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Editorial Commentary

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Welcome to the first issue of Volume 14 of the *International Journal of Interpreter Education (IJIE)*. It is an honor to be selected as the first deaf main editor of *IJIE*. I really appreciate such an opportunity to contribute to the field of interpreter education in a diverse world and look forward to collaborating with contributors as we advance. As the new editor, I hope to further advance the journal as a continued vehicle for interpreter educators globally related to research and commentary on best practices and new approaches. The ultimate goal of this journal is to collectively develop and gain a deeper understanding of interpreting pedagogy.

I would first like to personally recognize the two previous co-editors—Ineke Crezee and George Major, both from Auckland University of Technology—for the outstanding work they have done for *IJIE* since 2015. Thank you, Ineke and George, for ensuring that the latest research findings related to interpreter education are shared and disseminated worldwide. We appreciate your contributions to the field. Best wishes in your future endeavors!

I have established several goals for this new role. The first is to announce our revised editorial board. I plan to maintain a more active relationship with the board and gather input from these experts by holding meetings with them regularly. My other goal is to make *IJIE* more accessible to deaf communities by adding videos in sign language to the articles published in written English. I am a firm believer in being transparent and sharing research findings with community members. Historically, there has been a wide gap between researchers and practitioners as well as the communities that interpreters ultimately serve. I would like to close that gap. *IJIE*'s new editorial team will discuss the logistics of posting these videos with editorial board members soon. In addition, signed language teaching is also part of interpreter education, and I would like to see more studies in future *IJIE* issues related to best practices in teaching signed languages and cultural competencies. My goal is also to make research more accessible to community members. I would like to see more community-based participatory research, with the need to recognize that interpreter educators are working to advance access for individuals from various backgrounds and language pairs.

Recently, the structure of *IJIE* personnel and procedures has undergone some changes based on work started by Sarah Wheeler and continued by Danielle Hunt while serving as the director of research and publications for the Conference of Interpreter Trainers (CIT). To bring IJIE more in line with other academic journals, the CIT board has assembled a new team of *IJIE* personnel in three positions: main editor, managing editor, and editorial assistant. I am pleased to announce that Danielle Hunt from Gallaudet University has accepted the position of managing editor. Yi Hin Chan, a recent Gallaudet University doctoral graduate, has agreed to serve as the editorial assistant. The CIT board also voted to publish the journal online via Clemson University's press. In the past, *IJIE* editors managed all the submissions and reviews through emails. We now have an online publishing portal for all submissions, meaning that the reviewing and publishing process will be more efficient and easily accessible.

In the near future, I encourage you to consider sharing your findings and commentaries with IJIE. We welcome your submissions and would love to hear from you. Please feel free to contact us at IJIE@cit-asl.org should you have any questions.

I wish you all the best and much success and happiness in 2022!

Danielle I. J. Hunt
Gallaudet University

In the spring of 2020, I took over as the director of research and publications on the CIT board. Sarah Wheeler had been serving in the position and started several initiatives to help shape the position to better serve members of CIT and support the work of IJIE. In late 2021, this board position was phased out, and I was voted in as the new managing editor for *IJIE*. Early this year, CIT announced that Kim Kurz would begin serving as the main editor. I am thrilled to be working with her and want to highlight a few changes that have taken place with the journal recently and a few things that I am hoping for IJIE in the future.

As the director of research and publications, I oversaw completing the work that Sarah had started by partnering with Clemson University Press to publish and host *IJIE*. One reason that CIT chose Clemson University is because of its approach to publishing, its commitment to supporting research and scholarship, and its interest in furthering open access and video availability as part of scholarly journals. Clemson has worked on adding all previous issues of *IJIE* to the EBSCO databases, meaning that more students, faculty, and researchers will be able to find the journal in their institutional libraries via an increase in discoverability. Future issues will be added as well.

As the CIT board began discussions with Clemson University Press, Ineke Crezee and George Major decided to step down as editors of *IJIE*. I worked closely with both of them to ensure the publication of their last issue, Volume 13, Issue 1, and this issue, Volume 14, Issue 1, while leading the search for a new editorial team. The CIT board used this time of transition to develop a new journal editorial structure, with an open call for editorial staff, including editorial board members, main editor, managing editor, and editorial assistant. We are hopeful that this new structure will result in continued quality and even more support for researchers.

Our partnership with Clemson University Press has resulted in a new approach to submitting and reviewing articles via an online portal called bepress, a Digital Commons cloud-hosted repository. Digital Commons provides several resources to support authors, including on-demand readership metrics and analytics and a workflow that ensures double-blind peer review. I have worked with Clemson to transition all past issues of *IJIE* to this repository, and we are now requiring all future submissions to be processed through this portal.

Digital Commons supports all content types, including data sets and multimedia. The ability to add video content to the journal, as Kim mentions, will be a considerable asset to allowing articles and supplemental content to be presented in signed languages. In my new role as managing editor, I look forward to working with Kim and the IJIE editorial board to examine best practices and develop guidelines for these types of submissions in the future.

The CIT board has also recently voted on the makeup of the *IJIE* editorial board. In 2021, I sent emails to all serving members to ask whether they would like to continue on the board. Some agreed, while others preferred to step down. Again, I thank you all for your service to the field in the hopes of improving interpreter education. These former board members include:

- Karen Bontempo, Macquarie University, Australia
- Mira Kim, University of New South Wales, Australia
- Peter Llewellyn Jones, University of Leeds, UK
- Holly Mikkelson, Monterey Institute of International Studies, USA
- Brenda Nicodemus, Gallaudet University, USA
- Carol Patrie, Independent Scholar, USA
- Cynthia Roat, International Consultant on Language Access in Health Care, USA
- Amy June Rowley, California State University East Bay, USA
- Debra Russell, University of Alberta, Canada
- Julie Simon, The Language Door, USA
- Anna Witter-Merithew, University of Northern Colorado, USA

As the new board begins its term, I hope to actively engage its members in shaping the future directions of *IJIE*. The editorial team will schedule a meeting with the new board soon to get its input. The current board members are:

- María Jesús Blasco Mayor, Universitat Jaume I, Spain
- Ineke Crezee, Auckland University of Technology, New Zealand
- Robyn Dean, National Technical Institute for the Deaf at the Rochester Institute of Technology, USA
- Suzanne Ehrlich, University of North Florida, USA
- Daniel Gile, Université Sorbonne Nouvelle, France
- Kimberly Hale, Eastern Kentucky University, USA
- Nigel Howard, Independent Researcher, Canada
- Rachel Locker McKee, Victoria University of Wellington, New Zealand
- George Major, Auckland University of Technology, New Zealand
- Esther Monzó Nebot, Universitat Jaume I, Spain
- Riccardo Moratto, Shanghai International Studies University, China
- Jemina Napier, Heriot-Watt University, Scotland
- Anna-Lena Nilsson, The Norwegian University of Science and Technology (NTNU), Norway
- Natasha Parkins-Maliko, University of the Witwatersrand, South Africa
- Helen Slatyer, Macquarie University, Australia
- Marty Taylor, Interpreting Consolidated, Canada
- Beppie van den Bogaerde, University of Amsterdam, Netherlands
- Myriam Vermeerbergen, KU Leuven, Campus Antwerpen, Belgium and Stellenbosch University, South Africa
- Jihong (Lily) Wang, The University of Queensland, Australia
- Elizabeth A. (Betsy) Winston, Teaching Interpreting Educators & Mentors (TIEM) Center, USA

I hope you enjoy this and future issues of *IJIE* as we continue to advance interpreter education through research and interdisciplinary discussion.

CORRECTION:

After publication, it was found that we overlooked the inclusion of one former IJIE editorial board member in the list of members we thanked for their service. Carol Patrie served on the board since the inception of IJIE, and not including her in the list was a huge oversight. We have corrected the list so that her name appears as it should have.
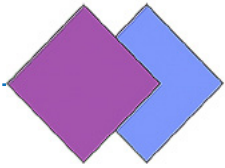
Translanguaging in Court Proceedings: How Interpreter Pedagogy Needs to Address Monolingual Ideologies in Court Interpreting That Delegitimize Litigants' Voices

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Abstract

The majority of court proceedings are based on monolingual ideologies that assume that the court is speaking one, specific, bounded language and the litigant another. Thus, interpreting processes in this context are framed as an L-B to L-A interchange, a bridge between two linguistically and culturally discrete entities. In increasingly superdiverse societies, however, court interpreters are finding that their clients do not always respect these rigid boundaries, often engaging instead in what has become to be known as translanguaging, a form of linguistically fluid, hybrid, and often creative discourse that sources all the client's (para)linguistic repertoires, acquired throughout their personal and working life experiences.

Drawing on preliminary research, this article explores how monolingual biases appear to persist in community or public-service interpreting and suggests that interpreters are little prepared to deal with translanguaging practices. Moreover, findings suggest that such a phenomenon needs to be addressed in interpreter training pedagogy.

Keywords: legitimate language; non-legitimate language; translanguaging; superdiversity; monolingual boundaries; community interpreting

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1. Introduction

Court interpreting is one form of what is referred to as *community interpreting or public-service interpreting*,[1] which provides interpreting services for minority language–speaking people in host nations who cannot speak the majority language, potentially restricting their access to essential public services (e.g., medical, educational, and legal). The right to such services is enshrined in Article 2 of the Universal Declaration of Human Rights,[2] which states that such rights and freedoms should be an entitlement "without distinction of any kind, such as race, colour, sex, *language*, religion, political or other opinion" (my emphasis). Hence, community or public-service interpreting is positioned as being an essential bridge between linguistically and culturally different groups living in a foreign country and serves to provide justice and equity for all (Bancroft, 2015; Garber, 1998).

However, this concept of interpreters providing a "bridge" between linguistic minority groups and the linguistic majority of a nation-state draws on a monolingual framing of languages (and cultures), whereby individual states claim a "one nation, one language, and one culture" status for all its citizens (Blommaert & Rampton, 2011). Although this stance might have been more relevant in the past, in the postmodern world of today, such myths are being increasingly challenged.

The phenomenon of *translanguaging*, in particular, provides a major challenge to monolingual approaches to interpreting,[3] being a form of multilingualism, but varying from the concept in representing a creative, dynamic, and fluid sourcing of diverse linguistic repertoires, rejecting the "artificial boundaries" between languages (Garcia, 2009; Garcia & Li, 2014). Translanguaging, indeed, represents an individual's, group's, or community's ability to create "new language" from all the principal and partial linguistic resources they have acquired through their personal histories and experiences (Garcia & Li, 2014). Moreover, translanguaging can be seen as a form of "multilingualism from below" or "metrolingualism" (Pennycook & Otsuji, 2015), emerging typically in urban spaces where mixed-language practices are an essential part of *getting things done* in everyday life (Pennycook & Otsuji, 2015). These spaces are where "superdiversity" is most evident in society (a concept described in more depth later), such as in the marketplaces, shops, and areas of production in cities, where getting things done legitimizes drawing on every resource available to build relationships, promote conviviality, and do business.

I argue that where and when translanguaging occurs, it is an essential part of an individual's social identity and voice, particularly for migrants, refugees, and asylum seekers, whose own minority language(s) have adapted in many (semi-)competent ways to the majority language of the host nation. Moreover, I suggest that translanguaging is an integral part of how these people communicate and build communities in their daily lives.

I begin by looking at superdiversity and translanguaging as emerging phenomena before turning to the wider concept of legitimate and non-legitimate language in institutional settings, specifically in relation to power and authority and how these have been influenced and shaped by monolingual ideologies regarding legitimate language usage in professional contexts (e.g., in legal proceedings). I go on to present preliminary research findings to support this argument before concluding with proposals for changes to pedagogic curricula in interpreter studies.

2. Superdiversity and Translanguaging in a Postmodern World

Beginning in Australia and Canada in the 1960s and 1970s, respectively, followed by America, Britain, and European Union (EU) countries in the 1980s and 1990s (Mahood, 2016), multiculturalism and multilingualism have gradually been politically acknowledged as realities in most nation-states, albeit with some still vehemently resisting them (see Monzó-Nebot, 2020). In today's world, however, an even more complex form of globalization and migration has deeply "altered the face of social, cultural and linguistic diversity in societies all over the world" (Blommaert & Rampton, 2011, p. 1). This new diversity has come to be known as *superdiversity* (Vertovec, 2007), a term used to describe

> a (new) level and kind of complexity surpassing anything the country has previously experienced.
> Such a condition is distinguished by a dynamic interplay of variables among an increased number

of new, small and scattered, multiple-origin, transnationally connected, socio-economically differentiated and legally stratified immigrants. . . . (p. 1024)

Paralleling the rise of "superdiverse societies" has been a rise in the creative and fluid use of multiple languages in everyday urban speech, a phenomenon that has come to be known as *translanguaging* (Garcia, 2009; Garcia & Li, 2014; Pennycook & Otsuji, 2015). Unlike multilingualism, and its correlation with the concept of "code-switching," passing from one "bounded" language to another (cf. Canagarajah, 2013; Hall & Nilep, 2015), translanguaging represents "a practice that involves [the] dynamic and functionally integrated use of different languages and language varieties, but more importantly *a process of knowledge construction* that goes beyond language(s)" (Li, 2018, p. 15, original italics).

How people construct their knowledge of the world is intricately tied to language, and translanguaging, in its multiple-language use, allows for new voices to permeate new social realities "by bringing together different dimensions of [people's] personal history, experience and environment" (Li, 2011, p. 1223). This relatively new social space in urban settings has brought people together from diverse ethnic, cultural, and linguistic origins with different personal histories and experiences, ranging from relative newcomers to those who have already established deep roots in their local communities, where translanguaging has become a new social necessity and a new reality (Creese et al., 2018; Pennycook & Otsuji, 2015).

3. Legitimate and Non-legitimate Languages in a Monolingual Context

Bourdieu (1977) has argued that

> [l]anguage is not only an instrument of communication or even of knowledge, but also an instrument of power. A person speaks not only to be understood but also to be believed, obeyed, respected, distinguished. Hence the full definition of competence as the right to speech, i.e., to the legitimate language, the authorized language which is also the language of authority. Competence implies the power to impose reception. (p. 648)

The legitimate language in institutional contexts (e.g., education and law) is the language that has been negotiated between the state and its institutions, based on dominant discourses and ideologies that have been historically legitimized over time and that invest the people who speak that language with the power "to be believed, obeyed, respected, [and] distinguished" (p. 648). Indeed, for reasons of political and economic power, *legitimate language speakers* are also those who remain within the matrix of power and continue to propagate specific language hierarchies to maintain that power (Bourdieu, 1977). Thus, non-legitimate language users—those without legitimized repertoires—remain marginalized and powerless (Reagan, 2016), and language practices and conventions are "invested with power relations and ideological processes which people are often unaware of" (Fairclough, 1992, p. 7).

The linguistic inequalities and asymmetries between litigants and legal representatives in courts have received substantive attention over the last 20 years (Conley & O'Barr, 1998; Cotterill, 2004; Matoesian, 1999; Mertz, 1994). However,

> a searching examination of the language-based discrimination of linguistic minority participants in legal contexts has developed only recently. The primary focus of analysis in these studies has been the institutional hegemony of monolingual ideologies that persistently disadvantage speakers of minority languages in procedural contexts. (Maryns, 2012, p. 297)

These monolingual ideologies often frame the interpreter as working between two clearly defined, discrete, and bounded monolingual sets of code, where the litigant is presumed to be equally represented in the mediatory process—that is, Court = L-A, litigant = L-B, interpreter = L-A-L-B (cf. Angermeyer, 2008, 2015; Inghilleri, 2003;

Wadensjö, 2004). However, translanguaging practices are marked by a fluid and creative interchange between multiple repertoires (Auer, 1998; Maryns, 2005, 2012; Maryns & Blommaert, 2001); consequently, a complete monolingual competence in one language can never be completely assumed and, indeed, rarely is the case (Harris, 1997; Leung et al., 1997; Maryns & Blommaert, 2001; Rampton, 1995). Moreover, research has shown that litigants may often be actually incapable of expressing themselves wholly in the language assigned to them through the services of a court interpreter, often leading to the court's, and the interpreter's, questioning of their credibility (Maryns, 2012; Rock, 2017). The complexities of the linguistic variables in play and the everyday nature of translanguaging practices, particularly in some communities, are arguably hardly ever acknowledged by the courts and only in varying degrees by interpreters, as the preliminary research presented here suggests. Moreover, I argue here, as does other research (see Cogo & House, 2017 Firth, 2009), that far from being a wholly arbitrary and idiosyncratic mixing of language codes, a certain consistency in the practice can be identified.

Interpreters themselves might be very aware of the difficulty of maintaining linguistic boundaries in their own personal lives and how often their languages blend, particularly outside their professional roles (Rock, 2017). However,

> many of the social institutions in which they work still view languages as separate and separable units which come into contact in highly regularised ways and can therefore be highly regulated whenever they meet. In other words, many social institutions still operate on the assumption of a monolingual norm even though many social actors within them do not. (p. 218)

This might be the product of a monolingual educational approach to language learning in general, whereby individual languages are taught in isolation and such practices as code-switching are ideologically seen as indicators of deficit (Creese & Blackledge, 2010; Cummins, 2005; Li & Wing, 2018; Rock, 2017). This attitude is also reflected in interpreter curricula, which generally favors a one-to-one monolingual approach to interpreting practices (Runcieman, 2018, 2021) and a consequent expectation of the same in a professional context.

To explore how such monolingual ideologies might affect the professional court interpreter's approach to translanguaging practices in court proceedings, I conducted research involving six practitioners in the field.

4. Research Overview

4.1 Participants

To acquire a cohort for research into court interpreters, I approached the UK's National Register of Public Service Interpreters (NRPSI[4]). The association subsequently agreed to publish a call on its website for volunteers to discuss contemporary issues in court interpreting in addition to the researcher's contact details. In the course of 2 weeks, six members agreed to correspond with the researcher individually, with a guarantee of anonymity when the research was published.

The cohort consisted of five females and one male, with a range of experience in the field of court interpreting from 3 to 28 years. Table 1 provides a brief description of each participant (whose names have been anonymized) based on an initial questionnaire. The questionnaire was also accompanied by an ethics consent form, outlining the nature of the study, guaranteeing that no information would be included in the research without the participants' prior consent, and assuring them that they could withdraw from the research at any time.

Table 1. Research Participants

Name (pseudonym) M=male F=female	Languages interpreted	Years working as a court interpreter
Sara (F)	French-English	18
Jacob (M)	Polish-English	3
Eva (F)	Dutch-French-English	28
Henna (F)	English-Portuguese	21
Tatania (F)	Russian-English	5
Solada (F)	Thai-English	6

Registered with the NRPSI, Solada received her diploma in public service interpreting (DPSI)[5] in 2018. She described herself as a full-time interpreter, having worked in the healthcare sector for 11 years but almost exclusively as a legal interpreter for the last 6 years (2015–2021). Apart from court hearings, she also interpreted during police custody interviews, where she sometimes translated depositions and witness statements.

Tatania was also a registered member of the NRPSI and obtained her DPSI in 2014. Apart from legal interpreting, she also interpreted for the social services and in healthcare.

Henna was one of the longest-serving interpreters in the cohort, being awarded her DPSI in 1999. In addition to being a member of the NRPSI for more than 10 years, she was a member of the UK's Association of Community Interpreters (ACIS). Nearly all her professional interpreting career was based in the legal field, including courts, probation hearings, police interviews, and prisons.

Eva, like Henna, had many years of experience in interpreting, working principally as a freelancer. She had worked for the healthcare sector, primarily in the field of psychiatry (mental health assessments), as well as for the European Court of Justice since 1993. Although not a member of the NRPSI, she was a member of the International Association of Conference Interpreters (AIIC) and the European Commission's Directorate General for Interpretation (SCIC). She held a postgraduate diploma in legal interpretation.

Jacob had master's degree in forensic linguistics and a DPSI. He had been an interpreter in the legal field since 2017, working principally on Ministry of Justice assignments, police custody interviews, and witness/victim statements. Previous to this, he had worked for the healthcare sector (2015–2017) in a variety of places, including accident and emergency (emergency room), surgery and minor procedures, hospital discharge, chemotherapy, radiotherapy, pre-op assessments, and pediatrics.

Sara was a member of the NRPSI as well as other organizations, including the Chartered Institute of Linguistics (CIOL),[6] the Institute for Interpretation and Translation (ITI),[7] and the Association of Police and Court Interpreters (APCI).[8] Moreover, she also held a law degree and a solicitor's qualification. She had set up her own company to train legal interpreters and focused principally on legal interpreting in her own professional life, although she also worked in the business and commercial sectors.

4.2 Analysis

The analytic frame in the research involved a discourse analysis of 51 emails specifically related to the cohort's exchanges with the researcher after posing the following initial focus question:

> Have you ever been in an interpreting situation where the client(s) were code-switching, that is, using more than one language interchangeably as they spoke? This might have been anything from

a few words to a long stretch of discourse. If so, can you describe the situation (with example/s) and say how you dealt with it?

Although translanguaging practices were a central focus of this area of research, using what was considered to be a more familiar and established term—code-*switching*—and framing it as "using more than one language interchangeably," was envisaged as reducing conceptual confusion over specific terminological/conceptual meaning. It was also intended to prevent the participants from taking an anticipatory theoretical or conceptual stance toward the practice of translanguaging itself.

