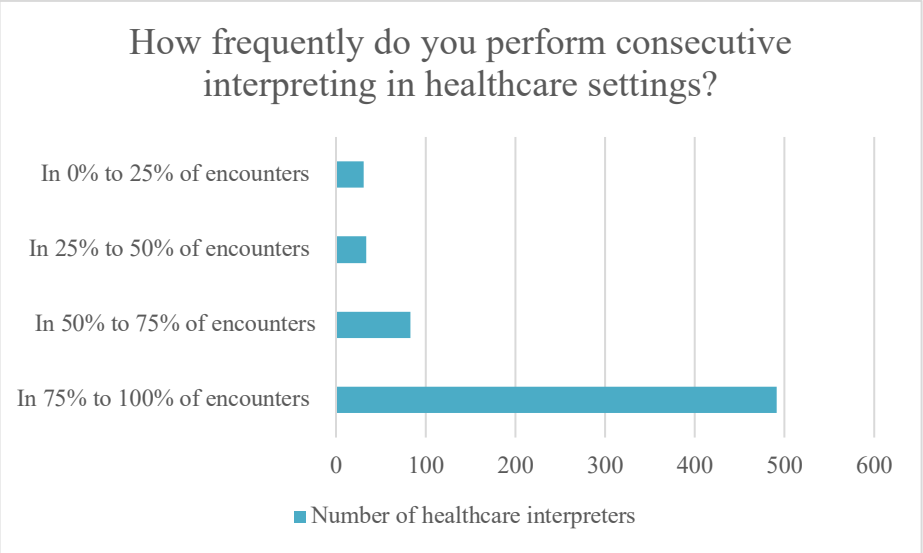


*Figure 3: Frequency of consecutive interpreting in healthcare settings*

The following responses were provided by a total of 632 participants to the question of how frequently they used sight translation in healthcare settings. The frequency ranges indicated varied from 0% to 25% of encounters (416, 65.7%), in 25% to 50% of encounters (123, 19.5%), in 50% to 75% of encounters (51, 8.0%), in 75% to 100% of encounters (42, 6.6%), and are shown in Figure 4.

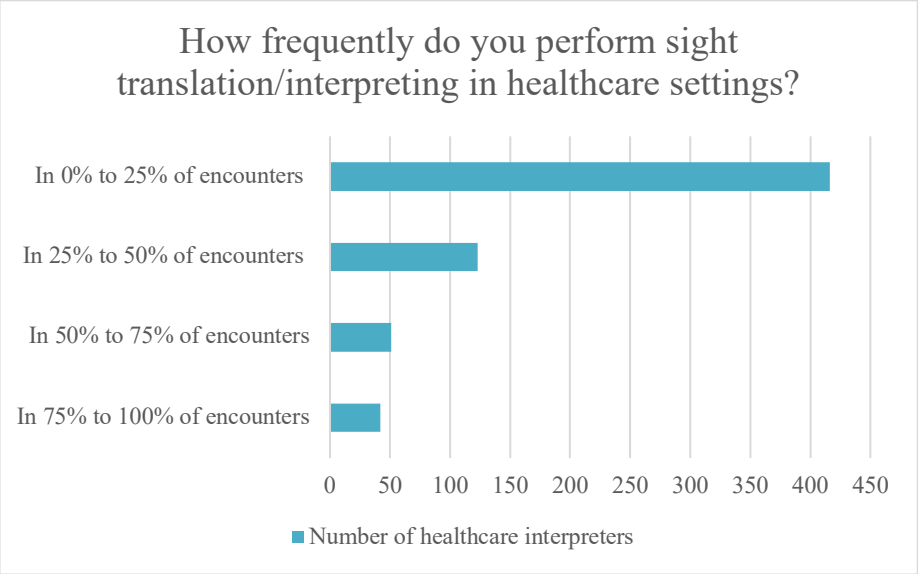


*Figure 4: Frequency of sight translation in healthcare settings*

A total of 638 responses were recorded for the question about the frequency of use of the simultaneous interpreting mode in healthcare settings. The ranges were varied from 0% to 25% of encounters ($n$ = 378, 59.2%), in 25% to 50% of encounters ($n$ = 36, 21.3%), in 50% to 75% of encounters ($n$ = 54, 8.4%), in 75% to 100% of encounters ($n$ = 70, 10.9%) (See Figure 5 below).