Table 2. Summary of emails and word content analyzed

Name	Number of emails analyzed	Total word content
Sara	1	253
Jacob	20	3,456
Eva	7	1,472
Henna	4	899
Tatania	0	0
Solada	19	2,998

Two participants (Jacob and Solada) provided much of the data, as they were more engaged with the practice of "language mixing," which they continually observed in their work, and the "problem" they saw it posing to professional legal interpreting.

My focus in these one-on-one exchanges was on how the participants constructed their specific *community of practice* (Lave & Wenger, 1991) as professional court interpreters. The analysis centered on identifying dominant discourses in the data with regard to the central concerns in an analysis of communities of practice (Lave & Wenger, 1991)—namely, ethical practices, shared (or unshared) professional values, and best practices, specifically with regard to what I determined as being translanguaging practices in the courtroom.

5. Research Findings

All the participants in the research cohort raised the issue of language transitioning in their clients' speech as hindering legal proceedings and having a negative impact on their professional interpreting abilities. Eva initially responded:

> I would say, depends on whether the speaker is recorded and whether the switch occurs after a prompt. If he is recorded and still speaking in full flow, I would probably first interpret into English and then add "part of this was in another language," knowing that if it matters to know exactly when the switch took place, we can play back the record. This would enable me to render the evidence without imposing my own person on that evidence. If not recorded, I would announce the switch at precisely the point it happened.

Eva described court proceedings as being either "recorded" or not, flagging potential differences in certain court proceedings to the uninitiated reader. If these proceedings were recorded, she described how she would ignore any translanguaging until after the client's turn and then signal it to the court with the phrase "part of this was in another language." The reason she gave was to avoid "imposing my own person on that evidence." This feeds into a discourse that interpreters should act as "passive language conduits" and remain as "invisible" as possible in the interpreting event, a discourse that is increasingly contested in the field of community or public-service interpreting (see Angelelli, 2012; Mikkelson, 2008) but is arguably a far more complex issue in legal interpreting, where the

interpreter can be liable for prosecution if any significant changes or modifications are made from the litigant's speech. If the hearing was not being recorded, however, Eva saw her role as actively interrupting proceedings and allowing the court to decide how best to proceed.

In response to the same research question, Solada said:

> I have a lot of clients from North Eastern of Thailand. They speak Isaan, which is a dialect for the North Eastern of Thailand. Some speak Laotian, as they live near the border of Thailand and Laos. I do not speak Isaan nor Laotian and have many times faced a scenario where my clients mixed Isaan and Laotian words into their Thai sentences. When this occurred, I didn't ask them to clarify or repeat; I instead told the judge/barrister/police officer/or doctor that the client had just used Isaan or Laotian words that I didn't understand. Then, I interpreted what I had just said to the service provider into Thai for the service user too. After that, I asked the service provider to repeat the English question again; by this time, the service user should answer properly in Thai.

Solada appeared to take a more "agentive" and "visible" role when translanguaging occurred in the court, stopping proceedings immediately to flag this with the court officials and then translating what she had said to the court back to the client, seemingly as an implicit request to them to clarify what they had translanguaged in standard Thai. Solada apparently felt obliged to do so due to an inherent discourse that monolingual standards must be observed in the court.

Interestingly, in Solada's case, it appears that she saw her clients' mixing of languages as a problem that could be overcome by making them aware of this in the court and expecting them to subsequently "answer properly in Thai." In a further development of this discourse, however, she made the following observation about the socio-educational demographic of some of these clients: "I'm not being judgemental, but ex bar girls who are married to English men in the UK are not highly educated. They know how to speak Thai, but they sometimes mix different dialects together." By describing these clients as being uneducated Thai girls who "sometimes mix different dialects together," she seemed to presume that their access to formal monolingual Thai might be limited, as it was unlikely that such tight restrictions on how they communicated had been imposed in contexts outside the proceedings of a court of law. What appears to be a relatively easy switch to standard monolingual forms of speech, from the perspective of an *educated* Thai interpreter, might, however, be a much more difficult task for "ex bar girls" whose everyday language might involve a form of translanguaging and for whom crossing monolingual borders might not be so self-evident and clear-cut. Moreover, requiring this monolingual communication from them in the context of a formal court hearing could also cause them to experience heightened levels of anxiety or distress.

Solada's and Eva's approaches to instances of translanguaging appear to include a tendency to interrupt their clients in mid-speech and affect their overall performances in the court case, potentially exasperating and/or negatively influencing the court's perception of the litigants, as it might position them as purposefully hindering communication, particularly if this happened on a regular basis.

In both cases, it is worth noting how the interpreters feel professionally obliged, regardless of whether they understand all of what is said, to raise the issue of translanguaging with the court officials. Court responses in this situation appear to vary quite considerably, however, as Eva observed:

> It really depends on the lawyer or other professional who is present, as responses vary from no interest at all to detailed questions as to which language, whether it is their first or second etc. language, do you the interpreter also speak it, and so on.

The court's responses appear to be rather arbitrary, ranging from "no interest at all" to "detailed questions," the latter being aimed at identifying the exact changes that occurred and whether information might have been missed or misinterpreted by the interpreters. Thus, it would seem that legal proceedings can be affected in diverse ways, from no interruption at all to a potentially sustained interruption with lengthy interrogation by a lawyer or other official.

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These examples show how court interpreters can frame translanguaging as being a problem that they would rather avoid if possible, particularly as it might cause a halting to proceedings and a potential interrogation of their own abilities to do their job as professionals. These examples refer principally to languages other than English, but what happens when English plays a major role in the translanguaging act itself?

Jacob described some of his clients' language in the following manner:

> I have also had Polish people trying to give full answers in English during their custody interview, but they would swap between giving a full answer in Polish and a full answer in English, so I never knew if they were going to stick to one language or not. When they gave a full answer in English, but the officer didn't understand it because it was broken English and it wasn't grammatically correct, the officer would say then, "Please, if you could use the interpreter," which I would proceed to interpret in Polish. Sometimes after the suspect again tried to answer in English, which would quite likely not get his message across to the officer, I would also just point my finger at myself to indicate the suspect should speak to me directly in Polish. I realize it was kind of breaking the being-unobtrusive rule, but I only did so to aid the flow of communication.

Jacob described his clients as continually attempting to express themselves in English before the court, which caused confusion for him and for the court officials. This situation seemed to be further exacerbated by what Jacob called his clients' use of "broken English." Jacob's attempts to limit this practice by pointing to himself in front of the client, as a way of implicitly insisting that they respond only in monolingual Polish, were described as "breaking the being-unobtrusive rule," referencing the same discourse that Eva did: interpreters should be "invisible" (i.e., neutral) in all interpreting events. Although the concept of neutrality continues to be a strong part of the discourse in interpreter training, as evidenced by Jacob's and Eva's reactions, the possibility of an interpreter's complete neutrality has been substantially critiqued (see Angelelli, 2012; Metzger, 1999; Mikkelson, 2008).

Jacob's frustration with having to intervene appears to come from the fact that despite having access to an interpreter, clients feel the need to use their own voice in the court, albeit one that is not to always effective in communicating.

On closer examination, however, the "broken English" described by Jacob seems to be a form of translanguaging, something that has potentially emerged in the clients' linguistic repertoire as a direct experience of their working lives, as Jacob suggested in his correspondence:

> I have had quite a few situations during custody interviews where Polish speakers were throwing in English phrases or words, albeit in broken English sometimes, whilst giving their version of events. Usually these are the people who had picked up some language and they'd been using their mother tongue and English interchangeably at work. . . .
> Most common examples I come across involve using English work-related lingo whilst giving the rest of the evidence in Polish. The words uttered in English would, for example, be . . . *boksy* (a Polish-formed declension in a plural form of the English *boxes*).

What is of particular interest here is the word *boksy*, as it appears to be a morphosyntactic modification of the English word *box* to indicate plurality in Polish, represented here with a -y suffix but representative of an *-ie* termination in Polish, with both orthographic representations being pronounced as a long open-front vowel /i:/.

Such transference of prosodic elements from L-A to L-B has a long history of research in applied linguistics, as exemplified by Flege and Port (1981), Jarvis (2000), Mennen (2006), and Nash (1972), among many others.

When I requested more examples of this type of modification from Jacob, he replied:

- "*Skinowałem chickeny*" (I was skinning chickens)
- "Rozmawiałem z *supervisorem*" (I was talking with the supervisor)
- "Byłem na *kitchenie*" (I was working the kitchens)

In these examples, English verbs and nouns have undergone a form of translanguaging. In the first example, the English verb "to skin" has taken the Polish suffix -*owałem*, indicating the past-imperfect aspect (i.e., "I was skinning"). The object of the verb, "chickens," like "*boksy*" in the previous example, is given the Polish plural suffix -*ie*, represented here by the letter -y again: *chickeny*. The next two examples show the English noun "supervisor" being given the -*em* suffix to signal an instrumental noun in Polish and "kitchen" again taking a Polish plural /i:/ phoneme, represented by an alternative orthographic representation -*ie*.

One might presume that Jacob's Polish client was aware that he was translanguaging, but he incorporated the language he spoke into a repertoire he was apparently incapable of modifying to suit the strict monolingual dictates of the court. The "English work-related lingo" that Jacob described was a language that came from the world of *getting things done*, the everyday world of a man working in the labor market. This "multilingualism from below" (Pennycook & Otsuji, 2015) challenged the legitimate language of the court (in that it was a hybrid form of English and Polish)—not in an overtly, agentive manner but in a subtle way that was perhaps more instinctive than purposefully resistant. The reaction to its use is expressed by Jacob's categorizing it as a non-legitimate form (i.e., "broken"), not whole but arbitrarily fragmented and subjective, a consequence of the individual's lack of knowledge or ignorance about the rules of standard English grammar.

Translanguaging can also be seen in ways that involve not only the morphological adaption of English words to the speaker's "mother tongue" but the phonetic as well, as shown in Jacob's example:

> Sometimes, however, people pick up a particular English word but don't get its pronunciation right, and then I have no idea what they're talking about. One example has stuck with me. A suspect suddenly said, "Pracowałem na *pisorku*." (literally: I was working on *pisorku*.) Because I had no idea what that word meant, I asked during the interview, "May the interpreter ask the suspect to clarify a word he's used?" and after some explanation, I realized that he was trying to say *piecework* but was completely mispronouncing it, and so my interpretation back to the officer was "I was doing piecework."

Jacob's client was speaking Polish when he introduced a word that was initially incomprehensible to the interpreter. After asking the court whether he could clarify the meaning with his client (consequently halting court proceedings), Jacob eventually realized that the word in question was actually English, but, due to a morphological and phonetic adaptation to Polish, it was unfamiliar and confusing for him. On closer examination, we can see how the word *piece* remained relatively intact, orthographically represented by the interpreter as "*pis*" (perhaps Jacob's attempt to render the word as he imagined his Polish client might) but presumably pronounced with a long open-front vowel /i:/, as in standard English. What occurred after this was related specifically to Polish phonetics and morphology: dropping the w (/w/), which is not a phoneme in Polish, and adding a final *u*, which signals a masculine noun in Polish—hence, *pisorku*.

Like the other interpreters' examples, this one shows a certain consistency in the transformative translanguaging process. The "rules" of Polish grammar and phonetics appear to have been applied to English in a relatively consistent manner. Moreover, these examples also show how translanguaging resists the legitimate monolingual language of the court, although it might well be that many speakers may not even be aware of it as representing a form of resistance if they have grown up in a community where translanguaging is the norm, such as the Latino community in New York (U.S.) speaking "Spanglish" (Casielles-Suárez, 2017). Yet despite attempts on both sides

(through appeals from the interpreter and the court official), the litigant is represented as being unwilling, or unable, to conform to the demands made on him to speak a legitimately recognized form of English and/or Polish.

In sum, translanguaging practices, such as these, challenge the theoretical framing of languages as being discreet objects, as exemplified by Saussurean linguistics, by resisting (consciously or unconsciously) idealistic monolingual models and by firmly rooting linguistic resources in the real world—a world that reflects the social activity and the personal history of the speaker.

6. Conclusion

Courts presume, *a priori*, that any litigant who has requested the services of an interpreter has no knowledge of English in any meaningful way (Angermeyer, 2015) and should therefore limit all their interventions in proceedings to the monolingual "foreign" language they are associated with. However, in an increasingly superdiverse society, I suggest that litigants might frequently mix their own language(s) with English, not only by code-switching but also by translanguaging, as this preliminary research demonstrates.

Many of the examples that the professional court interpreters presented in this research are of people transposing the language of the street and the language of their daily lives into the context of a court of law. It is, arguably, part of their "metrolingualism" (Pennycook & Otsuji, 2015), a melded set of linguistic resources that does not conform to hegemonic monolingual dictates of institutional service providers such as courts and the legal field in general.

The Polish workers described in this research have, one might suspect, found forms of employment while living in the UK (where the research was based) that they were not particularly aware of before. "Skinning chickens" is perhaps a new occupation for them in the manual labor market and not something they did back home. Hence, the job has also emerged as a new linguistic reality for them, something that has undergone translanguaging, a development between the unfamiliar occupation in an English-speaking context and their more familiar Polish means of giving it grammatical meaning (e.g., *Skinowałem chickeny*).

Although this preliminary research draws on a very small cohort of court interpreters, further research could draw on a much larger sample, which could also include legal professionals, to examine how any shifts from monolingual usage in a court of law are perceived from different and triangulated perspectives.

6.1 Designing New Curricula

Although successfully challenging monolingual bias in courtrooms is still perhaps a remote possibility, educators could include the phenomenon in interpreter training curricula to better prepare interpreters for the translanguaging challenges they will face (as exemplified by the professional interpreters' narratives in this study). One way to do this might be by introducing a "translanguaging space" into curricula (Runcieman, 2021), addressing the sociocultural processes that have led to its emergence as well as the challenges it poses to professional best practices and its potential impact on professional interpreters' identities (Runcieman, 2018).

Moreover, educators might also begin designing task-based exercises to mirror potentially complex translanguaging scenarios by introducing role-plays that draw from texts with translanguaging examples rather than teaching only a simple one-to-one, source-to-target language approach (LA-LB). These role-plays might be partially modeled on plurilingual task-based exercises in translation studies, drawing on González-Davies's work (2020), for example, which explores how students can successfully complete information-based tasks in their target languages even when working with plurilingual source texts (see Runcieman, 2021, for a specific proposal). González-Davies has shown that by sharing their varied linguistic resources and metacognitive skills, students created a "scaffolding" that allowed them to successfully complete tasks as well as develop their own plurilingual and multicultural competencies. Other approaches might present students with real court transcripts, extracted from courtroom corpora, in which translanguaging has occurred. Here, students might explore and comment on how the interpreter dealt with its occurrence and debate best practices in individual cases with their peers and teachers.

In societies already marked by superdiversity and translanguaging, I argue that interpreting curricula need to begin to reflect this reality to help future interpreters meet the challenges they will inevitably have to face in their professional lives.

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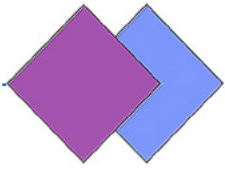
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Endnotes

1   Many other terms exist, with international variations on the actual roles performed and relevant accreditation processes.

2   https://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf

3   The term interpreting throughout this article refers specifically to public-service or community interpreting, in contrast to other professional forms, such as conference interpreting.

4   https://www.nrpsi.org.uk; all members are certified public-service interpreters, having obtained Level 6 interpreting qualifications.

5   The DPSI program is taught over an 8-month period and can only be accessed after having acquired a certificate in community interpreting (a 3-month course). Interpreters in public-service interpreting therefore have approximately 1 year of studies.

6   https://www.ciol.org.uk

7   https://www.iti.org.uk

8   https://apciinterpreters.org.uk

Are Two Heads Better Than One?
Interpreting Students' Moral Reasoning Skills

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Abstract

The Defining Issues Test (DIT) is an internationally used instrument that measures an individual's moral reasoning skills—that is, how an individual explains right and just action. DIT scores are correlated with age and education, and they are also correlated with clinical performance when administered to professional practitioners. Practicing signed language interpreters' scores, however, were not reflective of their age and education in one study, being much lower than those of practitioners from other professions. Providing communication access for individuals who do not share the same language as their service providers is grounded in social justice and equity, yet practicing interpreters' DIT scores did not reflect higher-order justice skills. The current study investigates American Sign Language interpreting students' DIT performance. Over the course of 3 years, different classes of third-year interpreting students in an undergraduate program in the United States took the DIT. Each year, the students' average scores were significantly higher than those of working interpreters (n = 80). This result raises the question of whether, how, and why years of interpreting experience curtail ethical development. A follow-up study with one student class (n = 32) also found that taking the DIT as a collective, meaning that answers were negotiated among group members, resulted in higher scores than the group members' individual median scores. This additional finding adds credence to educational approaches that focus on ethical discussion and deliberation of interpreting practice.

Keywords: interpreting students, decision making, ethical reasoning, Defining Issues Test

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1. Introduction

During an interpreting faculty meeting a few years ago, the topic of students accepting professional work in the community while still in the interpreting program was raised. Interpreting faculty address this concern with some frequency: How do we instill in students the importance of discernment regarding their qualifications—when to accept or not accept an interpreting assignment—now and in the future?

Within the context of this conversation, one faculty member relayed a distressing conversation she had had with students a couple of weeks prior: "I asked the students how they should determine whether or not they accept an interpreting assignment." She went on to contrast two responses in particular. One student suggested that they would consider the impact on the deaf and hearing people. Another student admitted that it was their *availability* that would determine whether they accepted the assignment: "I just ask myself, does this fit my schedule, and if it does, I would accept it." This response caused the entire faculty to groan with frustration.
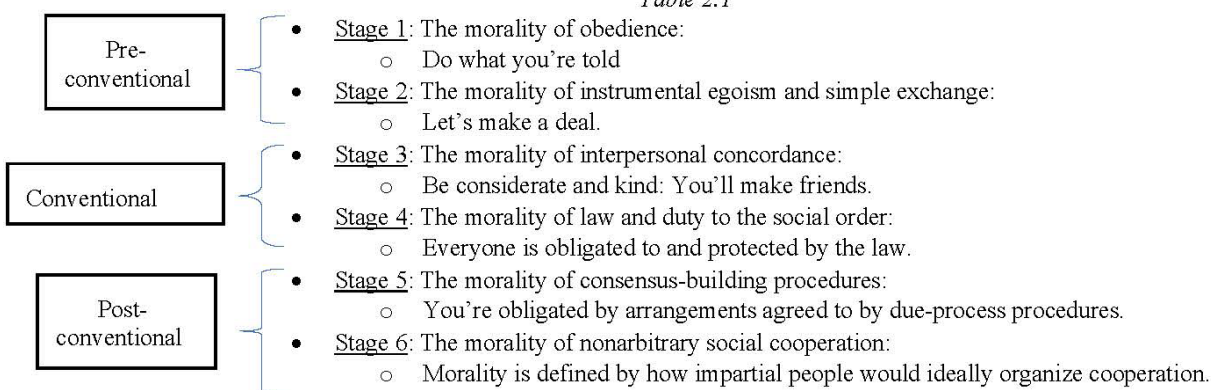
How an individual *reasons through* a decision to reach what they imagine is right and just action is of interest to moral psychologists (Gilligan, 1977; Kohlberg, 1976; Rest et al., 1999). Moral psychologists have proffered theories and empirical data for what constitutes an ethically defensible reason as well as what makes some reasoning patterns better than others (Rest et al., 1999). In more than 100 years, more than 20 instruments have been created and used to measure moral judgment, moral reasoning, and moral development (Martí-Vilar et al., 2021).

One of the top two measures used in the last 30 years is the Defining Issues Test (DIT; Martí-Vilar et al., 2021). The DIT measures an individual's pattern of moral reasoning and has been used with professional practitioners in the fields of teaching, medicine, business, and law (Christensen et al., 2016; Rest, 1994; Roche & Thoma, 2017). The DIT more recently has been used to measure the moral reasoning abilities of American Sign Language–English (ASL-ENG) interpreters in the United States (Dean, 2015), the results of which reveal moral reasoning patterns commensurate with individuals in their teenage years, more than half of the average age of the study participants. Teenagers and young adults (~ age 22) on average demonstrate a moral reasoning pattern that is concerned with following rules or social conventions. The results of this initial study beg the question of why these interpreters have not developed beyond this stage. This current study investigates whether student interpreters, representative of the teenage to young adult category, show similar reasoning patterns to their peers and to practicing interpreters.

2. Stages and Schemas of Moral Reasoning

At the interpreting faculty meeting described above, no one felt the need to question what was wrong with the second student's response or why the first student's response was better. The faculty all just seemed to tacitly agree that the first was acceptable and the second wasn't. Kohlberg's (1976) six stages of moral development readily explain why the faculty assessed each student's response differently. Kohlberg's six stages include a notable hierarchical nature to ethical reasoning, from preconventional to postconventional. Table 2.1 defines Kohlberg's moral stages (Rest 1994, p. 5).