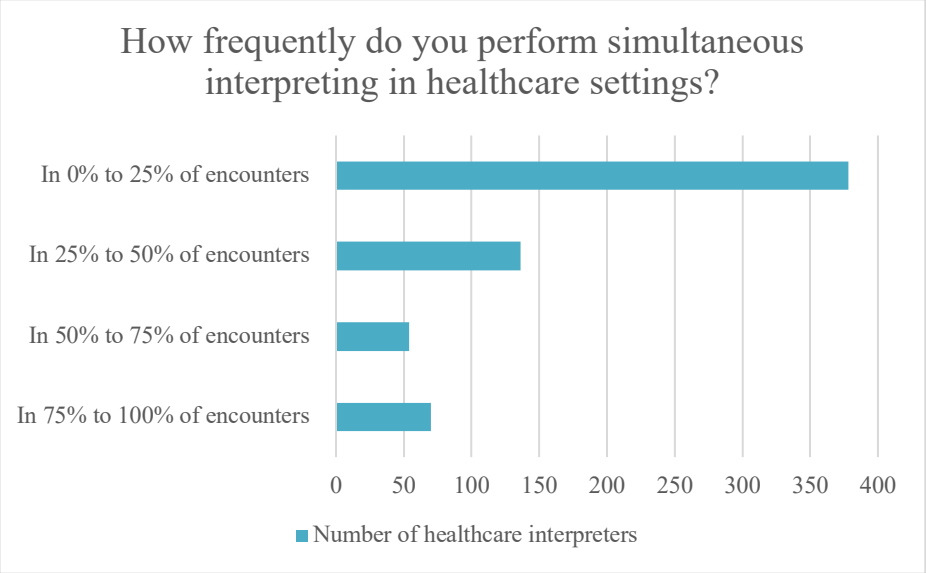


*Figure 5: Frequency of simultaneous interpreting in healthcare settings*

### *5.5 Determining the interpreting mode*

As part of the study, and in order to have a deeper understanding of the interpreters' decision-making process as pertains to the mode of interpreting, the participants were asked how they determined which mode is the most appropriate for the medical encounter or interpreted event. A total of 637 responses were recorded. Figure 6 illustrates the counts for each category including: nature of appointment ($n$ = 261, 40.9%); it is negotiated with the provider ($n$ = 10, 1.5%); both nature of appointment and negotiated with provider ($n$ = 322, 50.5%); and 'other' ($n$ = 44, 6.9%). The categories provided in this question were based on the professional standard of practice, anecdotal evidence, and the interpreter role in managing the flow of communication during any given interpreted event in healthcare settings to ensure effective communication. The participants also had the option to further elaborate under *other,* if they chose or determined the interpreting mode based on factors not reflected in the options provided in the question. Their responses have been analyzed and grouped thematically and are shown in Table 3.

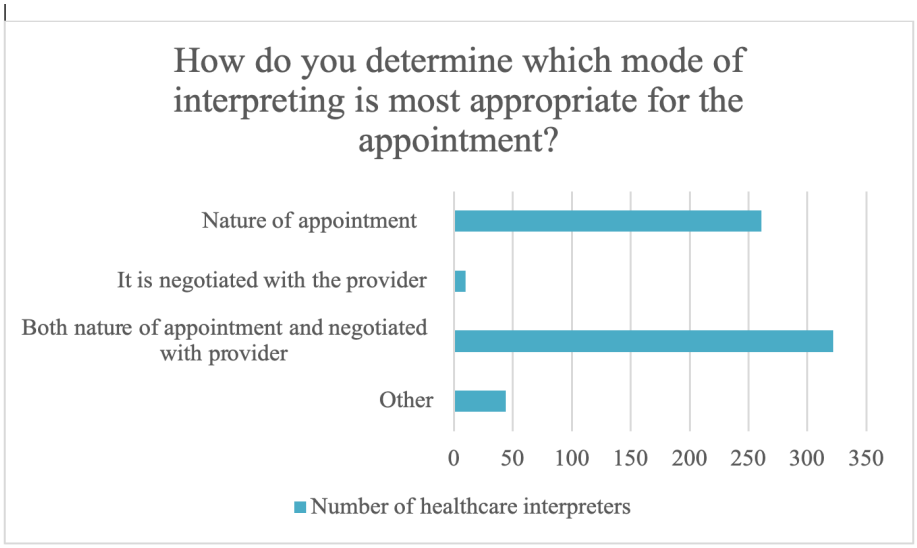


*Figure 6: Determining which interpreting mode is appropriate for the encounter*

For the 44 participants who chose *other* and provided written answers, responses were first analyzed and then thematically categorized as shown in the first column of Table 3. Column 2 shows the setting and/or the rationale provided by the participants for choosing the simultaneous interpreting mode, with column 3 showing the number of participants.

There were three written responses which were shared by participants, but not reflected in Table 3, which offer an important observation as to the question of how, or rather if, the interpreter determines the mode of interpreting. Furthermore, one participant cited that the simultaneous mode is not possible with the remote modality in which they primarily work since the platform used does not have a designated channel for simultaneous interpreting. Additionally, two interpreters (1 English = Korean, 1 English = Hebrew) stated that their language combination makes it difficult to use the simultaneous mode. One participant expressed difficulties such as those posed by mask-wearing "like during COVID" leading them to "stick to consecutive" as a way to minimize potential errors resulting from their inability to hear the parties clearly.

Table 3: Other ways the participants determine the mode of interpreting

| General theme | Setting and rationale | Number of responses |
|---|---|---|
| Nature and modality | In person vs. remote session | *n* = 11 |
| Negotiated with both the patient and the provider | — | *n* = 5 |
| General theme | Setting and rationale | Number of responses |
| Preference | Consumer language preference and ability especially for ASL | *n* = 3 |
| Interpreter choice/decision dictated by the session | | *n = 21* |
| | Participant number, participant and/or spatial configuration (room layout) | *n* = 2 |
| | Side conversations (conversations with other language concordant individuals in the room) | *n* = 1 |
| | Speed or lack of (frequent pausing) | *n* = 2 |
| | Decided in the moment (spontaneous or after assessing the situation) | *n* = 4 |
| | In situations of emotional distress | *n* = 1 |
| | In the event that the patient has a cognitive deficit or brain injury | *n* = 1 |
| | Prior knowledge and experience with the patient and provider and their preference | *n* = 1 |
| | Switch to simultaneous if consecutive is not working or not suitable for the session | *n* = 2 |
| | Dynamics of the appointment | *n* = 2 |
| | In pediatrics when the parent does not speak English | *n* = 1 |
| | When accompanying family members do not speak English or depending on language structure within the patient's family | *n* = 2 |
| As the default mode | "I am a sign language interpreter; we almost always work simultaneously." | *n* = 1 |
| Mental health | In mental health appointments | *n* = 1 |

Several participants, of both spoken and signed languages, offered more detailed responses which are shared below. One ASL participant writes:

> With ASL, the order of operations would determine the fit (assuming patient is conscious and non-emergent): 1. Client language preference 2. Situation 3. Provider input, because in the Deaf community there are two major forms of communication used, with one being a true language (ASL) and the other a language code (SE). We can't know how to sign until we see which form they use. If it is the latter, there are also sub-codes of that form. With ASL, you must sign consecutively. With the codes, you must sign simultaneously – the consumer language preference determines the mode.

Another ASL participant shared:

> Deaf people have varying degrees of fluency in their own language due to a number of factors. Language deprivation is an issue in the Deaf community. So, the Deaf person's ability to use ASL is the biggest factor on whether or not I can work simultaneously or not.

One spoken language participant provided the following rationale and decision-making process for when to use the simultaneous mode:

> I assess the ability of both the patient and provider to successfully maintain meaningful and efficient communication as I use the simultaneous method of interpretation. I perform a very short pre-session mostly with the patient as most physicians seem to be use [sic] to simultaneous methods. If any of the parties displays distress with simultaneous, then I switch to consecutive.

These examples illustrate how decisions were made in the moment by both spoken and signed language interpreters regarding which mode or technique of interpreting to use when interpreting in an encounter between hearing participants, and during interactions between a hearing and a Deaf individual. Furthermore, it shows that both the participants' preferences and needs, in addition to the communicative goals, are taken into consideration.

### *5.6 Situations in which the simultaneous mode of interpreting is used*

This section presents the findings related to the question of situations in which healthcare interpreters use the simultaneous mode of interpreting. The categories or the choices offered to the participants are based on the limited literature, and the anecdotal evidence of where healthcare interpreters might typically employ this particular technique. A total of 656 participants responded to this question. Their responses, presented in Figure 7, included: as the default mode ($n$ = 87, 13.2%), in emergency situations ($n$ = 409, 62.3%), when the person accompanying the patient speaks English ($n$ = 233, 35.5%), when interpreting for parents or adults of English-speaking children ($n$ = 332, 50.6%), when it gets hard to keep up using consecutive ($n$ = 337, 51.3%), other ($n$ = 121, 18.4%). The participants who answered *other* were asked to elaborate. Their responses were analyzed and organized thematically as shown in Table 4.

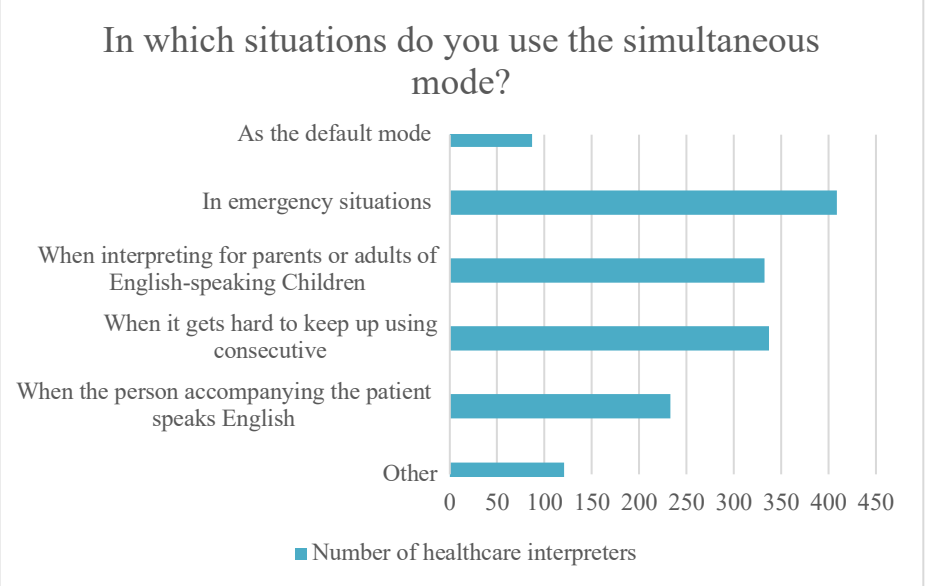


*Figure 7: Situations in which the participants employ the simultaneous mode*

Out of the 121 participants who indicated *other,* 113 provided additional information. After thematically analyzing the written responses, they were categorized according to their general setting, department, (sub)specialty or interpreted event, and participant example, followed by the number or responses with the total number of responses representing each general setting indicated at the top. Of those who specified, one participant with the English-Spanish language combination, stated that they use simultaneous in all situations without additional detail indicating whether modality (in-person vs. remote) or other factors had any bearing on their decision to use this mode exclusively. The responses are shown in Table 4.