Table 2.1

- Pre-conventional
  - Stage 1: The morality of obedience:
    - Do what you're told
  - Stage 2: The morality of instrumental egoism and simple exchange:
    - Let's make a deal.
- Conventional
  - Stage 3: The morality of interpersonal concordance:
    - Be considerate and kind: You'll make friends.
  - Stage 4: The morality of law and duty to the social order:
    - Everyone is obligated to and protected by the law.
- Post-conventional
  - Stage 5: The morality of consensus-building procedures:
    - You're obligated by arrangements agreed to by due-process procedures.
  - Stage 6: The morality of nonarbitrary social cooperation:
    - Morality is defined by how impartial people would ideally organize cooperation.

According to Kohlberg, the second student's response of "Does this fit my schedule?" would be indicative of the *preconventional stages*, where the focus is on the self and limited to only those who are known (i.e., kinship). In other words, an individual in the preconventional stage might ask, "What's in it for me and my ingroup?" By being concerned about the impact the decision could have on others, the first student demonstrated a type of *postconventional reasoning*. Postconventional reasoning, or principled reasoning, as it is also called, is concerned with shared values; these individuals might ask, "How can I cooperate?"

There was not a third student in this anecdote, but as a means of completing the illustration, imagine a student reasoning at the conventional stages. They might have offered, "I should only accept work based on those in authority; if my boss says I should take it, then I should." Those in the conventional stages tend to ask, "What is the rule, and what is my duty?"

What Kohlberg's theory does not account for is why one 20-something-year-old college student was reasoning at an age typical of preadolescence while the other 20-something was reasoning at a level *theorized to be* beyond their years (Rest et al., 1999). According to Kohlberg (1976), these similarly aged individuals should have been drawing on a shared moral stage and, as a result, should have reflected similar reasoning abilities. Indeed, 20-somethings tend to fall into the conventional stages of moral development, but neither of these students gave a conventional response—the conventional response was created and added for the purposes of illustration.

The moral psychologist James Rest was a former doctoral student of Lawrence Kohlberg. Along with scores of other graduate students, Rest helped advance the empirical value of Kohlberg's instrument, the Moral Judgment Interview (MJI). In the MJI, participants are offered a hypothetical scenario of an overarching social nature, asked what the character in the scenario should do, and then queried for their reasoning behind the proposed ethical action. The participants' moral reasoning statements are then coded based on Kohlberg's six stages.

Years later, Rest's own research would address some of the weaknesses apparent in Kohlberg's research design and protocol (Rest et al., 1999). The first of those weaknesses was the concept of stages. Kohlberg's notion that individuals follow along a steplike, age-based series of stages as they mature was not compelling and not sufficiently evidenced in the data. Rest instead proposed *moral schemas*. Although schemas are not completely irrespective of age, he found that all individuals (old enough to be verbal) have the capacity to think and reason in preconventional, conventional, and postconventional ways. Instead of Kohlberg's six stages, Rest proposed three schemas that still include the preconventional, conventional, and postconventional categories. Table 2.2 lists Rest's moral schemas, descriptors for each, and how they correspond to Kohlberg's stages (Narvaez & Bock, 2002).

Table 2.2: Rest's Moral Schemas

Rest's Moral Schemas	Schema Features	Compared to Kohlberg
Personal Interest	Arbitrary or negotiated cooperation Self-focused Advantage to self is primary Survival orientation Scope includes known others In-group reciprocity	Stages 2 & 3
Maintaining Norms	Need for norms Self-focused Uniform categorical application Partial society-wide reciprocity Duty orientation	Stage 4
Postconventional	Appeal to an ideal Sharable ideals Primacy of moral ideal Full reciprocity Rights orientation	Stages 5 & 6

Although all individuals have the *capacity* to draw on any of the three schemas while thinking and reasoning ethically, as they move through life stages (e.g., age, education, life experience), individuals develop a dominant schema—one that is more consistently relied upon (Rest, 1994). Deviations from that dominant schema would be expected when particular situations are encountered. For example, a person could be dominant in postconventional reasoning, but when faced with a particular topic and the decisions associated with that topic (e.g., military service or diet and exercise), they might reason at a level more reflective of the maintaining-norms schema. Emotional states, such as anxiety and fear, can also shift an individual's dominant schema. Rest's research showed that dominant schemas do tend to cluster around age and education, but there is also potential for deviation from those trends.

3. Tacit Processes

Rest (1994) also proposed that moral schemas function tacitly, or *beyond one's awareness*. As a result, when an individual is asked directly to reason or to justify their proposed ethical action (like with the design of Kohlberg's MJI), they may struggle to express their reasoning. For example, in the scenario above, the faculty collectively expressed their frustration at the reply of "If it fits my schedule. . . ." They all appeared to be agreeing that the first response (concern for the impact of the decision) was more ethically compelling than the second (a concern for personal circumstances and benefits). No explanations were needed; tacitly, the faculty agreed with the morally superior response.

However, if someone had asked what was wrong with the second student's answer, the tacit nature of moral schemas would have become more evident. Some might have only replied, "Isn't it obvious?"; others could have explained how *concerns for others* morally supersede *concerns for the self*. This variation in response is not necessarily because of variations in moral reasoning abilities but in verbal abilities (Narvaez & Bock, 2002). In other words, the ability to articulate tacit reasoning is linked more to verbal skills than to reasoning skills (Rest et al., 1999).

In Kohlberg's MJI research, the protocol was to collect spontaneous responses and measure them. Kohlberg's MJI instrument uses hypothetical scenarios and poses the questions of "What should be done?" and "Why is that the right thing to do?" However, decades of data collection did not produce sufficient evidence of participants' ability to reason at the most sophisticated Stages 5 and 6, or *postconventional reasoning*. In what would eventually be called Kohlberg's *fatal flaw*, Kohlberg's data were thought to be representative of verbal skills and not reasoning skills (Rest, 1994).

Kahneman (2011) sums up this phenomenon by explaining that moral reasoning "requires a richer vocabulary than is available in everyday language" (p. 4). Without access to or use of such vocabulary, it can be argued that what a person is drawing on is just what is *cognitively available* (Kahneman, 2011) and not necessarily reflective of their actual abilities. What becomes cognitively available to an individual depends on the kinds of normative messages that they have directly or indirectly acquired (Dean, 2014, 2015).

Normative messages—being told directly or indirectly what is right and wrong—are ubiquitous. For professionals, normative messages about effective and ineffective practices are found in formal and informal sources—that is, they can be found in sanctioned documents and expressed through common tropes (e.g., "You're just the interpreter"). They come from a profession's ethical codes and standards of practice documents and are equally acquired from the "ethical parlance adopted by educators and the discursive norms and heuristics used by practitioners" (Dean, 2015, p. 96).

In one study, I (Dean) identify a series of normative messages prevalent in signed language interpreting textbooks and in interpreting discourse. Normative messages can sometimes morph into heuristics or mental shortcuts. Heuristics help the brain simplify ethical issues into *rules of thumb* and, by doing so, intimate solutions (Kahneman, 2011):

> [I]n order to function, the brain creates heuristics allowing for cognitive ease, to think and respond quickly. Heuristics [are] "simple procedures that help find adequate, though often imperfect, answers to difficult questions" (Kahneman, 2011, p. 98). Therefore, it is likely that . . . normative messages would function as an availability heuristic for [sign language interpreting] students. (Dean, 2014, p. 65).

Consider the heuristic of "better safe than sorry"—something we might say to ourselves or to each other when faced with a decision. This heuristic distills the complexity of the decision and proposes two possible outcomes—being safe or not being safe, and in not being safe, experiencing regret. The solution further intimated by the heuristic is "choose whichever leads to safety." Consider the statement "You're just the interpreter," which is sometimes used in the interpreting field and similarly can function as a heuristic. "You're just the interpreter" implies that whatever the expressed concern is, in actuality, *should be of no concern to you*. The solution is further implied from this simplification—if it should be of no concern to you, then you should *do nothing, not address it, or take no action*.

Doing nothing, taking no action, and the like are common themes found in the ethical content material used in interpreter education (Dean, 2014). Interpreting texts and interpreting discourse reveal a series of normative messages that can be summarized as: When faced with a decision to take action or not take action, interpreters should almost always not take action. Exceptions include those associated with effective message transfer (e.g., not hearing the speaker), the preferences and directives of the deaf person (e.g., "Please don't interrupt the speaker"), or those resulting in untoward consequences, as in life-or-death decisions (see Dean, 2014, p. 65, for a more detailed description).

If you ask a person why they consider a particular decision to be ethically correct, you are more likely to access what they are *verbally* capable of than what they are *morally* capable of—that is, they might have the tacit ability to think and function in a more sophisticated way than what they can express. Moreover, what they are verbally capable of may well be informed by those normative messages that are elicited from stimuli, such as familiarly themed ethical scenarios or ethical dilemmas.

4. Ethical Scenarios in Interpreting Education and Research

Posing ethical scenarios, dilemmas, or cases (real or made-up) as a means of eliciting dialogue on decision making and reasoning is a common educational technique in professional ethics (Hill, 2004). Although it is also common in interpreter education (Cartwright, 2009; Dean, 2014; Drugan & Megone, 2011; Humphrey, 1999; Seal, 1998), some have highlighted the kinds of problems that occur with overreliance on this teaching technique (Dean, 2014; Marin, 2020; Wilbeck, 2017).

Ethical scenarios typically focus on the boundaries between right and wrong (Hill, 2004), requiring the decision maker to consider only two obvious choices: Do *this* and don't do *that*. This type of ethics education only advances *mandatory minimal standards* of a profession's ethics (Hill, 2004). As a result, ethical dilemmas "do very little to advance ethical awareness . . . [or] conversations [that] foster and ensure *effective practice*" (Dean, 2014, p. 62). The use of ethical dilemmas might also lead to a type of defensive practice (Hill, 2004), causing practitioners to await and expect some ethical breach (Dean, 2015). As a result, practitioners "might limit their behaviour even more severely than necessary and thus fail to serve their client's best interests" (Hill, 2004, p. 140; see also Turner & Best, 2017). Posing ethical scenarios is not only an educational technique; it is used as a means of assessing interpreters' professional ethical knowledge and skills (as in education and professional accreditation), and it is used as a research tool.

Collecting data through discussion of ethical scenarios or ethical dilemmas is a popular technique in interpreting research (Bergson & Sperlinger, 2003; Dean & Pollard, 2009; Stewart & Lindsey, 1990; Tate & Turner, 2002; Thomas, 2012). Often, the respondents' spontaneous speech or self-explanation is prompted by a scenario, and then that speech is recorded and analyzed for ethical thought and reasoning. In other instances, in vivo interpreted situations are observed and followed up by interviews about interpreters' actions to collect and analyze the interpreters' ethical thoughts and reasonings (Hsieh, 2007, 2009).

Mendoza's (2012) study used surveys and interviews to investigate the ways in which novice and expert ASL-ENG certified interpreters discuss how they make ethical decisions. In the second part of the study, Mendoza interviewed six of the survey participants and asked them to recall and report on an actual interpreting situation from their own practice. They were asked to consider those situations that highlighted one of the tenets of the professional ethical code, such as confidentiality, impartiality, professionalism, or business practices. Mendoza then compared their responses, three from the novice group (3 years and under of interpreting experience) to three of the expert group

(having more than 10 years of experience). Mendoza found that the novice group was limited in their assessment of the ethical dilemma (i.e., lacking complexity), while the expert group explored greater nuance. The expert group was able to discuss how consequences of decisions would affect all individuals in the situation, whereas the novice group appeared to be more self-focused.

Posing ethical scenarios to elicit ethical responses is a common educational, assessment, and research tool. Research data that rely on the verbal data of participants need to be interpreted carefully. If ethical reasoning skills are indeed being measured through these data, then there may be concerns for research validity. The data need to be critiqued in light of what might be a function of verbal skills as well as how those verbal skills might be influenced by what is made cognitively available (Dean, 2014).

5. Rest's DIT

The DIT, now in its second iteration (DIT-2), was developed by Rest (1986) as an alternate measure of individuals' reasoning skills. Similar to the MJI, the DIT proposes ethical scenarios and follows each scenario with a series of questions. Also similar to the MJI, the research participant is queried for the optimal ethical action, but instead of having to rely on their verbal skills to explain their reasoning, they are given verbal assistance (Narvaez & Bock, 2002) in the form of a series of argumentation statements for each of the five scenarios. As such, the DIT's design is based on the participant's ability to recognize and affirm compelling rationales for their chosen ethical action. This is done by the participant's rating (a Likert scale of importance from 1 to 5) and ranking each of the 12 argumentation statements and choosing the top four most compelling.

The Center for the Study of Ethical Development (CSED; n.d.) explains the DIT's design rationale:

> A common assumption in the field of morality, and one with which we disagree, is that reliable information about the inner processes that underlie moral behavior is obtained only by interviewing subjects. Contrary to assuming that interviewing presents a clear window into the moral mind, researchers in cognitive science and social cognition contend that self-reported explanations of one's own cognitive process have severe limitations. There is now a greater appreciation for the importance of implicit processes and tacit knowledge on human decision making, outside the awareness of the subject and beyond his or her ability to verbally articulate them.

For example, consider this frequently cited example, the Heinz Scenario. In summary, Heinz's wife is dying from a disease. The druggist in town has invented a medicine that will save the wife, but his price is too high. Heinz cannot raise the money. He is faced with the moral choice of whether or not to steal the drug. Sample argumentation statements offered to respondents to rate and rank include the following:

- It really depends on how much Heinz likes his wife and how much risk there is in taking the drug. If he can't get the drug in another way, and if he really likes his wife, he'll have to steal it.
- Regardless of his personal feelings, Heinz has to realize that the druggist is protected by the law. Because no one is above the law, Heinz shouldn't steal it. If we allowed Heinz to steal, then all of society would be in danger of anarchy.
- I think that a husband would care so much for his wife that he couldn't just sit around and let her die. He wouldn't be stealing for his own profit; he'd be doing it to help someone he loves.

Listed here are only three sample argumentation statements. In the DIT-2, each scenario has 12 to be rated and ranked. The argumentation statements are devised to reflect features of Rest's moral schemas: personal interest (PIS), maintaining norms (MNS), and postconventional (PCS).

The DIT is administered and scored by the CSED in the United States. Since the 1970s, the CSED has collected thousands of DIT scores on an international level. Multiple indices are offered for validity (see also Thoma & Dong,

2014). The DIT is correlated with age, education, and clinical performance; it is not correlated with personality trait measures, IQ, or socioeconomic status (CSED, n.d.). In a recent study, the DIT was found to be one of the top two most used moral development measures (Martí-Vilar et al., 2021).

Three types of scores are returned to the researcher: the *P-score*, the *Type Indicator*, and the *Utilizer Score*. The P-score, or the *principled reasoning score*, is the score that most researchers report. It accounts for the degree to which a respondent endorses statements indicative of PCS, the most sophisticated schema. The P-score is reported in percentages, as are the reports of the other two schemas, PIS and MNS. Whichever percentage is the highest of the three (PIS, MNS, PCS) is the respondent's current dominant schema. As mentioned earlier, these do tend to cluster around age and education. Table 5.1 shows the average scores on the normed data based on education.

Table 5.1: Average P-scores, based on age and education

Grade level	Average PIS	Average MNS	Average PCS
Grades 10–12	27.7%	35.3%	31.6%
Undergraduate	25.0	35.1	35.1
Graduate	20.6	34.1	41.1

The numbers for PIS and MNS decrease based on age and education, while the PCS score increases. This is an expected response to increasing age and educational attainment.

Table 5.2 lists the normed data for students in professional education and practitioners, including two anchors for comparison: seniors in high school (~ age 18) and adults in general.

Table 5.2: Normative data for students in professional education and practitioners

P-score	Group
65.2	Moral philosophy and political science graduate students
52.2	Law students
50.2	Medical students
49.2	Practicing physicians
46.3	Staff nurses
42.3	College students in general
40.0	Adults in general
31.8	Senior high school students

In addition to collecting normed data on students and professionals, the DIT has been used to measure the efficacy of ethics education in a pre-test/post-test measured design (Bebeau, 2002; Mayhew et al., 2014). McGeorge (1975) used the DIT to investigate the hierarchical nature of ethics reasoning, examining whether respondents are able to *will* themselves to do worse (they can) or better (they can't) than their own score. In other words, respondents can fake low, but they can't fake high.

The DIT has also been used to determine whether working together as a collective produces better scores (i.e., higher P-scores) than the scores achieved when those individuals take the DIT alone (Dukerich et al., 1990; Nichols & Day, 1982). This latter design of individual versus collective scores is of particular interest to interpreter education for a couple of reasons. First, ethics education is often conducted by using real or constructed ethical scenarios to prompt ethical discussions among a group of students, typically in an ethics or practicum seminar class, or among interpreter practitioners during a professional development event. Both of these designs are based on the idea that two heads are better than one when it comes to ethical reasoning. Yet if such a hierarchy in moral

reasoning exists, do those who reason at higher levels pull up those who reason at lower levels, resulting in an influential modeling of advanced abilities? Or does the opposite occur, with those who are reasoning at an advanced level being pulled down? In other words, maybe two heads are not better than one.

6. The DIT and Interpreters

In 2013, 25 American Sign Language (ASL) interpreters agreed to take the DIT-2. This cohort was a subset of the approximately 65 participants involved in a related qualitative study (Dean, 2014 & 2015). Although the qualitative data collected from this study revealed a very rule-bound and prescriptive understanding of interpreting ethics (Dean, 2014 & 2015), those data had to be reconsidered in light of the potential concerns flagged by moral psychology researchers—that is, relying solely on interview data as a "window into the moral mind" (CSED, n.d.) is flawed.

Much of what interpreters use to justify decisions can be found in what is cognitively available from traditional normative messages (Dean, 2014). Posing the same types of questions to interpreters results in formulaic and predictable answers. Those answers may not accurately reflect a person's reasoning capabilities because the formulaic answers may well be governed by tacit processes—that is, these predictable questions may summon a moral schema that might not be a true reflection of the participant's dominant moral schema. However, if interpreters are provided with a different type of question, outside the predictable ones, then they might not follow a well-worn discursive pathway (Dean, 2014 & 2015). Instead, they might reveal their greater ethical reasoning capacity.

The cohort of interpreters (n = 25) who agreed to the follow-up study completed an online version of the DIT-2. As part of the DIT-2 data collection, respondents were asked to input demographic data, such as gender, age, and highest level of education. The average age of the cohort was 49 years, more than half had an undergraduate degree or above, and all but one held national- or state-level qualification.

The average PCS or P-score for the interpreting practitioners was 33.6. As shown in Table 5.1, when compared to age and educational attainment, their PCS or P-scores and PIS were similar to those in their early 20s, yet their average age was more than double that. Notably, their MNS scores were the highest, at 35.0, making this the dominant moral schema of the group. Their average MNS score was commensurate with that of teenagers, making them appear even younger than their PCS and PIS scores indicated. A dominant MNS schema means that as a collective, they were most frequently compelled by arguments that focused on maintaining the rules and following one's duties—that is, "[t]hey appear to think that following the rule will yield a moral result—that the rule contains the moral ideal" (Dean, 2015, p. 207).

Comparing the interpreters' P-scores to those of other professionals (and their students) yielded similarly unexpected results (see Table 5.2). Not only did the interpreters not even *make it on the list* of the other professionals; they scored lower than adults in general (a P-score of 40.0) and closer to seniors in high school (a P-score of 31.8). These unexpected results prompted the following questions: Does the prescriptive nature of interpreting ethics come to influence interpreters' broader perception of ethical behavior? Or does the interpreting profession, because of its frequently rule-bound normative messages, attract those who already have a propensity for prescription? As students, do interpreters arrive with a prescriptive, duty, and rule-bound perspective on ethical action? Accessing the DIT scores of interpreting students was the most direct way to get help in answering these questions.

7. Methodology and Results

7.1.   Individual DITs: Study 1

Third-year interpreting majors enrolled in a 4-year program in the northeastern United States were asked to participate in this study. Approximately 30 students across two sections of an interpreting ethics course took a paper-and-pencil version of the DIT-2. This study was repeated in their ethics class, using about 1 hour of class time

for the fall semesters of 2016, 2017, and 2018. Institutional Review Board (IRB) approval was granted for the three iterations of this DIT study.

The same protocol was used for each iteration of the study: Test booklets, answer sheets, and number two pencils were distributed to all students. Each student created a code name, one that would be unique to them and not easily guessed by their classmates or their instructors (e.g., the name of a pet or a special date). They were instructed to write that code name on the answer sheet and to remember or write it down for safekeeping. This code name was then linked with a random number code used by the researchers and written in the text field of the answer sheets. A key was created that linked the students' chosen code names and the researchers' assigned numbers. The answer sheets were sent to CSED, where they were scored. The scores were returned by email approximately 1 week later.

The results of the DIT included individual scores and the group's aggregate score. The aggregate scores were presented to the whole class; after that, students were asked to claim their individual scores, which were laid out on folded sheets of paper, identified only by the code name. Students were encouraged not to share or ask each other about their individual scores because a higher P-score is considered "better." Time was allowed for a discussion as well as an explanation of what the DIT can say about moral reasoning and the DIT's limitations (Bebeau & Faber-Langendoen, 2014).

7.2. Results: Study 1

Table 7.2.1 lists the cohorts from all 3 years and their P-scores, which represent PCS.

Table 7.2.1: Mean score of each P-score for third-year students in 2016, 2017, and 2018

Interpreting students 2016	n = 31	Mean P-score (PCS)	45.1
Interpreting students 2017	n = 32	Mean P-score (PCS)	47.3
Interpreting students 2018	n = 27	Mean P-score (PCS)	41.9

The P-scores for all three classes are higher than the average P-score of 33.6 for the practicing interpreter cohort in 2013 (Dean, 2015). Table 7.2.2 adds the students' PIS, MNS, and PCS scores within the table of normed DIT data for undergraduate students.

Table 7.2.2: Newer normed DIT data for each university year for college students (CSED, n.d.)

University year	Average PIS	Average MNS	Average PCS
First year: freshman	26.5	34.3	34.1
Second year: sophomore	25.7	34.3	35.2
Third year: junior	24.9	35.5	34.9
Fourth year: senior	23.7	35.7	35.9
2016 students	24.8	24.4	45.1
2017 students	25.5	22.3	47.3
2018 students	27.8	23.4	41.9

Comparatively, all classes of interpreting students did better than their peers in PCS (the P-score). They also had much lower scores for MNS compared to their peers. They also were at least 10 points lower (i.e., better) than the mean for the practicing interpreters, who had an MNS score of 35.0. Their PIS scores were more comparable to those of their peers and in 2018 were slightly higher than those of their peers.

Table 7.2.3 combines all P-scores from students and practitioners and compares them to other students and practitioners from other professions.

Table 7.2.3: Comparing interpreting student cohorts, interpreter practitioners, and other professionals

P-score	Group
65.2	Moral philosophy and political science graduate students
52.2	Law students
50.2	Medical students
49.2	Practicing physicians
47.3	Interpreting students (2017)
46.3	Staff nurses
45.1	Interpreting students (2016)
42.3	College students in general
41.9	Interpreting students (2018)
40.0	Adults in general
33.6	Interpreter practitioners (2013)
31.8	Senior high school students

In every year that the DIT was administered, the interpreting students did better than their practitioner counterparts, scoring within the realm of other professionals and graduate students. Therefore, the answer to the question that arose out of the lower-than-expected scores of the practitioners—are interpreters conventional thinkers because they arrive to educational programs already ensconced in a rule-bound perspective on ethical action?—appears to be *no*.

7.3.   Collective DITs: Study 2

In 2017, we added a follow-up component to the individually administered DIT. In addition to each student's taking the DIT-2 individually, they also took it as a group, with a negotiated answer to each ethical scenario recorded on the DIT answer sheet. This collective version of the DIT was conducted before the students were informed of their class's aggregate score or their individual scores. This study was also approved by the university's IRB.

A total of seven groups, each with four or five members, was created based on the members' individual scores. Every attempt was made to balance the groups as much as possible—that is, a balanced number of P scores in the 30s, 40s, 50s, and so forth as well as a balanced number of students. This quasi-matched design was relatively effective; however, in at least two cases, students were absent on the day that the collective DIT was administered. In those cases, groups were missing members and representative scores. This quasi-matched design was not known to the students because at this point, none of the students was aware of the scores. Code names were used to divide the students, which to them likely appeared to be random.

Approximately seven students had scored in the high range of the DIT's principled reasoning or P-score (60 or above). Each group included one of the high scorers, who was assigned to be the group's leader. The leaders were given unique instructions, which are explained later. The scenario and the three questions were read aloud by each leader to each group of students. The group was asked to deliberate and come to consensus for each of the three questions across the five scenarios of the DIT-2. The DIT-2 ends with a series of demographic questions; for the collective responses, these questions were skipped. Throughout the 45- to 60-minute process, we kept tabs on each group's progress. If a group was running behind, they were asked to be cognizant of the time they were spending in deliberating over and negotiating answers.

Certainly, not all students participated equally in the deliberative process. This is not dissimilar from what might happen in an ethics course where students are asked to discuss some ethical issue pertaining to interpreting. In that way, it could be argued that the processes are similar. No special instructions were given to the students to make this process any different from what might naturally occur in class.

One question that was intriguing was whether the high scorers would have a stronger influence on the deliberative group process if they *knew* that they were high scorers. To answer this question, the leaders (i.e., high scorers) were placed in two groups with the conditions of *tell* and *no tell*.

The first section of the ethics class had five groups and, therefore, five leaders. Two of the five leaders were asked to get one test booklet, one answer sheet, and a pencil for their group. Those two leaders were given those items and sent back to their groups. This was the no-tell condition. Next, the other three leaders were called up and given the test items and then told quietly that they were high scorers (without being told their exact scores) and that, as such, they should make their opinions heard in the group. They were told not to tell anyone about their high-scorer status and encouraged not to dominate the discussion but to just *make sure they expressed their opinions*. They agreed and were sent back to their groups. This was the tell condition. The very same design occurred in the second section except, with only two groups in the smaller class, one was the tell condition and one was the no-tell condition. With a total of seven groups from two sections of the ethics course, four groups were the tell condition and three groups were the no-tell condition.

The collective DITs with negotiated scores were coded to designate group numbers, and the answer sheets were sent by mail to the CSED. The CSED scored them and returned the results in PDF through email about a week later. A presentation of the individual and collective scores was delivered toward the end of the semester; all students were informed of the study's outcome.

7.4.   Results: Study 2

The 2017 third-year class, a total of 32 students, was unique in having the highest P-scores but also the largest range of P-scores. The high scorer got a 70, while the low scorer got a 20. Every effort was made to create quasi-balanced groups (see column 2 in Table 7.4.1). Column 2 in Table 7.4.1 lists each group's individual scores, with at least a 30-point difference between the lowest scorer and the highest scorer. Column 3 contains each group's median P-score. The median is preferred over the mean because of the significant spread in P-scores in the 2017 cohort. Column 4 shows the results of the negotiated P-scores, and column 5 shows each group's gain from the median P-score to the higher negotiated score.

Table 7.4.1: Comparison and analysis of the individual DIT and collective DIT

Groups	Individual P-scores	Median P-sccore	Negotiated P-score	Gains in P-score
Group 1	1. 62 2. 48 3. 44 4. 34 5. 30	44	66	+22
Group 2	1. 68 2. 52 3. 46 4. 36 5. 34	46	58	+12
Group 3	1. 72 2. 48 3. 48 4. 32	48	60	+12

Group 4	1. 64 2. 42 3. 38 4. 34	40	54	+14
Group 5	1. 68 2. 56 3. 36 4. 32 5. 20	36	48	+12
Group 6	1. 66 2. 48 3. 44 4. 36 5. 26	44	48	+04
Group 7	1. 68 2. 56 3. 46 4. 40	51	54	+03

In every instance, the negotiated P-score was better than the median P-score, with gains ranging from 3 points to 22 points. The average gain was 11.3 points (with a median and mode of 12 points), a significant difference by the sign test ($p = .008$). In other words, collective DIT takers scored reliably higher than individual DIT takers.

As mentioned above, four groups across the two sections of ethics class were led by those who knew they were the high scorers (the tell condition). Three of the groups were led by those who did not have any knowledge as to their high-score status or why they were chosen as leaders. This was to test whether or not the leader's ethical strength (as defined by the DIT) and influence would explain any potential gains or whether it was more likely the result of the deliberative process. Table 7.4.2 reveals which groups were in the tell groups versus the no-tell groups and the gains in their P-scores:

Table 7.4.2: Tell and no-tell conditions and their effects

	Tell	No tell	Differential in scores
Group 1	√		22
Group 2		√	12
Group 3	√		12
Group 4		√	14
Group 5	√		12
Group 6		√	04
Group 7	√		03

The average increase in the no-tell condition (groups 2, 4, and 6) was 10, while the average increase in the tell condition (groups 1, 3, 5, and 7) was 12.3. This is not a statistically significant difference. Although the sample size is too small to rule out an effect of high-score knowledge, an actual difference of between 10 and 12.3 is arguably minimal, suggesting that the leaders did not overly influence the P-score outcomes of their groups. The gains can therefore be assumed to have come from the deliberative process—collectively discussing, conferring, and settling on the best moral answer.

8. Conclusions, Limitations, and Further Research

Posing ethical scenarios as a means of eliciting ethical thought can be indicative of *something*, but it would be wrong to assume that it is indicative of moral reasoning abilities. As such, it cannot be assumed that the two different student responses in the faculty member's story meant much of anything, at least not in everyday application. Individuals need some verbal assistance to express what they are capable of cognitively. The DIT was designed to specifically offer that assistance.

When working interpreters were given that verbal assistance, it did not appear to elevate their expressions of principled reasoning. If the normative messages of the interpreting profession consistently reflect a rigid, maintaining-norms approach to ethics, then perhaps their conventional reasoning at work bled over into their broader moral reasoning in life. This was one of the considered conclusions of Dean's (2015) study, now reconsidered with greater credence, given the results of this study. In other words, because the students consistently scored higher than those in their age group, and the working interpreters scored much lower, is it possible to consider that exposure to professional discourse over their years of practice made them this way? The data showed that interpreting students consistently scored better than practitioners, even without their age and educational advantages. Therefore, the hypothesis of the profession's attracting conventional thinkers is not born out by these data.

Interpreting students also did better on average when they worked together to negotiate responses than when they worked alone. The results of this second study on collective DITs are encouraging because they appear to add some evidence to the traditional design of group discussion and deliberation employed in ethics courses and in professional development techniques, such as case report and case analysis, often used in the reflective practice of supervision (Curtis, 2017; Dean & Pollard, 2011, 2013; Hetherington, 2011; Interpreting Institute for Reflection-in-Action and Supervision, n.d.).

The generalizability of these data has limitations. The program in which all students were enrolled espouses a type of ethics across the curriculum design. Demand control schema (DC-S), a work analysis and decision-making tool, is taught from the beginning of the program and either reinforced throughout or used more extensively in subsequent courses. DC-S directly teaches principled reasoning—it requires an assessment of the context, including the values of the setting and a consideration of each stakeholder's communication aims and preferences (Dean & Pollard, 2011, 2013). It also encourages behavioral flexibility as a means of working cooperatively toward shared values (Dean & Pollard, 2011, 2013). This study was not designed to investigate the impact of DC-S on DIT scores, although that could be a topic for future research. A follow-up study with these students-now-practitioners to measure to what degree their reasoning patterns might have shifted, as is evidenced in other professions, has been discussed. Future research should also seek to increase the reliability of the data by replicating the study with greater diversity in types of interpreters (e.g., signed language interpreters in other countries, interpreters who work as deaf interpreters, and spoken language interpreters) in addition to greater sample sizes. Lastly, it would be useful to use the DIT to account for the reasoning abilities of teachers and mentors who influence students' ethical-reasoning skills.
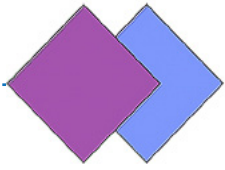
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CAI Tool-Supported SI of Numbers:

A Theoretical and Methodological Contribution

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Abstract

Numbers are an area of interpreting that is particularly prone to human error. Thanks to recent advancements in automatic speech recognition (ASR) and artificial intelligence (AI) technology, computer-assisted interpreting (CAI) tools may soon be used to enhance delivery accuracy for numbers during simultaneous interpreting (SI).

Given the novelty of the topic, the impact of in-booth CAI tool support on the SI of numbers is still largely under-researched. First, only a few studies have addressed the topic. Second, due to a number of methodological limitations, their findings yield only a partial understanding of the issue. The present work aims to make a theoretical and methodological contribution to this new area of inquiry. It identifies different research approaches to the interpretation of numbers. It then presents an empirical study on the computer-assisted SI of numbers with five Italian conference interpreters and the AI-powered CAI tool SmarTerp. The analysis contrasts two different research approaches and reveals the impact of speech design and evaluation methods on results. Implications and methodological recommendations for future studies are discussed.

Keywords: numbers, simultaneous interpreting, computer-assisted interpreting, automatic speech recognition, methodology

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1. Introduction

Numbers are a recurring stumbling block for interpreters, which "make[s] simultaneous interpreting (SI) a 'finite and fallible function'" (Mazza, 2001, p. 103). In other words, they are "among the source speech elements that are particularly vulnerable to incompleteness and inaccuracy in an interpretation" (Mead, 2015, p. 286).

Through the years, several studies have explored the SI of these highly challenging elements and quantified their impact on the interpreter's output (i.e., the "delivery"; see, for example, Braun & Clarici, 1996a; Cheung, 2008, 2009; Frittella, 2017, 2019a; Kajzer-Wietrzny et al., 2021; Korpal & Stachowiak-Szymczak, 2018; Mazza, 2001; Pinochi, 2009). As reported by Desmet et al. (2018), the average error rate across multiple studies lies between 45% and 55% for students and 30% and 40% for professionals in experimental settings.

Although most studies report "accuracy rates" and "error rates," they differ sensibly in key methodological aspects, such as the definition of the research issue (i.e., what "interpreting numbers" entails) and how to adequately explore the issue empirically. Consequently, methods used to evaluate the delivery and the design of the test speech differ across studies. The error rates of some studies refer to the rendition of the bare numeral only (e.g., Braun & Clarici, 1996; Mazza, 2001), while other studies consider the number's "context" too (Korpal & Stachowiak-Szymczak, 2018). Some studies present participants with sentences that contain one numeral only, others work with number-dense passages, and yet others do not specify the characteristics of the speech units in which numerals are embedded. All this variety limits the comparability and reproducibility of findings. It may even be conjectured that these methodological issues may introduce biases in the results and their interpretation. Concerning the unit of analysis, for instance, Cheung (2009) points out:

> The validity of research findings based solely on [the accuracy of interpreted numerals], however, is questionable. For instance, how should renditions that contain gibberish but correctly translated numbers be graded? . . . Therefore, examining correctly translated numbers would only be a valid criterion if one is interested in one particular aspect of CI [here: conference interpreting]. However, this may not be the case for most research, quantitative or qualitative, which tends to focus on messages being interpreted rather than on numbers or words out of context. (p. 66)

In recent years, researchers' interest in the SI of numbers has been fueled by the integration of automatic speech recognition (ASR) and artificial intelligence (AI) technology into computer-assisted interpreting (CAI) tools, which now make it conceivable to enhance human performance through technology.[1] Early explorations report that the use of CAI tools may improve accuracy rates by more than 30%, even when subjects are master's degree students who have not received any previous training on CAI (Defrancq & Fantinuoli, 2020; Desmet et al., 2018). However, the methodological issues pointed out above with regard to the "traditional" SI of numbers may be found in current research on the CAI tool–supported SI of numbers too. Given these limitations, it is questionable whether reported findings are actually reflective of broadly conceived delivery accuracy and may be transferred from the context of the experiment to real-life assignments.

The present paper aims to make a theoretical and methodological contribution to research on the interpretation of numbers, in general, and CAI tool–supported SI of numbers, in particular, by identifying different approaches to the empirical exploration of this issue, analyzing their methodological components, and shedding light on their impact on results. Thereby, the study aims to contribute to the development of a solid empirical foundation for this area of increasing scientific and practical interest. At the same time, it aims to provide a starting point for a more holistic approach to the analysis of the CAI tool–supported SI of numbers. Deeper knowledge of the impact of CAI tool use on the SI of numbers and the challenges to the successful execution of this task is fundamental to tackle the paramount pedagogical issue of our time: ensuring that professionals and students may leverage technological innovation.

The aim of the paper is accomplished through a literature review and an empirical study. The literature review identifies three main approaches to the empirical investigation of the SI of numbers—*cognitive*, *syntactic*, and *communicative*—highlighting their conceptual premises, methodological implications, and limitations.

The empirical part draws on data gathered during a pilot study conducted within the framework of the Innovation Activity *SmarTerp*,[2] funded by EIT Digital. Five Italian conference interpreters interpreted a speech simultaneously from English into Italian with the support of a mock-up of the AI-powered CAI tool SmarTerp. The data set is analyzed by two distinct methods to ascertain whether the choice of approach and methodology has an impact on results.

The body of the paper comprises four sections: literature review, study design, results, and discussion. The conclusion highlights the relevance of the present discussion for the research milieu, points to future study directions, and summarizes the methodological recommendations for future research on the interpretation of numbers. Detailed study materials are provided in the appendix of the paper.

Literature Review: Research Approaches to the Interpretation of Numbers

Studies on the interpretation of numbers differ on a series of key methodological aspects. The present paper proposes that they may be divided into three groups based on some common theoretical and methodological denominators[3] : the *cognitive*, the *syntactic*, and the *communicative* approaches. For each approach, these key methodological issues are analyzed in the following review:

(1) *Conceptualization of the research issue:* How does the study define the issue *interpretation of numbers*?
(2) *Research question:* What type of research question does this approach answer?
(3) *Unit of analysis:* What is the unit of analysis corresponding to the conceptualization of the research issue in the study?
(4) *Speech design:* What speech variables are manipulated to explore the research issue and answer the research question?
(5) *Evaluation methods:* How are errors in the interpreter's delivery defined? How are *omissions* evaluated?
(6) *Limitations:* How are research findings (e.g., accuracy rates) obtained by this method limited?

The Cognitive Approach

A first approach, arguably the most represented, defines the SI of numbers as the conversion of numerals from one coded representation (the source language, SL) to another (the target language, TL, or a graphic code, e.g., Arabic numerals). This approach is little concerned with the semantic aspects of the SI of numbers, and the transcoding task is even postulated to be an asemantic process (Braun & Clarici, 1996; Mazza, 2001; Pinochi, 2009). We may call this approach *cognitive*, as it is mostly concerned with cognitive aspects of the interpretation.

The unit of analysis corresponding to this approach is the bare numeral. This means that data analysis is restricted to the evaluation of how the numeral is interpreted, whereas other aspects of the delivery (for instance, how the whole sentence is rendered) are not considered.

As already mentioned, this *cognitive* approach is most suitable to answer research questions concerning cognitive aspects of the interpretation of numbers. For instance, Braun and Clarici (1996) adopt a cognitive standpoint to define the nature of the mental processes that underlie the SI of numbers, and Korpal and Stachowiak-Szymczak (2019) explore the cognitive load involved in the task. Other studies have adopted this approach to explore the impact of specific variables on the rendition of the bare numeral, such as the use of note-taking (Mazza, 2001), the verbal properties of the source-language numerals (Pinochi, 2009), and speed (Korpal & Stachowiak-Szymczak, 2020).

Because the focus of studies adopting a cognitive approach is on the numeral, the salient feature of the test speech design is the introduction of numerals of different sizes and types. For instance, Mazza (2001) crafts her test speech by including (a) whole numbers above the order of magnitude "thousand" (with four or more digits),

(b) whole numbers below "thousand" (with fewer than four digits), (c) decimals, (d) ranges, and (e) dates. A similar choice is adopted by Pinochi (2009) and Desmet et al. (2018).

Consistent with the conceptualization of the research issue and the corresponding unit of analysis, the evaluation of the delivery focuses only on the bare numeral. The analysis typically yields an error rate describing how many numerals are correctly rendered (if the numeral corresponds exactly to the original) and how many are misinterpreted (if an error occurs in the transcoding process), approximated (if another numeral that is close in value is rendered), or omitted (if the numeral is not interpreted). The analysis may further qualify the phenomena identified, such as in the error classification proposed by Braun and Clarici (1996) based on studies in numerical cognition (McCloskey, 1992) and later adopted by Mazza (2001), Pinochi (2009), and Desmet et al. (2018), among others.

As already stated, studies adopting a cognitive stance are particularly suitable to "zoom in" on the mental processes underlying the rendition of numbers and shed light on the variables that may influence the processing operations as well as the interpreter's output. It may, hence, be regarded as a microanalysis concerned with the smallest unit of analysis in the interpretation of numbers. However, this approach has two major limitations related to its speech design features and evaluation methods. The first limitation is the lack of focus on the linguistic context in which numerals occur in the source speech: Because the focus is on the numeral, further variables inherent to the source speech are not taken into account, such as the sentence structure, the density of numerals, and other problem triggers in the speech passage. The second limitation is that the evaluation does comprise delivery aspects other than the bare numeral. Consequently, this approach fails to describe the impact of the interpreted numeral on the overall delivery quality. For instance, this method does not capture whether a misinterpreted numeral corresponds to a minor inaccuracy or a major semantic error (Frittella, 2019a). In the same way, every SL numeral that is not rendered as the TL numeral is regarded as an omission, irrespective of whether the interpreter expresses the numeral with other words (e.g., 2021 → this year) or decides to leave out a numeral repeated multiple times by the speaker. As a consequence of these two limitations, accuracy rates obtained by the cognitive approach may not be regarded as a reliable measure of the overall delivery accuracy, only as a description of a particular aspect of the interpretation of numbers and only under the conditions specified by the particular design of the speech.

The Syntactic Approach

A second research approach to the interpretation of numbers has emerged as authors have pointed out the need to expand the unit of analysis to the number and its referent (Gotri, 2003, cited in Moratto, 2011, p. 214; Korpal & Stachowiak-Szymczak, 2018; Pellatt, 2006). Embracing the views of Jones (1998, p. 130), these authors stress that numbers do not occur in isolation in a speech and do not convey meaning out of context. To reliably evaluate the accuracy of the SI of numbers, one should analyze not just the delivery of the bare numeral but also its "context." We may call this approach *syntactic* because the unit of analysis is defined by syntactic criteria (i.e., by the elements constituting the "context" of the numeral).