Table 4: Other situations in which the participants used the simultaneous mode of interpreting

| General setting | Department, (sub)specialty or interpreted event | Participant example | Number of responses |
|---|---|---|---|
| Pediatrics | | | *n* = 4 |
| | Behavioral health | Developmental-behavioral pediatrics | *n* = 1 |
| | | When children don't understand turn-taking | *n* = 1 |
| Behavioral Health | | | *n* = 38 |
| | Mental health, psychiatric or psychotherapy assignments | Psychological evaluations | *n* = 5 |
| | | Involuntary hold hearings (5150 Hearings) | *n* = 1 |
| | | Dissociative disorders | *n* = 1 |
| | | Autism spectrum | *n* = 1 |
| | When the patient is agitated or highly emotional counters | When the patient is in crisis | *n* = 1 |
| Therapy & rehabilitation | Group therapy | | *n* = 13 |
| | | Support group (e.g. addiction, AA & NA Meetings) | *n* = 1 |
| | | Group CBT (Cognitive Behavioral Therapy) | *n* =1 |
| | Functional Restoration Program | Drug rehab & functional restoration rehab via Zoom (virtual) | *n* = 1 |
| | Physical therapy rehabilitation | — | *n* = 1 |
| Educational seminars and presentations | | | *n* = 31 |
| | | Workshops | *n* = 1 |
| | | Webinars | *n* = 1 |
| | | Conferences | *n* = 1 |
| | | Long speeches | *n* = 1 |
| | | Pain management | *n* = 1 |
| | | Nutrition | *n* = 1 |
| | | Diabetes | *n* = 1 |
| | | Lactation | *n* = 1 |
| | | Chemical dependency | *n* = 1 |
| | | Transplant teaching (bone marrow, organ, kidney, etc.) | *n* = 1 |
| | | Informational sessions | *n* = 1 |
| | | Postoperative teachings | *n* = 1 |
| | | Psychology of pain, anxiety and stress management, etc. | *n* = 1 |
| | | | *n* = 1 |

| | | | |
|---|---|---|---|
| | | Vocational classes for brain injury patients, i.e.: training for life after a stroke<br>Mother/baby class | *n* = 1 |
| Family care conference | | | *n* = 15 |
| | In end of life or in palliative care conversations | Example: "During palliative care meetings when multiple family members are there and when everyone is feeling anxious and trying to speak at the same time even though the interpreter have constantly reminded family members to take turns in speaking so that all questions can be accurately and precisely addressed." | *n* = 3 |
| | | When time is crucial with many providers present – cardiology or fetal health | *n* = 1 |
| When one of more parties in the room do not speak both languages | | | *n* = 19 |
| | Rounds | When "the team begins to rattle off the underlying history and symptoms, then the lab or test results." | *n* = 1 |
| | | When interpreting for a person who is not part of the conversation to keep them informed (family or another provider) in Peds with English-speaking children or PA/NP resident or other "extender" in the room | *n* = 2 |
| | | When patient's family members are talking amongst themselves | *n* = 4 |
| | When same language speakers begin talking amongst themselves – this is a strategy to manage the flow of communication | When providers have a conversation/consultation with other providers or specialists in front of the patient | *n* = 4 |
| | | When there is a team of professionals | *n* = 2 |
| | | Hospitals communicating with non-English-speaking staff | *n* = 1 |
| | | During rounds when providers are talking to medical students about the patient (pediatric) and parent listens | *n* = 4 |
| | | Or when the provider speaks Spanish but other residents, medical students, nurses or attendings do not | *n* = 1 |
| | | Room full of people* where one parent prefers English | *n* = 1 |

| | | |
|---|---|---|
| | and the other only speaks Spanish | |
| | When providers are speaking rapidly over each other | *n* = 1 |
| | When the person accompanying the patient switches between languages to address both the provider and the patient | *n* = 1 |
| When the parties fail to pause for the interpreter | When patient and provider do not pause to allow for interpretation to take place | *n* = 8 |
| When either party is pointing | | *n* = 2 |
| | Patient describing symptoms and pointing | *n* = 1 |
| | Provider is pointing at different things when explaining concepts | *n* = 1 |
| When requested, needed, or based on preference | | *n* = 9 |
| | When the goal is clear, or for certain follow-ups | *n* = 1 |
| | "[d]uring Qualified Medical Examinations, in order to move quicker because most of the questions are answered beforehand on paper." | *n* = 1 |
| | When appropriate and patient and/or providers are comfortable with the method | *n* = 2 |
| Emergency | — | *n* = 3 |
| Trauma | | *n* = 2 |
| | Sexual abuse | *n* = 1 |
| Intensive care unit | — | *n* = 1 |
| When communicating commands | — | *n* = 1 |
| Worker's compensation | — | *n* = 1 |
| Simul-consec | When speakers have natural pauses in their speech | *n* = 1 |
| In ASL or when interpreting for a deaf individual | "Simultaneous interpreting is used when the deaf professional is not a primary participant in the interaction or if there is a story or narrative being described." | *n* = 3 |
| For elderly patients | — | *n* = 1 |
| Remote sessions | Through a dedicated channel | *n* = 2 |
| When testing for the certification exam | — | *n* = 1 |

## 6. Discussion

The findings reported in the previous section offer valuable insight into the use of the SI mode in the US healthcare context. Unsurprisingly, the results show greater frequency of consecutive mode use in healthcare settings with 76.8% (*n* = 491/639) of participants reporting using this technique in 75% to 100% of interpreted events. This confirms the widely held belief that the consecutive mode is used with greater frequency considering the patient-centered (Angelelli, 2019), and dialogic (Wadensjö, 1998; Tipton & Furmanek, 2016) nature of healthcare interactions. The counts that show participants using this mode less frequently, especially those with the least frequency (4.8%, *n* = 31), could be due to the language combination, modality (remote vs. in person), available technology (e.g., a separate channel for SI), preference, as well as nature and communicative purpose of the interaction. Similarly, the results regarding the frequency of sight translation use in healthcare settings were not surprising and tip the frequency count to the opposite end of the spectrum, with 65.8% (*n* = 416/632) participants reporting using sight translation in 0% to 25% of encounters. The other results which stated ST was used in 25% to 50% of encounters (*n* = 123, 19.5%); in 50% to 75% of encounters (*n* = 51, 8.0%); and in 75% to 100% of encounters (*n* = 42, 6.6%), are illuminating since they show that sight translation is performed by professional interpreters, albeit with varying frequencies, and thus an important skill to develop.