It must be noted that different authors provide different definitions of such "context," and so the unit of analysis varies across studies aligned to a syntactic approach. Although Jones (1998) stresses that several elements contribute to constituting such context, Korpal and Stachowiak-Szymczak choose the numeral and referent combination (i.e., the numeral together with the entity it refers to) as their unit of analysis—a choice that has also appeared in recent master's degree theses (e.g., Canali, 2018). Frittella (2017, 2019a) elaborates on Jones's definition and proposes to call the unit of meaning constituted by the numeral and its "context" the *numerical information unit* (NIU). The components of the NIU are as follows (Frittella, 2019a, p. 80): (a) the *numeral* itself, (b) the *referent* (i.e., the entity that the numeral refers to, such as export value), (c) the *unit of measurement* (e.g., U.S. dollars), (d) the *relative value* (e.g., increase, decrease, or leveling off), (e) the *time reference* (e.g., in 2019), and (f) the *geographical location* (e.g., in China).

This approach is most suitable to answer research questions concerning the impact of different syntactic variables on the rendition of the numeral as well as the NIU. Some research questions could ask "How does the sentence structure affect the rendition of the numeral and the NIU?" or "Does the nature of the referent (e.g.,

whether it is an acronym, a specialized term, or another numeral) affect the rendition of the numeral and the NIU?" Pellatt (2006) stresses that patterns emerging in the interpretation of numbers may not be fully understood without considering the crucial impact of "the linguistic environment" in which numerals occur in the speech (i.e., the sentence structure, the number of components in the NIU, and the density of numbers in a speech passage). Korpal and Stachowiak-Szymczak (2018) use a syntactic approach to investigate whether a difference may be identified in practicing conference interpreters' and trainees' renditions of numerals and their referents.

To be aligned to research questions formulated from a syntactic stance, the speech design should make it possible to observe the impact of the specific syntactic variables considered. One method could, for instance, present interpreters with NIUs of various lengths or with a specified number of numerals. If the aim is to explore the impact of different types of referents on the delivery, the speech design should comprise these elements.

Evaluation under the syntactic approach stresses that to ascertain whether the delivery is correct, the researcher must look beyond the rendition of the bare numeral. From this standpoint, the delivery is evaluated as accurate only if the numeral and the other elements constituting the unit of analysis are rendered correctly. In Korpal and Stachowiak-Szymczak (2018), for instance, the correct rendition of the numeral and the referent are conditional to the deliveries being evaluated as accurate. Based on Frittella's (2019a) definition of NIU, all constituents should be rendered accurately for the delivery to be evaluated as accurate.

Although the syntactic approach expands the unit of analysis of the cognitive approach, its scope continues to present limitations—especially if only the numeral and referent combination is considered rather than the whole NIU. In the speech design, this approach fails to account for influencing variables beyond the sentence level—for instance, are numerals repeated in the speech section? As for the evaluation, this approach may fail to unveil that interpreted numerals in the speech are mutually contradictory or represent a plausibility error or, again, that the omission of a redundant numeral may represent a strategy rather than a problem (Frittella, 2019a).

The Communicative Approach

A third approach, underrepresented compared to the previous two (particularly compared to the cognitive approach), sees the SI of numbers as an act of comprehension and interpretation of a message. With the exception of Frittella (2017, 2019a), scholars have endorsed this approach without in-depth theoretical justifications (e.g., Alessandrini, 1990; Cheung, 2009), but rather following the pretheoretical intuition that the whole of interpreting is "meant to reproduce ideas not words" (Alessandrini, 1990, p. 78) and that numbers should not be regarded as an exception. By this approach, "interpreting numbers" is conceptualized as the interpretation of a message, which contributes to constituting the logical chain of reasoning of a text, carries an extralinguistic semantic meaning, and is purposefully used by a speaker in a defined communicative context to achieve a specific goal. We may define this approach as *communicative* because it considers the SI of numbers to be an act of communication, like the whole of interpreting.

The communicative approach and its corresponding units of analysis are best formalized in the *processing ladder model for the interpretation of numbers* (Frittella, 2017, 2019a), which is inspired by Chernov's (2004) *probability prediction model*. The processing ladder model comprises the units identified by the cognitive and syntactic approaches and further expands the scope of analysis to consider the whole *numerical information*, as shown in Figure 1.

Examples of research questions that may be answered by this approach include the following: What is the impact of numbers on the broader accuracy of the interpreter's delivery? What factors beyond the characteristics of the numeral and the NIU may influence the interpreting process and product? What strategies make it possible to overcome difficulties inherent to the interpretation of numbers without severely compromising the transmission of the message? Adopting this approach, Alessandrini (1990, p. 78) investigates "what exactly happens when an interpreter comes across numbers," Cheung (2008) analyses the impact of different types of exercises (numerals and numeral and referent drills) on students' interpretation of numbers, and Frittella (2017, 2019a) explores the impact of different possible causes of error in the SI of numbers.
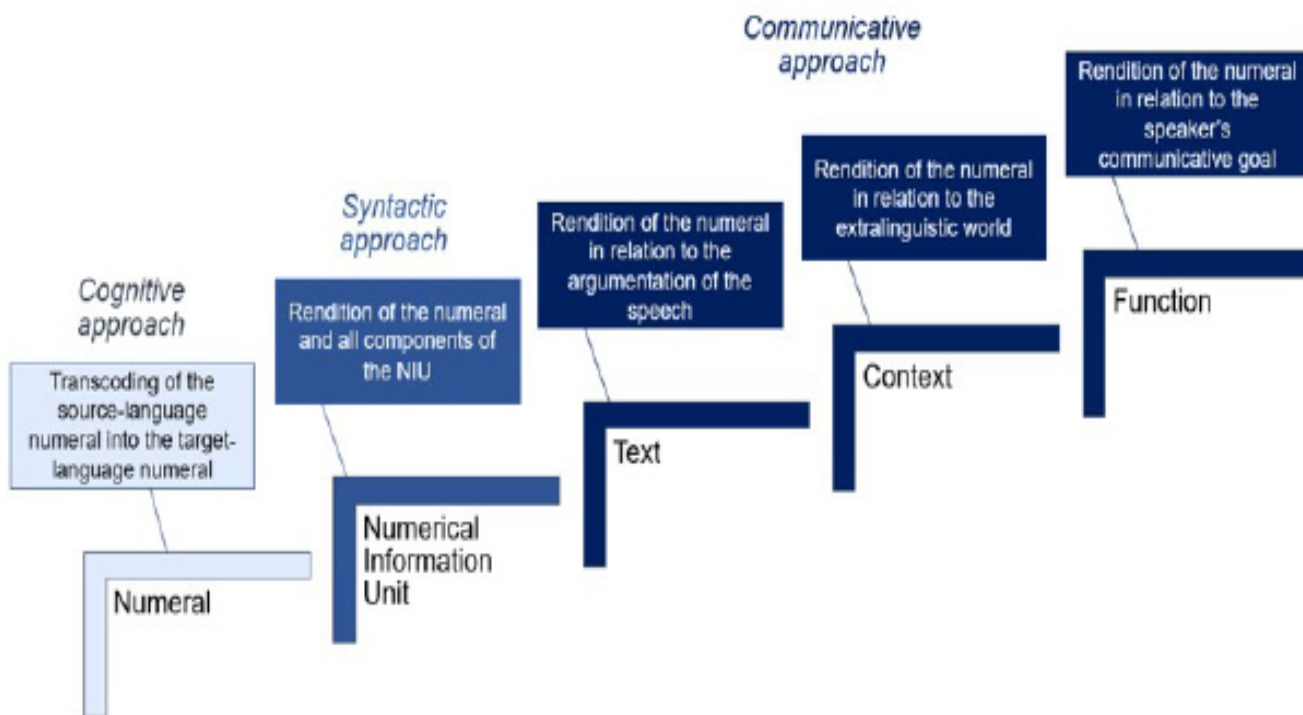
Figure 1. Processing ladder model for the interpretation of numbers; adapted from Frittella (2019a)

As this approach strives to holistically capture delivery accuracy, the speech design should comprise different types of challenges inherent to the interpretation of numbers. For instance, several authors highlight that number-dense speech passages may be associated with a higher error rate than isolated numbers (e.g., Mazza, 2001; Pellatt, 2006), which points to the need to take this variable into account. Frittella (2017, 2019a) proposes to include in the test speech numerical information of different complexities defined by the notion of *objective redundancy* (Chernov, 2004)—which may be broadly defined as the part of the message that is repeated or predictable based on the linguistic properties of discourse. Frittella (2017, 2019a) defines the objective redundancy of a speech unit (from a single sentence to a whole passage) containing numbers by (a) the numeral size and the number of digits, (b) the syntactic structure of the speech unit, (c) the number of components in each NIU constituting the speech unit, (d) the number of problem triggers within the unit, (e) the number of numerals within the unit, and (f) the number of repetitions of numerals and other NIU components within the unit.

Evaluation from a communicative stance considers the delivery to be accurate if all numerical information is interpreted correctly. In Frittella (2017, 2019a), this approach results in a classification of errors that takes into account the impact of the misinterpreted numeral on the transmission of meaning—for instance, it highlights whether numerals in the delivery are mutually contradictory or implausible. The same study also implies that the interpreted numerical information would be classified as a "functional error" if the delivery contained a correctly interpreted numeral but substantially distorted the communicative intention conveyed by the speaker—for instance, if a numeral used to support the speaker's argument was interpreted as an argument against it. Evaluation from a communicative perspective also implies a differentiation between nonstrategic omissions, which compromise the transmission of the message, and strategic omissions, which do not affect the rendition of the message—for instance, when a numeral appearing in the speech for the third time is omitted but hinted at by anaphoric reference (cf. Cheung, 2009; Frittella 2017, 2019a).

The communicative approach, albeit still being developed, may be the most adequate to holistically explore the delivery and its accuracy. It may also be the most productive when it comes to yielding pedagogical implications. In fact, thus far, studies aligned with a communicative approach have succeeded in shedding light on recurring problems and on how they may be addressed through interpreting strategies (Cheung, 2008; Frittella, 2017,

2019a). This knowledge informs the development of interventions on the interpretation of numbers (Cheung, 2009; Frittella, 2019b). On the contrary, studies that try to respond to the pedagogical challenge through a cognitive analysis (Mazza, 2001; Pinochi, 2009) conclude that "there does not seem to be any real solution to this problem" (Pinochi, 2009, p. 55).

The major limitation of this approach is that it is still being developed, and, hence, its methods are still only loosely defined. Frittella (2017, 2019b), for instance, proposes a communicative classification of error and strategy but suggests in the conclusion that a revision may be needed. Cheung (2009) proposes a classification of strategies based, however, on limited observations and only one specific language combination (Chinese-English). Therefore, in its current state, the communicative approach presents a shortage of validated methods and research instruments.

Final Methodological Considerations

The literature review above identifies three main research approaches to the interpretation of numbers (cognitive, syntactic, and communicative) and discusses their corresponding methodological aspects. These are summarized in the table at the end of this section. A few final remarks concerning the analysis are needed.

First, in the discussion, all methodological elements perfectly match the specified approach. Although the alignment of methodological components to the general research approach is usually the sign of a robust research design (cf. Creswell, 2018), this is not the case for every study. For instance, one study may use a unit of analysis corresponding to the syntactic approach to answer a research question about cognitive processes. This is not necessarily a weakness and may sometimes even be necessary to achieve the study's aim. However, the rationale for certain methodological choices should be clearly motivated in scientific work.

Second, the cognitive (microanalytical) approach and the communicative (macroanalytical) approach may be best regarded as two extremes of a scale rather than a strict dichotomy. Although studies may be categorized as belonging to one or the other approach based on their general orientation, they may actually be located at various points on this continuum. The syntactic approach itself may be regarded as an intermediate point on the scale.

Third, it is argued that the design of the test speech should be purposeful and match the unit of analysis and research question of the study. It should be stressed that if the test speech should make the observation of the impact of a specific variable possible, the design should also exclude the impact of undesired confounding variables. Furthermore, if the researcher aims to perform a quantitative analysis, a sufficient number of data points for each variable should be collected.

Fourth, transparency in the discussion of how data are collected and analyzed, which implies explaining the exact characteristics of the speech units in which numerals occur (i.e., providing a detailed description of the input variable considered), is of paramount importance for replication purposes and to ensure the comparability of findings. For instance, Kajzer-Wietrzny et al. (2021) report that in their study, number-dense passages do not correspond to an increase in error rates, contrary to what has been observed in other studies (e.g., Frittella, 2017, 2019a; Mazza, 2001). However, if the specific characteristics of the speech passage are unknown, it is not possible to ascertain whether the conditions are comparable across these studies (i.e., whether their findings all refer to passages of equal density and complexity).

Finally, each and every study should carefully frame its findings within the limitations inherent to its approach and research design to avoid compromising its reliability. Although this is true of all research, it may be particularly important in the context of the interpretation of numbers because, as discussed before, the concept itself varies across studies.

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Approach	Conceptualization of the research issue.	Sample RQ	Unit of analysis	Speech designs	Evaluation	Limitations
Cognitive	Interpreting numbers means transcoding numerals from the SL to the TL.	How are numerals mentally processed during SI? What factors influence the transcoding process?	Numeral	Numerals of different sizes of types.	*Error*: The numeral is incorrectly rendered. *Omission*: The SL numeral is missing in the delivery.	Not reflective of overall delivery accuracy.
Syntactic	Interpreting numbers means conveying the numerals and their linguistic context.	How are numerals and the elements they refer to processed? How are different referents influential?	Numeral and referent combination. The whole NIU	Different types of referents. NIUs of different lengths and syntactic structures.	*Error*: Some NIU components are incorrectly rendered. *Omission*: Some NIU components are missing in the delivery.	Not reflective of overall delivery accuracy.
Communicative	Interpreting numbers means communicating a message.	How is the whole numerical information rendered? What strategies may be used?	Numerical information (text, context, and function)	Speech units of varying completely (e.g., defined by the concept of objective redundancy)	*Error*: The numerical information is incorrectly rendered. *Omission*: Nonredundant numerical information is missing in the delivery.	Methods still ill-defined and possible subjective interpretation of evaluation criteria.

*SL = source language, TL = target language
Table 1. Summary of approaches and methodological issues

Study Design

• *Aim*

The aim of the present paper is to make a methodological contribution to research on the CAI tool–supported SI of numbers as well as to the interpretation of numbers in general. The literature review identifies different approaches to the conceptualization of the research issue, which lead to different data analysis and speech design methods. The present study aims to highlight the impact of key methodological choices on the results. It is hoped that the discussion will help guide the study design and interpretation of findings of future research on the topic.

• *Research Question*

Empirical studies on the interpretation of numbers have been characterized by different approaches, and some criticisms appear in scholarly work concerning the adequacy of specific methods to describe the accuracy of the delivery of numbers, as presented in the literature review. However, due to the lack of data, the impact of one or the other approach on the study results may only be conjectured. Two main conjectures are explored empirically in this study.

First, it may be conjectured that different analysis methods may influence the results, causing a possible measurement bias. The first research question of the present study is as follows:

> RQ1: Do results vary quantitatively and/or qualitatively if the data set is evaluated by the *cognitive approach* (method 1) and the *communicative approach* (method 2)?

The choice of contrasting these two approaches is motivated by the fact that they may be regarded as two extremes on a scale. Furthermore, the syntactic approach is included within the communicative approach, which represents its further expansion, as argued earlier in the paper. Therefore, the qualitative analysis is expected to help define some limitations of the syntactic approach, too, although this is not analyzed separately.

Second, it may be conjectured that the complexity of the speech unit in which the numeral occurs (i.e., the variable of *task complexity*) may influence the effectiveness of the interpreter's use of CAI tools and, hence, the delivery. The second research question is as follows:

> RQ2: Does task complexity affect study participants' rendition of numbers in the CAI tool–supported SI task, and how?

• *Context*

The results of the analysis presented in this paper are related to data gathered during the pilot study of our research on the usability of the CAI tool *SmarTerp*,[4] developed through the EIT Digital[5] grant (cf. Frittella, in press). The overall aim of the research project is to expand the field's understanding of the ways that CAI tools support interpreters in the cognitively taxing task of interpreting numbers simultaneously, to derive implications for CAI tools' user interface (UI) design as well as for the training of conference interpreters. The pilot study, which was conducted remotely between May 31 and June 19, 2021, aimed to validate the study design, methods, and materials developed by the lead researcher and author of this paper. For the purpose of the present paper, the data set has been analyzed to answer the above-presented research questions.

• *Participants*

The participants in the pilot study were five Italian conference interpreters with English as their B/C language, two males and three females, ages 26–35, holders of a postgraduate degree in conference interpreting, and members of a
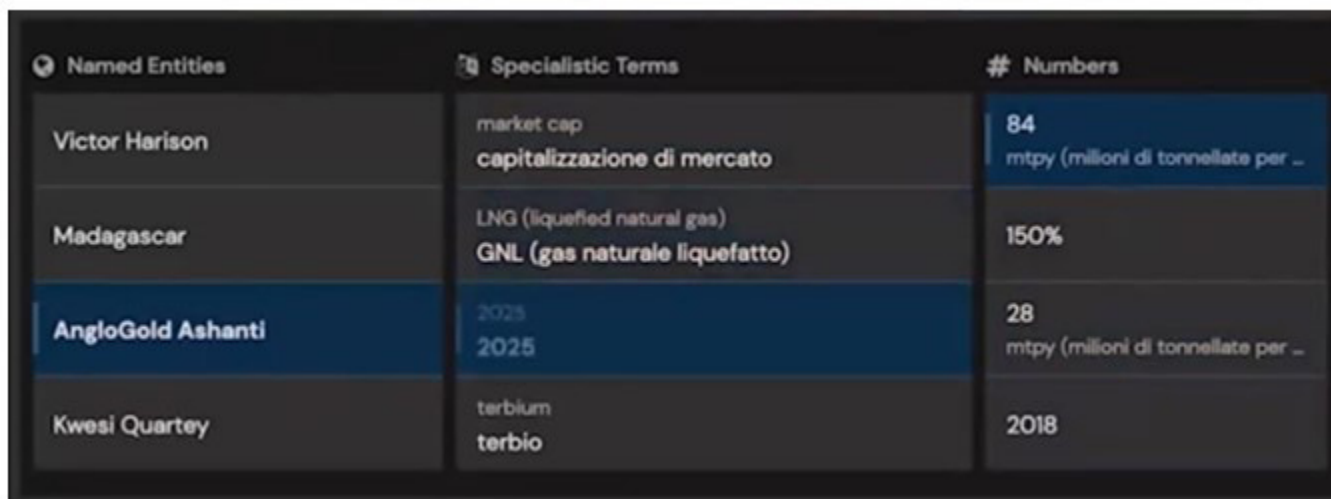
professional association (AIIC,[6] AITI,[7] and Assointerpreti[8]). Except for one participant, all declared to have a yearly assignment volume as English-Italian simultaneous conference interpreters above 30 and to have completed more than 30 RSI (remote simultaneous interpreting) assignments over the previous year. The participants were recruited through the researcher's professional network. In the recruitment process, they signed an informed consent and filled out an enrollment questionnaire for profiling purposes (i.e., collecting such information as their qualifications and professional experience). Each chose a pseudonym for themselves to grant anonymity. Participation in the pilot study was voluntary, but the participants were rewarded with a €50 gift card.

Participation in the study involved the following tasks:

(1) → Completion of an *asynchronous e-learning module* (approx. 1.5 hours) with a theoretical introduction to ASR-supported CAI tools, the interface of SmarTerp, and a practical exercise similar to the test task. The e-learning module was developed by the author of the present paper with the aim to prevent first-time CAI tool use from affecting the test results.

(2) → Participation in the *remote test* (approx. 1.5 hours), consisting of an SI interpreting task with the support of SmarTerp (10 minutes), an evaluation questionnaire (10 minutes), and an interview (approx. 60 minutes).

• *The CAI Tool SmarTerp: UI Design for Numbers*

The study used a mock-up of the SmarTerp prototype. SmarTerp is a "third-generation" (*CAI – EABM*, 2021) CAI tool that makes use of ASR and AI technology to recognize problem triggers in the source speech and display them on the interpreter's laptop screen in real time, currently with a 2-second latency. A screenshot of the interface may be seen in Figure 2. Refer to Frittella (in press) for a comprehensive discussion of the UI design and the underlying rationale.

Figure 2. SmarTerp CAI tool interface

• *Materials*

• *Design of the Test Speech*

The design of the test speech implied a choice about the trade-off between control of variables and ecological validity. As pointed out by Prandi (2017), examining the impact of precise input variables on interpreters' deliveries requires a carefully designed speech that may present structural and prosodic characteristics different from unplanned speech typical of most real-life interpreting assignments. Cognizant of these limitations, the author of this paper chose this

option because a real-life speech would have been unsuitable to answer RQ2, which is concerned with the impact of task complexity.

The first step in the speech design was the conceptual definition of tasks of increasing complexity. In the present paper, a "task"—more precisely, a *numerical (interpreting)* task— is defined as a representative problem situation in the SI of numbers. The idea of evaluating interpreting performance based on representative tasks is derived from usability testing (Barnum, 2020) as well as expertise studies, which are based on the observation of how experts deal with purposefully crafted challenges within the test (Ericsson et al., 2018). The notion of "representativeness" implies that the numerical tasks constituting this test should reflect the problems encountered by interpreters in real life, especially those challenging situations in which they are most likely to seek support from the CAI tool.

The second step was establishing the criteria for specific tasks of varying complexity that would constitute the speech. The degree of task complexity was defined based on the concept of *objective redundancy* presented in the theoretical section of this paper. Furthermore, every task needed to be challenging enough to prompt CAI tool use. Table 2 shows a list of the test tasks and their descriptions.

Task Code	Task name	Numerical task description
NU	Numeral	Interpreting a complex numeral (i.e., three-digits, order of magnitude = "trillion") in a simple sentence.
NR	Numeral and referent	Interpreting a complex numeral (i.e., an acronym / named entity / specialized term / numerical value) associated with it.
NIU	Numerical information unit	Interpreting a complex NIU consisting of (a) a complex referent, (b) a complex unit of measurement (i.e., an acronym / named entity / specialized term / numerical value), and (c) several numerals as in the following structure: amount increased/decreased by (X%) from Y (time 1) to Z (time 2).
NCR	Redundant number cluster	Interpreting a number cluster with redundant elements, which presents the following characteristics: (a) the passage contains three subsequent NIUs, (b) the time and place references remain unvaried and are repeated in each NIU, (c) the unit of measurement and the referent remain unvaried, but the referent is expressed with a different synonym in each NIU, and (d) the numeral changes in each NIU.
NCN	Nonredundant number cluster	Interpreting a number cluster without redundancy, which presents the following characteristics: (a) the passage contains three subsequent NIUs, (b) time, place, referent, unit of measurement, and numeral change in each NIU, and (c) either the referent or the unit of measurement are complex.

Table 2. Description of numerical tasks in the test speech

The next steps in drafting the speech were choosing a communicative context and then designing a speech unit matching the characteristics detailed in the description of the numerical task, as shown in Table 3. The full description is provided in the appendix of the paper.

Task code	Task name	Numerical task description	Numerical task
NU	Numeral	Interpreting a complex numeral (i.e., three digits, order of magnitude = "trillion") in a simple sentence.	The continent currently has a gross domestic product of USD 3.42 trillion.

Table 3. Example of numerical task

As a final step, the passages corresponding to each numerical task were arranged into a logical sequence to create a blueprint for the test speech. This step moved from the method used by Prandi (2017), drawing on Seeber and Kerzel (2012), of designing a speech with a "fixed internal structure that allows us to focus on the sentence level without sacrificing ecological validity completely" (Prandi, 2017, p. 85). The aim was to prevent excessive cognitive

load that would arise from an uninterrupted series of problem triggers, on the one hand, and the *spill-over effect* (Gile, 2009) that may confound the analysis of relationships between input variables and delivery, on the other hand. The speech design method consisted of alternating *target sentences* that contained the input variable under study and *control sentences* that were free of any problem trigger and used to provide context.

In this study, each numerical task was enclosed in control sentences before and after. The introductory and the closing control sentence(s) were of 20–30 words in length and presented neither a problem trigger nor syntactic or conceptual complexity, as in the example below. When the speech was recorded, each closing sentence was followed by a 0.3-second pause:

> [Our objective is to] accelerate the political and social-economic integration of the continent. There are several signs that we are on the right track ((*introductory control sentences*)). The continent currently has a gross domestic product of USD 3.42 trillion ((*target sentence*)). This represents a remarkable achievement if we consider the fast pace of our economic growth over the past decades ((*closing control sentences*)). [3-second pause]

- *Video*

The speech used for the pilot study was video recorded by the lead researcher and author of this paper in a nativelike pronunciation (New Zealand English). The average reading speed was 110 words per minute. Both the audio and the video were high resolution. The speech was well articulated and read in a natural and emphatic tone. The recorded video was entered into the SmarTerp prototype, and the running prototype was video recorded. A recorded video rather than the live tool was used as test materials for three main reasons: (1) to avoid an additional complexity in the remote testing procedures; (2) to create equal conditions for all participants; and (3) to prevent technical problems (e.g., tool failure, issues with participants' connection speed) from creating an additional variable to our analysis.
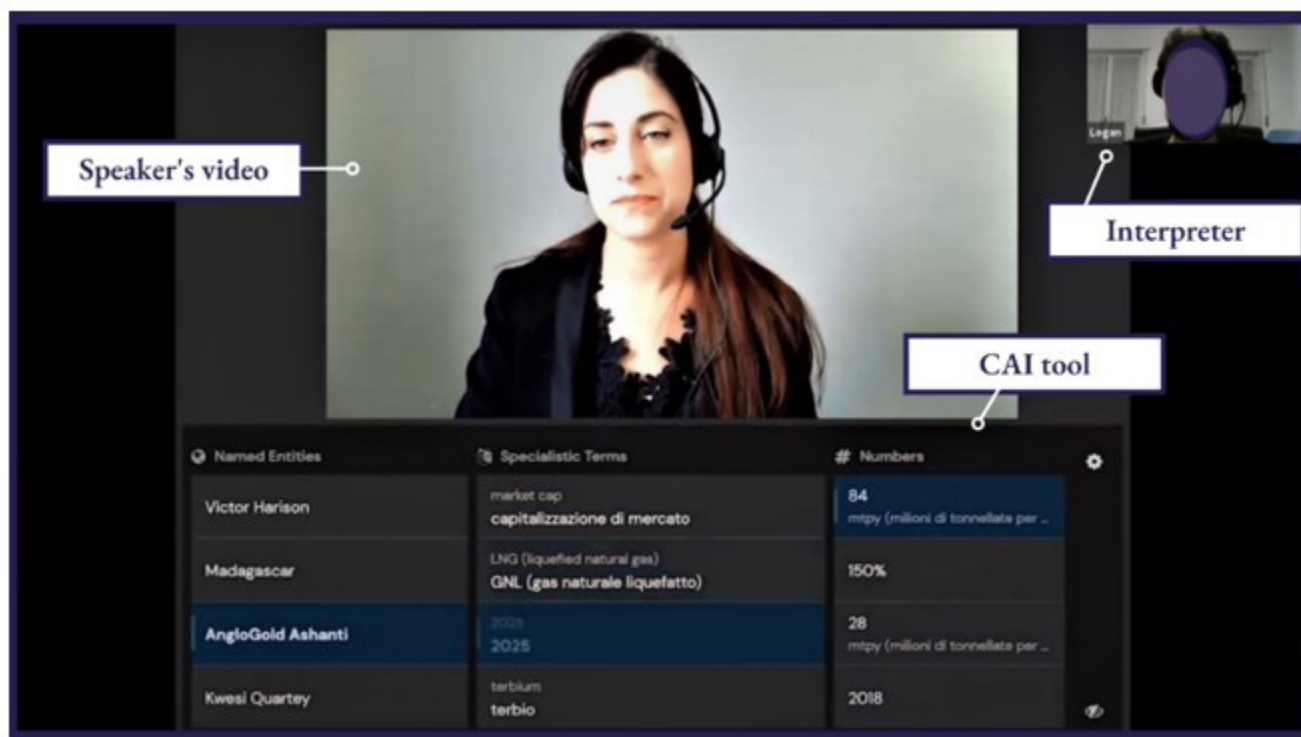

Figure 3. Remote test

• *Procedure*

Our pilot study was conducted between May 31 and June 7, 2021, as a remote testing procedure, given the ongoing COVID-19 pandemic. The lead researcher and author of this paper invited the participants to a remote testing session using the web conferencing platform Zoom. After an introduction, participants were sent a link to access the test speech video and were asked to share their screen. They were given 1 minute to read some generic information about the communicative context of the speech but could not search for additional information and terminology. They were then asked to interpret the speech simultaneously from their B/C language, English, into their mother tongue, Italian. Their webcam, delivery, and screencast were recorded as a single integrated visualization. The interpreter's webcam and audio were also saved as a separate file to zoom in on their faces, thus making it possible, in case of doubt, to ascertain whether they were looking at the tool when numerals were presented.

• *Data analysis*

• *Transcriptions*

Relevant parts of study participants' delivery were transcribed for data-analysis purposes with the following procedure. First, the test speech was segmented according to the units considered in our analysis:

- The numerical tasks represent the fundamental conceptual and semantic units as well as
  the input variables.
- The NIU is the smallest unit of meaning within the numerical task.
- The numeral is the arithmetic value itself.

Then, the source speech was organized into an Excel spreadsheet accordingly; see Table 4 for an example related to the numerical task *redundant number cluster* (NCR):

Numerical information unit	Numeral	Source speech
NCR-1	NCR-1-a	By 2030, the African continent would add about 295 million new people aged 15 to 64.
	NCR-1-b	
	NCR-1-c	
NCR-2	NCR-2-a	The growth would push the number of 15- to 64-year-old Africans up by 40% by 2030.
	NCR-2-b	
	NCR-2-c	
NCR-3	NCR-3-a	By 2030, Africa would hence be home to nearly 1 billion people of 15 to 64 years of age.
	NCR-3-b	
	NCR-3-c	

Table 4. Segmentation of the source speech

Finally, relevant parts of participants' deliveries were transcribed in a column to the right of the "source speech" column.

• *Comparison of Methods*

To answer RQ1, the data set was coded twice, using two distinct methods:

(1) *Method 1—cognitive approach*: The delivery was evaluated as accurate solely based on the rendition of the bare numeral; all omitted numbers were evaluated as an error, and more specifically as an omission, irrespective of whether the omitted number was redundant.

(2) *Method 2—communicative approach*: The delivery was evaluated as accurate only if the accuracy requirements of a communicative approach to the analysis (detailed below) were satisfied; the omission of a redundant number was not evaluated as an error if the interpreter adopted a strategy not to change the meaning of the utterance.

By method 1, the numerals in the delivery were evaluated as either accurate or inaccurate. Inaccuracies were broken down into errors (coded as e) and omissions (coded as o).

By method 2, each delivery unit was evaluated as either accurate or inaccurate based on the following criteria derived from an adaptation of the *redundancy ladder model* (Frittella, 2019a, cf. literature review):

(1) *Numeral*: Is the rendition of the bare numeral accurate?
(2) *IU*: Is the rendition of numeral, referent, unit of measurement, relative value, time, and geographic location accurate?
(3) *Text*: Is the interpreted numerical task internally consistent in logic and externally congruous in meaning with the source speech?
(4) *Context*: Is the interpreted numerical information plausible?
(5) *Function*: Is the interpreted numerical information functionally equivalent with the source speech, and does the delivery convey the communicative intention expressed by the speaker?
(6) *Strategy*: Did the interpreter use a strategy to tackle a number-related difficulty without altering the meaning of the utterance or causing a loss of information?

Error categories were identified at each level of analysis, first based on the literature review and then through a preliminary analysis of the data set, in a process similar to the identification of themes in thematic analysis (Braun & Clarke, 2006). The resulting evaluation criteria are presented in the results section.

• *Impact of Complexity*

To answer RQ2, participants' performance on each task was aggregated to calculate the *success rate*. Like the idea of testing performance on representative tasks, the success-rate concept was borrowed from usability testing (Barnum, 2020). The criteria used in this stage of analysis are reported in Table 5. The success rate of numerical tasks comprising several NIUs was calculated as the mean of the success rates of the constituting NIUs.

Delivery	Success rate	Criterion	Example (source→target)
Correct rendition	100%	All elements of the NIU were rendered accurately, and all other accuracy criteria in method 2 (see above) were satisfied.	In 2021 → in 2021
Omission of redundant component lexical substitution	100%	A component of NIU was omitted, but the key statement is accurate.	In 2021 → this year
Partial rendition	Proportional to the content of the NIU	Some elements were omitted, but the key statement is accurate.	Analysts forecast that African production of LNG will increase by 150% from 28 mtpy in 2018 to reach 84 mtpy by 2025. → Analysts forecast that African production of LNG will increase b 150% to reach 84 mtpy by 2025. =80%
Generalization, summarization	30%	The numerals were omitted and the information was summarized by the interpreter.	Analysts forecast that African production of LNG will increase by 150% from 28 mtpy in 2018 to reach 84 mtpy by 2025. → Analysts forecast that African production of LNG will increase substantially in the next years.
Semantic error	0%	Regardless of whether the numeral and other NIU components were rendered accurately, the delivery substantially contradicted the original meaning.	Population will increase *by* 1 billion. → Population will to increase *to* 1 billion.
Complete omission	0%	The whole numerical task was omitted.	In 2021 → ø

Table 5. Evaluation criteria for task accuracy

• *Results*

• *Categories of Error and Strategy*

Table 6 summarizes the categories of error and strategy identified on each level of analysis. It also reports how many instances of each category (column "Tot cases") were identified and in how many participants' delivery they occurred (column "Tot p."). A more detailed table with delivery examples is provided in the appendix of the paper.

Level	Category	Explanation	Total cases	Total p.
Numeral	*Error*	The interpreted numeral was incorrect.	3	3
	Omission	The numeral was omitted.	23	5
NIU	*Wrong referent*	The interpreted referent differed from the referent in the SL numerical task.	2	1
	Wrong unit of measurement (UoM)	The interpreted UoM differed from the SL one.	7	5
	Wrong relative value	The interpreted relative value differed from the SL one.	3	2
	Misattribution of components	The semantic links between the components of the interpreted NIU did not correspond to the SL ones.	4	3
	Sentence fragment	A NIU did not express a complete thought, as one or more of its essential components were missing.	7	4
	Omission of the NIU	The whole NIU was omitted.	1	1
Text	*Inconsistent numerals*	The numerals within the interpreted numerical task were contradictory.	1	1
	Distortion of information	The meaning of the interpreted numerical task, albeit internally consistent and plausible, differed substantially from the SL.	5	3
Context	*Plausibility error*	The interpreted numerical information seemed unreasonable and improbable against the world knowledge of an informed listener.	9	4
Function	*Functional error*	Although the numeral and all components of the NIU corresponded to the SL NIU, the interpreted message differed from the original one in its function.	0	0
Strategy	*Omission of redundant item*	The interpreter omitted an item (the numeral or another component of the NIU) that was repeated within the numerical task.	4	3
	Abbreviation of acronym	The interpreter simplified the referent or the UoM by using an acronym.	3	2
	Lexical substitution	The interpreter replaced a component of the NIU with its non-numeric equivalent or through anaphoric reference.	4	2
	Generalization of the numeral	The interpreter replaced the numeral with a general expression to form a sentence of finite meaning.	4	3
	Summarization	The interpreter summarized the meaning of the numerical information.	3	1

Table 6. Categories of error and strategy

• *Method Comparison*

• *Quantitative Difference*

Table 7 reports the results of the analysis conducted on the data set, using method 1 (the cognitive approach—that is, evaluating only the rendition of the numeral) and method 2 (the communicative approach—that is, considering all other levels of analysis). Participants interpreted a total of 110 numerals (22 numerals × five deliveries).

		Total number of errors (/110)	Error rate
Method 1: cognitive	*Numeral*	27	24.5%
	Error	3	2.7%
	Omission	24	21.8%
Method 2: communicative	*Other level*	34	30.9%

Table 7. Results by method

Seven more errors were detected by the second method, representing 25.9% of all errors detected by method 1 and 20% of errors detected by method 2. Twelve of the 27 errors (44%) at the numeral level were not evaluated as errors by method 2, while 19 of the 34 errors (55%) at all other levels were evaluated as accurate by method 1. This means that a total of 31 inconsistencies was identified in the evaluations performed on the data set by the two methods. It is noticeable that no delivery was exempt from incongruent evaluations.

• *Qualitative Difference*

The impact of method on results may be best understood through a qualitative analysis. Starting from the instances that were evaluated as numeral errors by method 1 but as accurate by method 2, all incongruencies correspond to omitted numbers: 12 in a total of 27 errors identified by method 1. These correspond to strategies adopted by interpreters for redundant numbers without changing the meaning of the utterance and making the NIU discernible from the context of the delivery, as in the example below, representing a case of anaphoric reference through lexical substitution:

> Eg. *(1)* → Source (NCR-2-a): The growth would push the number of 15- to 64-year-old Africans ((repeated item)).
> Target (Carlo): People in this age range ((anaphoric reference to numeral expressed in the previous sentence)).

More specifically, using method 2, these 12 omissions were classified as generalization (four cases), lexical substitution (four cases), omission of redundant item (two cases), and summarization (two cases). See the table in the appendix for examples of each error category.

For the instances that were evaluated as accurate by method 1 and inaccurate by method 2, 19 incongruencies were registered out of 34 errors identified by the latter method. These incongruencies relate to errors at the level of the NIU, which break down into the following categories: *wrong unit of measurement* (three cases across three participants), *wrong relative value* (three cases across two participants), *misattribution of components* (two cases across two participants), and *sentence fragment* (two cases across two participants). The incongruency in evaluation outcomes by the two methods is clarified by the example below: Although the interpreted numeral was correct, the participant omitted the referent (oil) and misinterpreted part of the unit of measurement (million *barrels* per day), transforming it into the referent of the NIU, which substantially changes the meaning of the utterance:

> Eg. *(2)* → Source (NCN-1-b): Africa produced nearly 8.41 mbd [million barrels per day] of oil.
> Target (Carlo): We produced approximately 8.41 million barrels per day.

Considering the text level, segments evaluated as correct by method 1 were found to correspond to a *distortion* of the original meaning (five cases across three participants) and *inconsistent numerals* (one case) when evaluated by method 2. The example below of inconsistent numerals clearly demonstrates the limitations of the syntactic approach (i.e., confining the analysis of the SI of numbers to the numeral or NIU level). Although the numerals all correspond to the original, and the NIUs are sentences of finite sense, there is an internal contradiction in the delivery:

> Eg. *(3)* → Source (NCR-1, -3): By 2030, the African continent would add about 295 million new people aged 15 to 64. . . . By 2030, Africa would hence be home to nearly 1 billion people of 15 to 64 years of age.
> Target (Minerva): Again, by 2030, the African continent will have about 295 million people aged 15 to 64. . . . Again, by 2030, Africa will have 1 billion inhabitants aged 15 to 64.

Considering the context level, a numeral assessed as correct by method 1 corresponded to a *plausibility error* in five cases across three participants. In the example below, 1 billion was evaluated as an accurate rendition, but the omission of part of the referent substantially changes the meaning of the utterance, making the whole message implausible (the population of Africa stands at approximately 1.3 billion as of 2021, so it is implausible to say that the population will soar to 1 billion by 2030):

> Eg. *(4)* → Source (NCR-3): By 2030, Africa would hence be home to nearly 1 billion people aged 15 to 64.
> Target (Diana): By 2030, Africa will be home to over 1 billion people.

No error was found at the level of the function of the message. This may depend on the architecture of our speech, which made the function of numerals clear through the introductory and closing control sentences.

• *Impact of Task Complexity*

Results concerning the impact of task complexity on delivery accuracy are reported in Table 8.

Code	Task	P1	P2	P3	P4	P5	Mean	Median	Mode
NU	Isolated numeral	100%	100%	100%	0%	100%	80%	100%	100%
NR	Numeral and referent	100%	100%	100%	100%	100%	100%	100%	100%
NIU	Numerical information unit	80%	40%	80%	20%	20%	48%	40%	80%-20%
NCR	Redundant number cluster	100%	67%	0%	0%	100%	53%	67%	100%-0%
NCN	Non-redundant number cluster	33%	33%	38%	80%	25%	42%	33%	33%

Table 8. Impact of task complexity on accuracy levels

Based on the results of our analysis of the impact of task complexity on accuracy rates, participants' accuracy seems to tendentially decrease with the increase of task complexity, although this trend is not clear for NIU and NCR. Accuracy rates are very consistent in tasks of lowest complexity—the only outlier who made a mistake in the NU task declared in the post-task interview that she got distracted at that stage. However, within-subject variability is considerable in tasks of higher complexity, as in the instance of P3 (Minerva) and P4 (Diana), who scored higher in NCR than NCN.

Is it possible that a redundant number cluster may be easier to process for these interpreters than a complex NIU? May these phenomena be attributed to idiosyncratic factors and skill gaps, as hypothesized by previous studies (Alessandrini, 1990; Frittella, 2019a; Kajzer-Wietrzny et al., 2021)? Or is the CAI tool's UI at least partly responsible for participants' errors? Given the small sample, it is not possible to advance a possible answer to these questions. However, they are worth noticing and deserve further exploration in future studies.

• Discussion

The results of our analysis highlight the impact of methodological choices on research results concerning interpreters' delivery accuracy for numbers with CAI tool support during SI.

• *Method Comparison: Implications for the Choice of Research Approach*

In response to the research question RQ1—Do results vary quantitatively and/or qualitatively if the data set is evaluated by the cognitive and the communicative approach?—our analysis suggests that evaluating delivery accuracy solely by the accuracy of the bare numeral (*method 1: cognitive approach*) or considering the rendition of the NIU as well as textual, contextual, and functional dimensions of the message (*method 2: communicative approach*) does produce quantitative and qualitative differences in the results. Although the *syntactic approach* is not the specific focus of the analysis, the qualitative results suggest that the latter approach may not be sufficient to detect all errors in the data set.

As for the quantitative difference, seven more errors were identified by method 2 than by method 1—a total of 34 versus 27 errors out of a total 110 interpreted numerals. Although the difference is rather small in absolute terms, in relative terms, it corresponds to the detection of 25.9% more errors relative to the total of 27 and of 20% more errors relative to the total of 34. The total number of inconsistencies is even higher (31). A larger or smaller impact of method on the results may be identified in a larger data set—a possible question to be answered in future investigations.