The results regarding the frequency of SI in healthcare settings in the US are especially useful. Not only has a study of this nature never been done before, but the results show that professional healthcare interpreters do, in fact, employ this mode, despite the anecdotal evidence to the contrary, or the limited emphasis on this mode in this specific context by the scholars, and the community of practice. They show 10.9% (*n* = 70/638) participants performing SI in 75% to 100% of healthcare encounters, with 59.2% (*n* = 378) participants in the 0% to 25% range. Furthermore, 21.3% (*n* =136) of participants fell within the 25% to 50% range, and the 8.4% (*n* = 54) reported using SI in 50% to 75% of encounters. By shining a light on the wide range in the frequency of SI use, they demonstrate that this technique is present in professional practice. Furthermore, they show that SI is used in clinical and non-clinical interactions. These findings, in addition to the findings from the Gonzalez and Lai (2022) study, challenge the existing position held by some that SI is not used in professional practice and that CI is the standard.

With regard to our second question, the results demonstrate several important aspects of how interpreters determined which interpreting mode or technique to use. The majority of participants selected either the nature of appointment, or both nature of the appointment and "negotiated with the provider". Of those who provided written answers under *other,* the responses that emphasize nature and modality suggest interpreters' ability to determine which mode would achieve the desired communicative purpose (Roat & Crezee, 2015), and ensure effective communication (Russel, 2005). In other words, their approach to determine the most appropriate technique supports Viezzi's argument that the interpreting mode is "a means to an end" (2013, p. 379). Other responses show that determining the mode in an interpreter-mediated interaction is also a negotiation with both the patient and the provider. In some instances, the participants reported that it is a matter of preference and interpreter choice. In ASL, one participant shared that they use SI so long as the conversation is still meaningful and effective, while the other participant's example shows a more complex and nuanced approach to determining the mode

best suited for the interaction, including preference, situational aspect, input, modality, and the form used by the client. Another response focuses on the interpreting mode being dictated by the session which is especially revelatory since it shows the complexity and unpredictability of communication, and that the purpose of a communicative event can change at any point, or be disrupted due to the presence of other active or passive participants.

In question three, we hypothesized that healthcare interpreters use SI in a variety of highly specialized healthcare encounters beyond the frequently cited emergency and mental health settings. It was expected that the findings would show the largest percentage of participants using SI in emergency situations with 62.3% ($n$ = 409/) participants reporting precisely that. It was also anticipated that other pre-defined categories would yield results that support the anecdotal and some existing literature that cites SI use in pediatrics or when interpreting for patient companions or other individuals who do not speak English. While we were hoping to uncover the additional examples of SI mode in interpreter-mediated interactions, what we did not anticipate was the depth and breadth of the participant answers. Responses offered both broad and specific examples of the types of settings, specialties, and situations that benefit from SI, or where it was needed, or preferred by the participants in order to achieve the communicative goal. The responses to our study showed that in addition to emergency settings, mental health, and pediatrics, SI was used in the following interactions: therapy and rehabilitation, educational seminars and presentations, family care conference, in trauma settings, in the intensive care unit (ICU), and in remote sessions with a designated channel for the interpreter. SI was also used when one or more parties in the room did not speak both languages, when the parties failed to pause for the interpreter, when the parties were pointing, when SI was requested, needed, or based on preference, when communicating commands, in worker's compensation, in ASL or when interpreting for a deaf individual, and when working with elderly patients. Some of the responses are also consistent with the findings from the Gonzalez and Lai (2022) study on *chuchotage* in healthcare settings in Australia, specifically the use of SI during family conferences, and in mental health settings. One of the most surprising findings are the examples of SI use that support the transfer model (Reddy, 1979) in healthcare settings. This is evident from the examples of interpreted events where more than one party in the interaction did not speak both languages, thus prompting the interpreter to resort to SI. Therefore, it could be argued that the use of the SI technique in these situations is in fact an example of SI use for the purpose of ensuring linguistic presence, as proposed by Hale and colleagues (2017).

Although the study yielded a large number of survey responses, it is not without limitations. All responses were self-reported and are, as such, inherently subjective, and do not offer a complete picture of SI use in the US healthcare context. The frequency ranges could have involved smaller increments to account for those participants who only recently joined the profession and have not had much experience using SI. Additionally, since the frequency use question does not specifically ask about SI use on a weekly or monthly basis, it only offers general insights. Although the majority of the language combinations were English-Spanish, the study did not explore syntax and its impact on the interpreter's decision whether or not to use SI. Lastly, the study is limited to the interpreters' input and does not provide insight into the perceptions of other participants in the interaction.