The discrepancy between methods may be best understood by considering the qualitative characteristics of this difference. Already, Cheung (2009, p. 66) has raised the question of the validity of research findings based solely on the accuracy of the interpreted numeral. We report cases in which correctly interpreted numerals actually corresponded to a plausibility error (e.g., Africa will be home to 1 billion people by 2030) or a complete distortion of the sense of the original message (e.g., Africa produces 8 million *barrels per day* instead of barrels *of oil* per day). These cases further reinforce the argument that the accuracy of interpreted numerals is not an adequate measurement of delivery accuracy. While the choice of the numerals as the unit of analysis (i.e., the *cognitive approach*) may be adequate for studies focused on cognitive processes, it seems unsuitable for exploring the overall impact of numbers and the use of CAI tools on the delivery. Researchers should take care to contextualize their findings within this limitation.

Our analysis also suggests that the *syntactic approach*, which takes the numeral and referent combination as the measurement of delivery accuracy, is also not sufficient to accurately and reliably measure the accuracy of numbers' delivery. This is exemplified by the example reported of inconsistent numerals—the two adjacent NIUs in the interpreter's delivery make perfect sense when evaluated individually but should still be evaluated as inaccurate because they are also mutually contradictory. Such inconsistency errors may only be detected at a communicative analysis at the text level.

• *Impact of Task Complexity: Speech Design Methods*

Responding to the research question RQ2—Did task complexity affect study participants' rendition of numbers in the CAI tool–supported SI task, and how?—our analysis points to a tendency in study participants' delivery accuracy to decrease at the increase of task complexity. Given the small data set, the results may not be generalized in a statistical sense and should be corroborated with further data. However, these observations provide arguments for the need to consider the variable of task complexity in the design of test speeches and in the interpretation of results on the CAI tool–supported SI of numbers as well as the interpretation of numbers in general.

• *Limitations*

The limitations of the present work concern the generalizability of its findings, the shortcomings of our speech design, the ecological validity of findings, and insufficient validation of proposed methods.

Starting with the generalizability of findings, it should be stressed that our data set was rather small, which is why no statistical generalizability was claimed for the findings. The significance that we claim for the work is in the methodological principles it highlighted rather than in the quantitative results obtained.

Further limitations may be identified in the speech design. In particular, we saw that the fixed internal structure of the speech, with opening and closing control sentences making the point of view of the speaker clear, may have prevented the observation of possible functional errors that may arise in all situations in which the function of the number must be inferred by the interpreter (Frittella, 2019a). This limitation further reinforces the argument that the speech used to evaluate interpreters' rendition of numbers should be in line with the research questions.

A further limitation arises from the choice of a high-constraint research design, which involved a moderate degree of experimental control (although we would define our approach as mixed-method and tendentially exploratory/ qualitative rather than experimental/quantitative). As rightly pointed out by Prandi (2017), the disadvantage of a carefully designed speech and experimental control variables is that it limits the ecological validity of findings—that is, it yields findings that may not be reflective of accuracy rates achieved in real-life assignments. This choice was deliberate, as constraining the number of variables was necessary to answer our research questions. However, readers interpreting this study's findings should bear in mind the limitations implied by its underlying design choices.

Finally, as stressed several times in this contribution, the methods proposed in this paper are novel and may require further empirical validation and refinement. Although they may provide a valuable starting point for future research, they might need to be refined and adapted to the specific research question addressed in future studies.

• Conclusion

Following the recent integration of ASR and AI technology into CAI tools, the interpretation of numbers assumes new relevance in the research landscape. The present study aims to address two major methodological issues related to the choice of evaluation methods and the design of test speeches. The fact that these aspects vary sensibly across studies reduces the comparability and reproducibility of findings. Unless appropriately addressed, these limitations may yield a distorted interpretation of findings and risk threatening the reliability of studies. For instance, claims that a CAI tool can successfully support the SI of numbers are unwarranted unless a range of crucial influential variables is included in the test speech design (such as the complexity of the speech passage in which numerals occurs) and the delivery is evaluated holistically rather than focusing only on the bare numeral.

Carefully accounting for these methodological issues (and, possibly, other issues that the present paper leaves unaddressed) is fundamental to generating a reliable knowledge base. In this new "technological turn" (Fantinuoli, 2018), the dissemination of findings based only on a partial understanding of the CAI tool–supported SI of numbers may generate false expectations in professionals who, when disillusioned, may lead to a counterproductive closure toward technology. Moreover, a deeper understanding of the challenges inherent to this novel and complex task is needed to inform the development of a training solution.

The present paper argued that the exploration of the (CAI tool–supported) interpretation of numbers has been thus far guided by three main approaches: *cognitive*, *syntactic*, and *communicative*. Through an empirical analysis of the same data set by distinct methods, the impact of these approaches on the results was unveiled and contrasted. The results seem to support the choice of a communicative approach to explore the broad impact of numbers and the use of CAI tools on delivery quality. They also point to the need to purposefully design test speeches by manipulating the variable of task complexity. By providing the study materials as annex, this paper aims to encourage peer scrutiny and offers a concrete example of how speech design principles discussed in the paper were applied.

It is the author's hope that other researchers interested in studying the interpretation of numbers (with and without CAI tool support) may find in the present paper some guidance on the development of a methodological framework for the exploration of this complex and fascinating topic. Below, the key methodological recommendations emerging from the paper are summarized. They are consistent with the recommendations for high-quality research design proposed in leading manuals (e.g., Creswell, 2018). Concrete examples of how to apply these recommendations may be found in the literature review:

Fritella

1. Conceptualize the *research issue* and choose a corresponding *research approach*: Respond to the question "What does 'interpreting numbers' entail?" Is it a transcoding process (*cognitive approach*)? Is it the rendition of a numeral and the other elements constituting the information unit (*syntactic approach*)? Or is it the delivery of a message with a semantic and pragmatic dimension (*communicative approach*)?
2. Formulate the *research question* accordingly: What research question is relevant for the exploration of the research issue, as defined by your approach?
3. Identify and clearly define your *unit of analysis* based on the chosen approach.
4. *Design your test speech* to include the variables that may affect interpreters' rendition of "numbers" (based on your conceptualization) and that are relevant to your research question.
5. Define *evaluation methods* pertinent to your unit of analysis and adequate to respond to your research question; think of how errors and omissions will be evaluated within your paradigm.
6. Discuss your findings within the *limitations* inherent to your methodology; in particular, specify to what extent they may be regarded as reflective of broadly conceived "delivery accuracy."

Finally, it is recommended that these steps be described with clarity and detail to encourage peer scrutiny and allow research consumers to identify the scope of applicability of reported findings. It may be advisable to refer to studies aligned with one's approach to help readers contextualize the study. It is also recommendable to provide the test speech, or the segments containing numerals, for transparency and to allow replication.

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• Appendix

• *Appendix 1. Numerical Tasks in the Test Speech*

| Task code	Task name	Numerical task description	Numerical task
NU	Numeral	Interpreting a complex numeral (i.e., three digits, order of magnitude = "trillion") in a simple sentence.	The continent currently has a gross domestic product of USD 3.42 trillion.
NR	Numeral and referent	Interpreting a complex numeral and the complex referent (i.e., an acronym / named entity / specialized term / numerical value) associated with it.	This year, the market cap of AngloGold Ashanti—the largest mining company headquartered in Africa—was USD 12.13 billion.
NIU	Numerical information unit	Interpreting a complex NIU consisting of (1) a complex referent; (2) a complex unit of measurement (i.e., an acronym / named entity / specialized term / numerical value); (3) several numerals, as in the following structure: amount increased/decreased by (X%) from Y (time 1) to Z (time 2).	Analysts forecast that African production of LNG [liquefied natural gas] will increase by 150% from 28 mtpy [million tonnes per year] in 2018 to reach 84 mtpy by 2025.
NCR	Redundant number cluster	Interpreting a number cluster with redundant elements, which presents the following characteristics: (1) the passage contains three subsequent NIUs; (2) the time and place references remain unvaried and are repeated in each NIU; (3) the unit of measurement and the referent remain unvaried, but the referent is expressed with a different synonym in each NIU; and (4) the numeral changes in each NIU.	Africa's working-age population is growing rapidly and is projected to surpass that of any other continent by 2030: • By 2030, the African continent would add about 295 million new people aged 15 to 64. • The growth would push the number of 15- to 64-year-old Africans up by 40% by 2030. • By 2030, Africa would hence be home to nearly 1 billion people of 15 to 64 years of age.
NCN	Non-redendant number cluster	Interpreting a number cluster without redundancy, which presents the following characteristics: (1) the passage contains three subsequent NIUs; (2) time, place, referent, unit of measurement and numeral change in each NIU; and (3) either the referent or the unit of measurement is complex.	Let us not forget that Africa has a wealth of natural resources: • In 2019, Africa produced nearly 8.41 mbd [million barrels per day] of oil. • Madagascar alone produced approximately 58,000 metric tons of nickel in 2021. • Namibia's diamond production amounted to 2.52 million carats in 2018."

• *Appendix 2. Error Categories with Examples*

Level	Category	Explanation	Example	Total cases	Total p.
Numeral	*Error*	The interpreted numeral was incorrect.	*Source (NU)*: The continent currently has a gross domestic product of USD 3.42 trillion. *Target (Diana, It)*: Il continente ha attualmente il prodotto interno lordo di 3,42 miliardi di dollari. *Target (Diana, En)*: The continent's gross domestic product currently stands at 3.42 billion dollars.	3	3
	Omission	The numeral was omitted.	*Source (NCN-2-b)*: in 2018 *Target (Sally)*: Ø	23	5
NIU	*Wrong referent*	The interpreted referent differed from the referent in the SL numerical task.	*Source (NCN-1-b)*: The growth would push *the number* of 15- to 64-year-old Africans . . . *Target (Diana, It)*: La *percentuale* di questa fascia di età . . . *Target (Diana, En)*: The proportion of this age group . . .	2	1
	Wrong unit of measurement (UoM)	The interpreted UoM differed from the SL one.	*Source (NIU)*: from 28 *mtpy* ((million tonnes *per year*)) . . . *Target (Carlo, It)*: da 28 *milioni di tonnellate* . . . *Target (Carlo, En)*: from *28 million tonnes* . . .	7	5
	Wrong relative value	The interpreted relative value differed from the SL one.	*Source (NCR-2)*: The growth would push the number of 15- to 64-year-old Africans up by 40% by 2030. *Target (Minerva, It)*: E questo sposterà la fascia demografica tra i 15 e i 64 anni *al* 40% entro il 2030. Target *(Minerva, En)*: This will move the 15- to 64-year-old population *to* 40% by 2030.	3	2
	Misattribution of components	The semantic links between the components of the interpreted NIU did not correspond to the SL ones.	Source (NCN-1,-2): In 2019, Africa produced nearly 8.41 mbd of oil. Madagascar alone produced approximately 58,000 metric tons of nickel in 2021. Target (Sally, It): Nel 2019, l'Africa ha prodotto 8,41 milioni di barili di petrolio al giorno, così come 58 (.) mila tonnellate di nickel. Target (Sally, En): In 2019, Africa produced 8.42 million barrels per day of oil, as well as 58,000 tonnes of nickel ((misattribution to the referent and time location of the previous NIU)).	4	3
	Sentence fragment	A NIU did not express a complete thought, as one or more of its essential components were missing.	*Source (NCN-3-a)*: Namibia's diamond production amounted to 2.52 million carats. *Target (Sally, It)*: La Namibia ha prodotto 2,52 milioni di carati. *Target (Sally, En)*: Namibia produced 2.52 million carats ((referent missing)).	7	4
	Omission of the NIU	The whole NIU was omitted.	*Source (NCR)*: By 2030, Africa would hence be home to nearly 1 billion people of 15 to 64 years of age. *Target (Sally)*: Ø	1	1

Texts	Inconsistent numerals	The numerals within the interpreted numerical task were contradictory.	*Source (NCR-1, -3)*: By 2030, the African continent *would add about 295 million new people aged 15 to 64. . . .* By 2030, Africa would hence *be home to nearly 1 billion people of 15 to 64 years of age.* *Target (Minerva, It)*: Sempre entro il 2030, il continente Africano *avrà circa 295 milioni di abitanti in età dai 15 ai 64 anni. . . .* Sempre entro il 2030, l'Africa *avrà 1 miliardo di abitanti in età dai 15 ai 64 anni.* *Target (Minerva, En)*: Again, by 2030, the African continent *will have about 295 million people aged 15 to 64. . . .* Again, by 2030, Africa will have *1 billion inhabitants aged 15 to 64.*	5	3
	Distortion of information	The meaning of the interpreted numerical task, albeit internally consistent and plausible, differed substantially from the SL.	*Source (NCN-1-b)*: Africa produced nearly 8.41 *mbd of oil.* *Target (Carlo, It)*: Abbiamo prodotto circa 8,41 *milioni di barili al giorno.* *Target (Carlo, En)*: We produced approximately 8.41 *million barrels* per day.	9	4
Context	*Plausibility error*	The interpreted numerical information seemed unreasonable and improbable against the world knowledge of an informed listener.	*Source→ (NCR-3-b,-c)*: Africa would hence be home to nearly *1 billion people aged 15 to 64.* *Target (Diana, It)*: l'Africa darà domicilio a *oltre 1 miliardo di persone.* *Target (Diana, En)*: Africa will be *home to over 1 billion people.*	0	0
Function	*Functional error*	Although the numeral and all components of the NIU corresponded to the SL NIU, the interpreted message differed from the original one in its function.	*No example found in this study; the example below was reported in Author (2019a, p. 93).* *Source*: First, let me thank our more than 66,500 employees for making our success in 2013 possible. *Target*: We have over 66,000 employees.	4	3

Strategy	*Omission of redundant item*	The interpreter omitted an item (the numeral or another component of the NIU) that was repeated within the numerical task.	*Source (NCR-1,-2,-3)*: By 2030, . . . by 2030 . . . by 2030. *Target (Carlo, It)*: Entro il 2030, . . . sempre entro lo stesso anno . . . Ø *Target (Carlo, En)*: By 2030, . . . by that same year . . . Ø		
	Abbreviation of acronym	The interpreter simplified the referent or the UoM through the use of an acronym.	*Source (NU)*: The continent currently has a *gross domestic product* of USD 3.42 trillion. ((CAI shows: prodotto interno lordo)) *Target (Logan, It)*: Il continente ha attualmente un *PIL* che è di 3,42 bilioni di dollari. *Target (Logan, En)*: The continent currently has a *GDP* of 3.42 trillion dollars.	3	2
	Lexical substitution	The interpreter replaced a component of the NIU with its non-numeric equivalent or through anaphoric reference.	Source (NCR-2-a): The growth would push the number of 15- to 64-year-old Africans ((repeated item)) . . . Target (Carlo, It): E le persone in questa fascia di età . . . Target (Carlo, En): People in this age range ((anaphoric reference to numeral expressed in the previous sentence)) . . .	4	2
	Generalization of the numeral	The interpreter replaced the numeral with a general expression to form a sentence of finite meaning.	*Source (NCN-3-b)*: in 2018 *Target (Minerva, It)*: negli ultimi anni *Target (Minerva, En)*: over the past years	4	3
	Summarization	The interpreter summarized the meaning of the numerical information.	*Source (NCN-2-a)*: Madagascar alone produced approximately 58,000 metric tons of nickel. *Target (Carlo, It)*: Il Madagascar è una grande risorsa per il nickel, che continuerà a crescere. *Target (Carlo, En)*: Madagascar represents a great resource for its nickel ((production: in the previous sentence)), which will continue to increase.	3	1

Endnotes

1   This is testified by the birth of and strong interest around research projects, such as EABM–*Ergonomics for the Artificial Booth Mate* (eabm.ugent.be), led by the Johannes-Gutenberg University of Mainz/Germersheim and the University of Ghent, and the EU-funded Innovation Activity *SmarTerp* (smarter-interpreting.eu).

2   www.smarter-interpreting.eu

3   The discussion of methodological issues is informed by the principles contained in such manuals as Creswell (2018).

4   https://smarter-interpreting.eu/

5   eit.europa.eu

6   International Association of Conference Interpreters: aiic.org

7   Italian Association of Translators and Interpreters: aiti.org

8   Italian Association of Conference Interpreters: assointerpreti.it

All examples were translated from Italian into English by the researcher. Original samples are provided in the appendix.
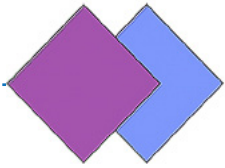
Dynamic Sight Translation:

A Simultaneous Interpreting Strategies Driver

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Abstract

This paper reports on eliciting anticipation strategy, a common strategy in simultaneous interpreting (SI) via sight translation (ST). A new ST variant, the dynamic type, was designed in a modular and progressive manner to facilitate the trainees' transition into SI at the early stage of learning. The new tool was used and tested under a framework of action research that was conducted continuously over 3 years. Despite some limitations, the longitudinal study finds that the newly designed set of exercises is not only a skill development and transfer enabler but also a contributor to eliciting SI-related strategies. This article explains the validity of the exercise design for SI teaching. It then presents data analysis indicating the efficacy of dynamic ST in helping students draw on anticipation strategy.

Keywords: simultaneous interpreting teaching, action research, sight translation, dynamic sight translation, anticipation strategy

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1. Introduction

Sight translation (ST), a mode of interpretation commonly demanded in the interpreting market (Stansfield, 2008), is seldom a focal point of pedagogical discussion or research in interpreting studies (Mikkelson, 1994). The literature on interpreting pedagogy is predominantly devoted to the teaching of consecutive interpreting (CI) and simultaneous interpreting (SI) (Moser-Mercer, 2005), with only a meager proportion on ST as an exercise element in interpreting teaching (Angelelli, 1999; Lim, 2006). Even among the limited research on ST used as a measuring tool in aptitude tests (Lambert, 1991; Moser-Mercer, 1994) or as a preparation exercise for SI (Gile, 2009b; Pöchhacker, 2013), little is proposed on its systemic use for specific SI teaching purposes (Li, 2015), and even less on how to manipulate ST to assist in developing SI-related skills and strategies.

This study sheds light on the usefulness of dynamic sight translation (DST), a text-to-speech mode of interpretation in teaching SI, a speech-to-speech mode of interpretation. We argue that DST can not only assist in developing shared skills with SI but also elicit strategies for SI. Using longitudinal action research (AR) over three first semesters of master of conference interpreting, this study has two objectives. The first objective is to justify the increased approximation between ST and SI in cognitive processes by manipulating some features of ST for potential skill transfer to SI. The second is to uncover what strategies for SI could be elicited from DST when it is thus designed and made closer to SI in temporal and cognitive pressure. To this end, this article reviews different types of ST and discusses it as a didactic tool in SI-related teaching and, more importantly, its cognitive relations to SI in operation. Based on the analysis of the data collected from the student participants, the article argues for the value of DST in SI teaching by highlighting how it helps drive students into using the strategy of anticipation in SI.

2. Literature Review

2.1 Sight Translation

There is a good number of definitions for ST as an interpreting mode, each focusing on certain features in line with the specific purposes of research. McDonald and Carpenter (1981, p. 231), for example, describe ST as "simultaneous translation," as they focus on two features of ST: immediacy in oral rendition of text written in one language into another language, and a shift between modes of input and output. Howard (1986) labels ST as interpretation with text, which suggests that ST can take place with audial stimulus and visual text input at the same time. Howard includes an extra mode of information input—audial stimulus, differentiating his definition from that of McDonald and Carpenter, even though he does not mention simultaneity in delivery. Viezzi (1989a, p. 66) describes ST as an activity where translating starts "as soon as possible when the text has been handed to them." The focal point is once again placed on immediacy of interpreting and text-only input. The above definitions have only revealed a limited number of features of ST in use, which make no allowance for preparation time, different modes of input and output, and time lag between receiving source texts and delivering. The multiplicity of ST forms, as Moser-Mercer (1995) speculates, might be the factor contributing to the difficulties in defining it in a comprehensive and consented way.

In view of the multiple features of ST in practice, researchers have categorized the types of ST. Lambert (1988) briefly distinguishes two types of ST—namely, unrehearsed ST and ST in simultaneous mode, or sight interpretation. The former is delivered at the interpreter's pace, which is "internally controlled," while the latter is delivered at the speaker's pace, or "externally paced" (Lambert, 1988, p. 77). Moser-Mercer (1995) further classifies ST into four types: (1) oral translation of parts of or the complete written text with preparation allowed, (2) oral translation of the gist of text without preparation, (3) detailed translation of what is included in the text, and (4) simultaneous ST with text in hand, with or without preparation. The first three types are all delivered at the interpreter's pace, whereas the last one is at the speaker's pace. Moser-Mercer also includes an additional variable in her categorization: conformity between source and target texts—namely, whether ST is delivered in summary or otherwise—stressing that the list may not exhaust all possible forms of ST tasks. Largely agreeing with Moser-Mercer, Jiménez Ivars (1999) groups ST in a somewhat similar way, but with more defining conditions: (1) prompt ST without preparation allowed, (2) prepared ST with text obtained beforehand and preparation allowed, (3) consecutive ST in the form of a summary of

a written text or an explanatory reformulation by adding some necessary information, (4) ST in consecutive mode (i.e., CI with transcript, while impromptu divergence from the transcript by the speaker is possible), and (5) ST in simultaneous mode—that is, sight interpretation. Compared with Moser-Mercer's classification, Jiménez Ivars adds one more ST variant—ST in consecutive mode.