## 7. Conclusion

This paper has established that simultaneous interpreting in healthcare occurs more frequently than what the anecdotal evidence, or lack of emphasis on this skill in the current scholarship, and the existing standards of practice might suggest. Furthermore, the findings have shown that not all interactions in healthcare settings are triadic. While the use of SI in healthcare settings has primarily been associated with emergency situations, mental health settings, and other high-stress or emotionally-charged situations where the patient might be agitated, educational presentations or classes (see Crezee, 2013; Bancroft et al., 2016; Gonzalez & Lai, 2022; Mytareva, 2018), pediatrics or family-centered rounds (see Kosack et al., 2022), there are other situations during which SI is employed.

Professional healthcare interpreters rely on SI to ensure effective communication, whether out of necessity, as a default mode, for pragmatic reasons or as "a means to an end" (Viezzi, 2013, p. 379), or as a result of one's inability to retain information for a successful long consecutive rendition due to the volume of content shared at a given time. As the CCHI JTA report, existing literature, and the present study illustrate, not all healthcare interactions require active participation from the patient in the interaction or the decision-making process. Some interactions serve to inform, or as shown in the examples provided in Section 5, to ensure linguistic presence (Hale et al., 2017) of all participants who do not speak both languages. Rather than making a general statement that consecutive interpreting is the default mode, the narrative needs to shift to accurately reflect the interpreting modes in relation to the communicative purpose of each interpreted event.

The results from this study contribute to the growing body of knowledge on simultaneous interpreting in healthcare. They offer valuable insight into the professional demands, frequency of SI use, and most importantly, the types of encounters and situations during which this technique may in fact be the best mode for the intended communicative purpose. These results can have didactic and practical applications for existing and future healthcare interpreters for they provide relevant information on the importance of simultaneous skill development. We hope that this study will help inform future practices, and inspire additional studies as more research is needed on SI in healthcare contexts to better reflect the current professional practice. This is especially important since some of the interpreting standards used to educate healthcare interpreters are more than 20 years old. Therefore, simultaneous interpreting merits further exploration as an alternative and an effective technique for interpreting in healthcare, with emphasis on both the perspectives and perceptions of other active and passive participants in the interpreter-mediated interaction.

## References


Altman, J. (1990). What helps effective communication? Some interpreter's views. *The Interpreter's Newsletter*, *3*, 23–32.

Angelelli, C. (2004). *Medical interpreting and cross-cultural communication*. Cambridge, England: Cambridge University Press.

Angelelli, C. (2019). *Healthcare interpreting explained* (1st ed.). Routledge.

Bancroft, M.A., García-Beyaert, S., Allen, K., Carriero-Contreras, G., & Socarrás Estrada, D. (2016). *The medical interpreter: A foundational textbook for medical interpreting*. Columbia Maryland: Culture & Language Press.

Barghout, A., Rosendo, L.R., & García, M.V. (2015). The influence of speed on omissions in simultaneous interpretation: An experimental study. *Babel, 61*, 305-334. https://doi.org/10.1075/babel.61.3.01bar

Barik, H. C. (1971). A description of various types of omissions, additions, and errors of translation encountered in simultaneous interpretation. *Meta, 16*(4), 199–210. https://doi.org/10.7202/001972ar

Bendazzoli, C. (2018). Corpus-based Interpreting Studies: Past, Present and Future Developments of a (Wired) Cottage Industry. In M. Russo, C. Bendazzoli, & B. Defrancq (Eds.), *Making way in corpus-based Interpreting Studies. New Frontiers in Translation Studies*. Springer, Singapore. https://doi.org/10.1007/978-981-10-6199-8_1

Bolden, G. (2000). Toward understanding practices of medical interpreting: Interpreters' involvement in history taking. *Discourse Studies*, *2*, 387– 419.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

California Healthcare Interpreters Association. (2002). *California standards for healthcare interpreters*. http://www.chiaonline.org/Resources/Documents/CHIA%20Standards/standards_chia.pdf

Camayd-Freixas, E. (2011). Cognitive theory of simultaneous interpreting and training. *Proceedings of the 52nd Conference of the American Translators Association (ATA)*.

Cambridge, J. (1999). Information loss in bilingual medical interviews through untrained interpreters. *The Translator*, *5*(2), 201– 219.

Certification Commission for Healthcare Interpreters. (2010). *Job Task Analysis Study and Results*. https://cchicertification.org/uploads/CCHI-2010-JTA-report.pdf

Certification Commission for Healthcare Interpreters. (2016). *National job task analysis study for healthcare interpreters*. https://cchicertification.org/uploads/CCHI_JTA2016_Report.pdf

Certification Commission for Healthcare Interpreters. (2023). *Candidate's Examination Handbook*. https://cchicertification.org/uploads/CCHI_Candidate_Examination_Handbook.pdf

Chernov, G. V., Hild, A., & Setton, R. (2004). Inference and Anticipation in Simultaneous Interpreting. John Benjamins Publishing Company.

Crezee, I. H. M. (2013). *Introduction to healthcare for interpreters and translators*. John Benjamins Publishing Company.

Crezee, I., Julich, S., & Hayward, M. (2013). Issues for interpreters and professionals working in refugee settings. *Journal of Applied Linguistics and Professional Practice, 8*(3), 254–273.

Ferner, S., & Liu, H. (2009). Comprehensive strategy towards delivering better communications and better healthcare to non-English-speaking New Zealanders? *Journal of the New Zealand Medical Association, 122*(1304).

Fischbach, H. (Ed.) (1998). Translation and medicine. *American Translators Association Scholarly Monograph Series*. Volume X 1998. John Benjamins.

Flores, G., Barton Laws, M. & Mayo, S., (2003). Errors in medical interpretation and their potential clinical consequences in paediatric encounters. *Pediatrics*, *111*(1), 6– 14.

Galli, C. (1989). “Simultaneous interpretation in medical conferences: a case-study.” In L. Gran & C. Taylor (Eds.), *Aspects of Applied Experimental Research on Conference Interpretation* (pp. 61–81). Campanotto Editore.

Gerver, D. (1976). Empirical studies of simultaneous interpretation: A review and a model. In R. W. Brislin (Ed.), *Translation: Applications and Research* (pp. 165–207). Gardner Press.

Gerver, D. (2002). The effects of source language presentation rate on the performance of simultaneous conference interpreters. In F. Pöchhacker & M. Shlesinger (Eds.), *The Interpreting Studies Reader* (pp. 53–66). Routledge.

Gile, D. (2001). Consecutive vs. simultaneous: Which is more accurate? *Interpretation Studies: The Journal of the Japan Association for Interpretation Studies, 1*, 8–20. https://doi.org/10.50837/istk.0103

Gile, D. (2009). *Basic concepts and models for interpreter and translator training* (Rev. ed.). John Benjamins Publishing Company.

Gonzalez, E. & Lai, M. (2022). Chuchotage in community settings. *The International Journal of Translation and Interpreting Research*, *14*(1), 1–24. https://doi.org/10.12807/TI.114201.2022.A01

González, R. D., Vásquez, V. F., & Mikkelson, H. (1991). *Fundamentals of court interpretation: Theory, policy, and practice*. Carolina Academic Press.

Hale, Sandra. (2007). *Community interpreting*. Palgrave, Macmillan. https://doi.org/10.1057/9780230593442

Hale, S., Martschuk, N., Ozolins, U., & Stern, L. (2017). The effect of interpreting modes on witness credibility assessments. *Interpreting, 19*(1), 69–96. https://doi.org/10.1075/intp.19.1.04hal

Han, C., & Riazi, M. (2017). Investigating the effects of speech rate and accent on simultaneous interpretation: A mixed-methods approach. *Across Languages and Cultures*, *18*(2), 237–259. https://doi.org/10.1556/084.2017.18.2.4

Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., Duda, S. N., & REDCap Consortium (2019). The REDCap consortium: Building an international community of software platform partners. *Journal of Biomedical Informatics*, *95*, 103208. https://doi.org/10.1016/j.jbi.2019.103208

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, *42*(2), 377–381. https://doi.org/10.1016/j.jbi.2008.08.010

Healthcare Interpretation Network. (2007). *National standard guide for community interpreting services*. Association De L’Industrie De La Langue Language Industry Association. https://ailia.ca/resources/Documents/National%20Standard%20Guide%20for%20Community%20Interpreting%20Services.pdf

Kalina, S. (2005). Quality in the interpreting process: What can be measured and how? *Communication and Cognition. Monographies*, *38*(1-2), 27–46.

Köpke, B., & Nespoulous, J.-L. (2006). Working memory performance in expert and novice interpreters. *Interpreting: International Journal of Research and Practice in Interpreting*, *8*(1), 1–23. https://doi.org/10.1075/intp.8.1.02kop

Köpke, B., & Signorelli, T. M. (2012). Methodological aspects of working memory assessment in simultaneous interpreters. *The International Journal of Bilingualism: Cross-Disciplinary, Cross-Linguistic Studies of Language Behavior*, *16*(2), 183–197. https://doi.org/10.1177/1367006911402981

Korpal, Pawel. (2012). Omission in simultaneous interpreting as a deliberate act. In A. Pym and D. Orrego-Carmona (eds.) *Translation research projects 4*, 103–111. Intercultural Studies Group.

Kosack, A., Carson, S. L., Montenegro, E. Y. B., Owen, M., Dodge, S., Sim, M., Cagigas, X., Ahumada-Mocorro, L., Kamzan, A., Acuna Hernandez, E., Lopez, G., Guzman, E., Sanchez Gomez, D., Islas, Z., Walker, V. P., Lerner, C., & Lloyd, J. (2022). Improving patient experience scores using simultaneous interpretation on family-centered rounds. *Hospital Pediatrics, 12*(12), 1019–1035. https://doi.org/10.1542/hpeds.2022-006696

Lenglet, C., & Michaux, C. (2020). The impact of simultaneous-interpreting prosody on comprehension: An experiment. *Interpreting: International Journal of Research and Practice in Interpreting*, *22*(1), 1–34. https://doi.org/10.1075/intp.00032.len

Meyer, B., Apfelbaum, B, Pöchhacker, F. & Bischoff, A. (2003). Analysing interpreted doctor-patient communication from the perspectives of linguistics, interpreting studies and health sciences. In L. Brunette, G. Bastin, G., I. Hemlin & H. Clarke (Eds.), *The critical link 3. Interpreters in the community*, 67– 80. John Benjamins.

Moser, B. (1978). Simultaneous interpretation: A hypothetical model and its practical application. In D. Gerver & H. W. Sinaiko (Eds.), *Language, interpretation and communication* (pp. 353–368). Plenum Press. https://doi.org/10.1007/978-1-4615-9077-4_31

Mytareva, N. (2018, March 2-3). *Challenges of mastering simultaneous interpreting in healthcare settings.* [Paper presentation]. California Healthcare Interpreting Association 18th Annual Educational Conference, Irvine/Orange County. https://chiaonline.org/2018-Conference

Napier, J. (2004). Interpreting omissions: A new perspective. *Interpreting: International Journal of Research and Practice in Interpreting*, *6*(2), 117–142. https://doi.org/10.1075/intp.6.2.02nap

Napier, J. (Ed.). (2009). *International perspectives on sign language interpreter education*. Gallaudet University Press. https://doi.org/10.2307/j.ctv2rcnfsh

Napier, J. (2011). If a tree falls in a forest and no one is there to hear it, does it make a noise? *Advances in Interpreting Research: Inquiry in Action*, *99*, 121.

National Board of Certification for Medical Interpreters. (2021). *NBCMI Candidate Handbook*. https://www.certifiedmedicalinterpreters.org/assets/docs/NBCMI_Handbook.pdf?v=2020

O'Neill, M. (1998). Who makes a better medical translator: The medically knowledgeable - linguist or the linguistically knowledgeable medical professional? A physician's perspective. In H. Fischbach (Ed.). *American Translators Association Series: Translation and Medicin*e, 69–80. John Benjamins.

Pio, S. (2003). The Relation between ST delivery rate and quality in simultaneous interpretation. *The Interpreters' Newsletter*, *12*, 69–100.

Pöchhacker, F. (2004). *Introducing interpreting studies*. Routledge.

Reddy, M. (1979). The conduit metaphor: A case of frame conflict in our language about language. In A. Ortony (Ed.), *Metaphor and thought* (pp. 284–324). Cambridge University Press.

Roat, C. (1999). *Bridging the gap: A basic training for medical interpreters*. The Cross Cultural Health Care Program.

Roat, C. (2000). Healthcare interpreting: An emerging discipline. *ATA Chronicle*, *29*(3), 18–21.

Roat, C. E., & Crezee, I. H. (2015). Healthcare interpreting. In H. Mikkelson & R. Jourdenais (Eds.), *The Routledge handbook of interpreting* (pp. 236–253). Routledge.

Rosendo, L. R., & Galván, M. C. (2019). Coping with speed: An experimental study on expert and novice interpreter performance in the simultaneous interpreting of scientific discourse. *Babel*, *65*(1), 1–25. https://doi.org/10.1075/babel.00081.rui

Roy, C. B. (Ed.). (1999). *Innovative Practices for Teaching Sign Language Interpreters*. Gallaudet University Press. https://doi.org/10.2307/j.ctv2rcng66

Russell, D. (2005). *Consecutive and simultaneous interpreting*. https://doi.org/10.1075/btl.63.10rus

Setton, R. (1999). *Simultaneous interpretation: A cognitive pragmatic approach*. John Benjamins Publishing Company.

Setton, R., Viezzi, M., & Garzone, G. (2002). A methodology for the analysis of interpretation corpora. In *Interpreting in the 21st Century* (Vol. 43, pp. 29–45). John Benjamins Publishing Company. https://doi.org/10.1075/btl.43.05set

Shlesinger, M. (1998). Corpus-based Interpreting Studies as an offshoot of corpus-based Translation Studies. Meta, *43*(4), 486–493. https://doi.org/10.7202/004136ar

Shlesinger, M. (2003). Effects of presentation rate on working memory in simultaneous interpreting. *The Interpretes' Newsletter 12*, 37–49.

Srivastava, S. B. (2014). The patient interview. In C. D. Lauster & S. B. Srivastava (Eds.), *Fundamental skills for patient care in pharmacy practice*. Jones and Bartlett Learning.

Stavrakaki, S., Megari, K., Kosmidis, M. H., Apostolidou, M., & Takou, E. (2012). Working memory and verbal fluency in simultaneous interpreters. *Journal of Clinical and Experimental Neuropsychology*, *34*(6), 624–633. https://doi.org/10.1080/13803395.2012.667068

Suarez, N. R. E., Urtecho, M., Jubran, S., Yeow, M. E., Wilson, M. E., Boehmer, K. R., & Barwise, A. K. (2021). The roles of medical interpreters in intensive care unit communication: A qualitative study. *Patient education and counseling*, *104*(5), 1100–1108. https://doi.org/10.1016/j.pec.2020.10.018

Sultanic, I. (2018). *Medical interpreter training and interpreter readiness for the hospital environment* [Doctoral dissertation, Kent State University]. OhioLINK Electronic Theses and Dissertations Center. http://rave.ohiolink.edu/etdc/view?acc_num=kent153250300759496

Sultanić, I. (2020). Medical interpreter education and training. In M. Ji & S. Laviosa (Eds.), *The Oxford handbook of translation and social practices* (pp.356–377). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190067205.013.23

Tipton, R., & Furmanek, O. (2016). *Dialogue interpreting*. Routledge.

Tommola, J., & Hyönä, J. (1990, April 15-21). Mental load in listening, speech shadowing and simultaneous interpreting: A pupillometric study. [Paper presented at the meeting of the world congress of Applied Linguistics, sponsored by the International Association of Applied Linguistics]. Thessaloniki, Greece.

Viezzi, M. (2013). Simultaneous and consecutive interpreting (non-conference settings). In C. Millán & F. Bartrina (Eds.), *The Routledge handbook of translation studies* (pp. 377–388). Routledge.

Wädensjö, C. (1998). *Interpreting as interaction*. Longman.