By extracting all variables of the existing ST forms from the cited literature and displaying them in one matrix, Table 1 outlines possible ST variants and their different combinations.

Table 1
List of variables of ST

Input mode		Lag between receiving and delivering information		Conformity between source and target text		Preparation	
Visual only	Visual and audio	Consecutive	Simultaneous	Summarized	Detailed	Prepared	Unprepared

These various forms of ST, however, all share one conventional feature: static text display. This current study is thus tasked with exploring how the static text display of these conventional STs can be dynamically manipulated to better serve the purpose of SI teaching.

2.2 Conventional Sight Translation as a Didactic Tool in Simultaneous Interpreting Teaching

Conventional ST is a common element or mode of interpretation in interpreting teaching (Angelelli, 1999; Chen, 2015; Lim, 2006; Sawyer, 2004; Wan, 2005) and increasingly adopted as an exercise tool for transition from CI to SI (Bacigalupe,1999; Déjean le Féal, 1998; Gile, 2009b; Kalina, 2000; Kim, 2001; Lambert, 2004; X. Liu, 2012; Noel & Song, 2006; Song, 2010; Viaggio, 1995; Viezzi, 1989b). Described as a "subsidiary or complementary component aimed at providing students with at least an overview of one more possible application of their newly acquired or developed communicative skills" (Sampaio, 2015, p. 63), ST is regarded and used as a preparatory transition tool. For instance, Kalina (1992) reports the inclusion of ST in her teaching to help students deal with adverse conditions encountered in SI. Bacigalupe (1999) suggests a progressive use of ST featuring different preparation time (i.e., ST with long, short, or no preparation). Baxter (2014, pp. 354–355) also proposes ST exercises as the "backbone" in his simplified multiple-model approach for SI training and suggests "synchronized ST" to enable students to acquire simultaneity and crucial strategies at the same time. The most current account of ST application in conference interpreting teaching can be found in Setton and Dawrant (2016). In their work outlining a proposed complete course of conference interpreting, ST is a crucial component in the transition to SI (Setton & Dawrant, 2016, p. 205). Viaggio (1995, p. 33) highly commends ST as perhaps the most effective and complete tool that preludes and prepares for SI.

Despite the didactic usefulness of conventional ST in SI-related skill development, its drawbacks are noticeable. In ST, the text is constantly available to interpreters, making it more likely to be drawn to the lexical items. Therefore, there is an inclination to process information literally and with less time pressure in conventional ST (Viezzi, 1989b). Analyzing the pros and cons of interpreters having the input text before them, Gile (1997, p. 203) believes that because an interpreter has more control in a ST task than in other interpreting tasks, they suffer much less time pressure and enjoy more flexibility to deliver.

Furthermore, the constant access to text gives rise to visual interference during ST, which, as Gile (1997) argues, can be more demanding cognitively due to the visual interference. Such interference is potentially manifested in two ways: linguistic interference in the target language from the source language and the temptation of focusing on words rather than meaning (Brady, 1989; Gile, 1997; Martin, 1993; Mikkelson, 1994). As such, the implications can be linguistically and cognitively related.

In the face of these issues, changes are necessary to offset or minimize the effect of the constant textual interference for the benefit of SI teaching. Gile (2005) suggests, as an easier solution, posing extra requirement in delivery—namely, with the use of conventional ST, students are required to deliver the interpretation at a fast pace. While reducing their dependence on written text, this approach also encourages students to avoid simple transcoding.

In this study, however, the researchers aim at manipulating the ST to resolve the issues. The review provides a groundwork to change the status quo of the pedagogical use of ST in SI. As it shows, the current ST variants mostly fall into the category of conventional ST. The differentiations between conventional ST and SI on the one hand and the current teaching practice of mainly using the conventional ST in SI on the other hand indicate that the role of ST in SI training is stifled if it continues to be kept in the current forms.

2.3 Making Conventional Sight Translation Unconventional—Dynamic Sight Translation

In the era of technology-impacted teaching and learning, ST proves to be as useful as ever, if not more. In Black Box, the computer-assisted interpreter training system designed for the University of Hull, for example, ST is included "as a preparatory exercise for SI" (Sandrelli, 2005, p. 7). The designers provide two types of ST for exercise: conventional ST and timed ST. For the latter, the texts are scrolled up at a pace controlled by the trainer to simulate the time pressure of SI (Sandrelli & Jerez, 2007).

An innovative method proposed by Song (2010) is more consistent with the direction of the current study and thus serves as the main inspiration for the exercise design in the current project. The new method recommends that new features be added to the ST to "share some on-line information processing attributes" (Song, 2010, p. 121)—that is, to make information only available for a brief period through text display to resemble closer simulation of SI. Detailed justifications can also be found in Yan (2019).

In this spirit, a new variant of ST is designed to differentiate itself from the conventional ST that features the static text display for the input mode. The new variant in this study is DST, which is essentially characterized by the dynamicity of text displayed and timed.

Briefly, unlike conventional ST, DST generally works in resemblance to autocue. Once a text is imported into a computer, it can appear on screen all at once or unfold itself segment by segment or word by word; likewise, it can disappear all at once or fade away gradually. These dynamic features are achieved by the researcher's employing the appearing and disappearing effects available in the animation setting in PowerPoint. The effects of the gradual appearance or unfolding of text simulate the continuously revealing source input in SI, and those of disappearance conjure resemblance to the effect of evanescence of audio input information. Accordingly, the time lag between the sight of text and production of interpretation in DST resembles the time lag between the hearing of a valid segment and the rendition of interpreting (i.e., ear-voice-span in SI), and both require working memory to compute and retain undelivered segments. The display patterns of appearance and disappearance are combined in different ways to generate different levels of textual dynamicity. Three textual dynamicity levels are set in the exercise design in this study, from Level 1 to 3, as preliminary, intermediate, and advanced level, respectively, shown in Table 2.

Table 2
Three dynamicity levels designed for the DST in this study

Dynamicity level	Textual display action	Display pattern	Embedded input rate (in english)
Level 1	Appear	All at once	90–110 words/minute
	Disappear	Fade gradually	
Level 2	Appear	Unfold gradually	100–120 words/minute
	Disappear	All at once	
Level 3	Appear	Unfold gradually	110–130 words/minute
	Disappear	Fade gradually	

The three levels are set with different input rates as shown above, leading the trainees to gradually adapt to information linearity and evanescent information availability in SI. Level 1 starts by giving students a gentle nudge to process information linearly with minimal time pressure. Level 2 escalates to the add-ons of a progressive presentation of incoming information in addition to the externally paced delivery. Level 3 features the highest resemblance to SI, with simulation of the continuous and evanescent audio input in SI, pushing students to process forward for delivery with an almost equivalent presence of time pressure with SI. As for the English input rate setting, the range is largely kept between 90 and 120 words per minute, as suggested by Seleskovitch (cited in Gerver, 1976, p. 172) as a comfortable range for novice interpreters in training, whereas rates higher than 120 words per minute are used to find out to what extent students can utilize relevant strategies as a specific task requires.

2.4 Importance of Strategy Practice in Simultaneous Interpreting

SI's characteristic difficulties impose cognitive constraints on interpreters, warranting the use of specific strategies. These attributes include time constraints, gradual and linear unfolding of information, and limits in the shared knowledge of discourse (Gile, 2009a; Kalina, 1994; Kohn & Kalina, 1996; Shlesinger, 1995). Among skills required to handle these difficulties in SI (see Biela-Wolonciej, 2007; Donovan, 2002; Gile, 2005, 2009b; Lambert, 2004), skills related to strategy use should be emphasized in teaching. Such advocacy can be found in Gile (2009b, p. 221), who defines strategies in interpreting as "deliberate decisions and actions aimed at preventing or solving problems" and states that use of "coping tactics" is a fundamental practical skill in interpreting.

It is widely recognized that use of strategies is quite common in interpreting practice when the task gets challenging in all modes of interpreting, and they contribute to the interpreting performance in all aspects (Gile, 2009b; Li, 2015). M. Liu (2008) also empirically confirms that the adequate use of various strategies is a prominent feature that distinguishes experts from novice interpreters. In ST, Wan (2005) particularly accentuates the use of strategies in performing English-to-Chinese interpreting among other skills.

Unquestionably, conventional ST has some similar, if not the same, cognitive processes and skills required in SI thanks to common features, thus making itself a possible tool to progressively introduce students to the skills and strategies in SI. However, conventional ST fails to prompt the use of strategies in SI due to absence of sufficient simulation to cognitive constraints of SI, as analyzed in Section 2.2. In this context, DST is designed to meet the gap.

2.5 Exercise for Application Strategy for SI as an Example

2.5.1 Significance of Anticipation Strategy

Among useful strategies in SI, anticipation is considered to be deserving of special attention in training. *Anticipation* is defined as "the target language production by the interpreter of a (string of) word(s) before (or simultaneous with) the speaker's production of the corresponding (string of) words," which is manifested as an oral production in an "advanced" way (Vandepitte, 2001, p. 324). It is considered to be a common yet crucial strategy in SI (Bacigalupe, 1999; Chernov, 1992; 2009b; Lederer, 1981; Setton & Dawrant, 2016; Setton, 1999; Vandepitte, 2001).

When it is successfully executed, anticipation helps interpreters juggle the concurrent efforts of listening, analysis, production, and memory (Andres et al., 2014; Arumí Ribas, 2012; Baxter, 2014; Gile, 2009b; Lambert, 1988; Setton, 2008). Anticipation can neutralize delays in delivery resulting from noticeable structural disparities between the source and target languages (Choi, 1990; Setton, 1994; Setton & Dawrant, 2016; Van Besien, 1999). It thus can be a valuable strategy for English-to-Chinese SI, where the structural disparities are colossal (Setton, 1998, 1999).

Anticipation is largely classified into two types. One type is product-based, depending on the time lag between the delivery directed by anticipation and the actual appearance of the corresponding segments in the source language. By this standard, anticipation is further divided into "proper anticipation" (where the production of one constituent appears before it is delivered in the source language) and "freewheeling anticipation" (where the production of one constituent is basically concurrent or a bit later than the constituent in the source speech); hence, the time lag is not the only measurement to identify anticipation (Lederer, 1981, p. 253).

The other type is clue-based (Van Besien, 1999). By the function of clues, anticipation is thus further divided into linguistic and extra-linguistic anticipation (Bacigalupe, 1999; Lederer, 1981; Setton, 1999). Linguistic clues stem

from syntactic/semantic information of the source language, while extra-linguistic clues refer to the situational or general knowledge available to the interpreter (Van Besien, 1999). In the practice, Van Besien (1999, p. 258) argues that extra-linguistic knowledge provides more clues for anticipation, while linguistic knowledge plays a minor but indispensable part.

2.5.2 Existing Exercise to Practice Anticipation

To practice anticipation, the cloze procedure is an effective exercise because clozing is conducive to detecting and using contextual clues, syntactically and semantically, for meaning construction in interpreting (Baxter, 2014; Chernov, 1994; Lambert, 1992). Those skills match the purpose of anticipation training: to motivate students to make active inference ahead and to develop the deeper processing required in SI.

In this spirit, Lambert (1992) further suggests how to design the cloze exercise for teaching and assessment, reinforcing that a text with mainly nouns and verbs missing is more difficult than one with only verbs missing and that anticipation of words missing in the later part is easier than that of words appearing earlier. In the same spirit, Baxter (2014, p. 356) proposes an exercise called "integrated synchronized sight translation," which requires students to fill in blanks in real time in the source language or the target language. With the integration of new elements not typically associated with conventional ST, Baxter (2014, p. 357) contends that this type of exercise contributes to "internalizing a series of key strategies designed to overcome problems arising in the main linear translating process," as required in SI, and enables the students to develop simultaneity of input processing and output production in a natural way. Pöchhacker (2016, p. 118) also nominates Syn(synonymic)Cloze to measure subskills, such as "online comprehension, oral expressional fluency constrained by contextual appropriateness, and fast reaction times."

These existing exercise types form the basis of the DST exercise called "Clozing DST" for the practice of anticipation strategy in this study.

3. Methodology

3.1 Background Information

The research was carried out as a pedagogical AR, and the first author was the teacher-researcher. AR is increasingly recognized as beneficial for pedagogical studies conducted as a part of everyday interpreting teaching (Burns, 1999; Schjoldager, 1994). This is because AR is constructed such that the exploration not only is integrated into but also stimulates the teaching and learning processes—that is, teachers can reflect on and modify teaching practices for constant improvement, while students can instantly provide feedback that can feed into and thus construct the teaching process simultaneously, ultimately leading to more tailored and needs-focused learning and teaching activities (Takeda, 2010).

With features of pedagogical AR (Carr & Kemmis, 1986; Cravo & Neves, 2007; Kember, 2000; Norton, 2007; O'Brien, 1998), this study was designed and conducted in a disruptive, collaborative, democratic, and cyclical way. By being disruptive, the research was aimed at seeking innovative changes to the existing knowledge and practice. By being collaborative and democratic, the research managed to include and consider different perspectives and interpretations of the multisource, and it acknowledged that these data and their interpretation are open to possible subjective bias. By being cyclical, the research involved three upwardly iterative cycles, with data collected in the first cycle leading to adjustments of hypotheses and improvements in the two cycles that followed.

3.2 Action Research Design

As a 3-year longitudinal AR, the teaching and learning action was conducted and observed in the first semester of each academic year from 2014 to 2016, with the same timeline in each of the three rounds. Each round included three sequential tests conducted at the beginning, midpoint, and end of each semester, and the actions were implemented between each test. Supplemented between every two tests was the subsequent questionnaire, constituting a micro-cycle of action. In other words, each round consisted of two micro-cycles, concluding with an interview at the end of the semester. The three tests, three questionnaires, and one interview—the opinion collection tools—were used

to profile the skill status of the students, with a view to identifying their skill deficiencies and monitoring their skill development at different stages. After each test, remedial actions were taken, during which various DST-related exercises were used as solutions to address those skill deficiencies discovered from certain tests. The efficacy of these exercises was also assessed in the follow-up test, which, in turn, continued with another micro-cycle of identification of skill deficiency, remedy actions, and tests of effectiveness. Among the three cycles, teaching actions varied from year to year in line with changes in circumstances, such as specific needs of the students and their progress, or based on the researcher's reflection drawn from the previous round(s) of action.

The participants composed three cohorts of Chinese students enrolled in master of conference interpreting at Macquarie University in 2014, 2015, and 2016, respectively. The student participants, who agreed to participate in the research on a voluntary and informed basis, were considered to present consistent linguistic profiles because they were admitted to the program after having met threshold requirements in language proficiency and interpreting skills, despite variations in gender and age. Prior to their enrollment in the conference interpreting program, all participants had finished interpreting courses at the undergraduate or postgraduate level. Ethics approval (approval number: 5201400072) was obtained before the recruitment started. The overview of participants is listed in Table 3.

Table 3
Student participants' profiles, 2014–2016

Year	Student participant number	Gender distribution	
		Male	Female
2014	7	1	6
2015	11	3	8
2016	6	2	4

The source of data included two parts. One part mainly derived from feedback from student participants. This collected feedback was quantitative, including students' reflective journals, three questionnaires, and one interview after assessment tasks. Such assessments aimed at integrated analysis of individually self-rated cognitive loads and performances by the students themselves.

The other part came from the teacher-researcher, including performance analysis via three tests conducted at the beginning, midpoint, and end of the first semester, respectively, and in-class observations during the teaching-learning interaction. The two sets of data jointly contributed to the integrated analysis, leading to research conclusions and thus establishing a more comprehensive understanding of the value as well as limitations of DST-related exercises in SI teaching.

The data collection and analysis methods are summarized in Table 4.

Table 4
List of data sources and types of data analysis

Data source	Data collection tool[1]	Analysis method	Analysis type
Student participants	Three questionnaires	Content analysis Thematic analysis	Qualitative
	End-of-semester interview	Content analysis	Qualitative
	In-class discussion Post-test self-reflection	Content analysis	Qualitative
Teacher-researcher	Weekly teaching observation Journals	Content analysis	Qualitative
	Performance analysis of three tests: (1) Level 1 DST; (2) Level 3 DST; (3) Level 3 DST + SI	Content analysis Thematic analysis Descriptive statistics	Qualitative Quantitative

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1   For detailed questions of the questionnaires and interview, please refer to Appendix 3 of the full dissertation about this action research by following http://hdl.handle.net/1959.14/1269762.

3.3 Clozing DST—A New Exercise Designed for Anticipation

Clozing was integrated into the DST exercise to urge the students to anticipate the direction of subsequent information based on the event context and wider general knowledge (Baxter, 2014).

This design included the exercise built upon Baxter's "integrated synchronized sight translation," where students are led to practice with DST with clozing blanks and to fill these blanks semantically based on various clues to produce an uninterrupted delivery.

The dynamicity levels adopted were Levels 1 and 2. With the external time pressure added and the deliberately set clozing construction based on linguistic and extra-linguistic clues, inference skills for anticipation strategy used in SI were expected to be enhanced.

In addition to its use in teaching, DST clozing was also included in the final DST test as an assessment of students' skill development in anticipation. The interpretation for these set clozing blanks was assessed for accuracy. There are three quality levels in assessing anticipation accuracy—namely, exact anticipation, general/generic anticipation, and incorrect/false anticipation (e.g., Bevilacqua, 2009; Jörg, 1995; Kurz & Färber, 2003). Although exact and incorrect/false anticipation types are self-explanatory, general/generic anticipation refers to an approximation or a hypernym of the source text, which represents "a meaning similar to that of the source text but does not cover every nuance of the late-appearing constituent" and where the meanings of the output are either "weaker" or "stronger" in expression weighting than the meanings of the source texts anticipated (Liontou, 2012, p. 161). Although time lag was not the only measurement, students were also asked to reflect on failures in anticipation in cases where they made inferences about a segment and possible causes for such failures.

3.4 Hypothesis

The value of ST in skill development for SI lies in equipping students with skills that can be transferred (Li, 2015, p. 179). With the DST designed to visually simulate the information input in SI on the basis of shared cognitive processes and skill components between the two modes, we hypothesize that by involving similar-to-SI constraining conditions in DST, the strategies required in SI can be effectively elicited via DST and then transferred to SI. Therefore, a clozing DST exercise strategy aimed at developing an anticipation strategy can boost and transfer such strategy use in SI.

4. Findings and Discussion

4.1 Effect of DST Exercise on Anticipation

To verify the hypothesis, the deliberately designed DST exercises were adopted in the teaching as part of the AR. As demonstrated in three AR cycles, students generally became more conscious about the benefit and use of anticipation as a result of the deliberate DST design. When reporting strategies that should be used or deemed crucial to deal with the evanescence of text partially presented at the beginning of the semester, students showed, with no exception, ignorance of strategies to be chosen. When asked "What did you do when you found yourself lagging behind?" in the first questionnaire, most students chose to leave the unfinished segment out or speak faster to catch up. However, when surveyed with questions about the strategies they adopted or found useful after the midpoint test and final test, more students reported use of or intended use of anticipation, indicating a better awareness of its usefulness and enhanced deliberation in its use.

Such findings are consistent with the researcher's observation during teaching. The researcher noticed that students started to experiment with anticipation after they were convinced of its value in lessening their cognitive load. Evidence of students' reflection on anticipation including their raising more questions during in-class discussion regarding how to make quick use of contextual or linguistic clues.

By the end of the semester, the value of anticipation in enhancing input processing was more acknowledged by the students as a skill to be transferred to SI. In response to the question "Which DST exercise is the most or

least useful to you in practicing SI?" in the final interview, clozing DST was nominated as one of the most valuable exercise types in all 3 years. Specifically, students commented in English that "anticipation makes it easier to organize sentences and <u>shorten the time for waiting</u>" (14A), and "I am able to <u>produce complex sentences</u> [with anticipation], especially when the structure needs to be adjusted" (14D). These comments show that students understood why and how to actively use anticipation to reduce their cognitive load in input processing, thus allowing more leeway for syntactic manipulation in delivery.

With an earlier introduction and more drilling of anticipation-targeted exercises, students in 2015 and 2016 commended anticipation for benefiting SI comprehension more often in the interviews, with typical comments including "[it is] <u>really helpful in understanding</u> the source text (16A)," and "[it] helps me to <u>catch up the speed</u> and produce complete and intelligible sentences" (16D). These underlined comments demonstrate that anticipation was perceived by the students as contributing to greater agility and accuracy in comprehension for SI. Such incremental awareness is a telling sign of enhanced proactiveness in the students' information processing because the strategy can reduce uncertainty and relieve cognitive load before difficulties appear (Gile, 2009b, p. 175).

The performance of students in clozing DST also corroborated their ever-developing capacity of anticipation. To assess the students' skill in making inferences, six clozing blanks were included in the final DST task. Despite high unfolding and erasing rates of text (to simulate an input rate of 130 English words/minute), students demonstrated the skills needed for inferences with the pretext clues. The following example involved one clozing blank (underlined) arranged at the end of the paragraph:

> *She lived with a fierce intelligence, a passion, a sense of purpose. She was not only devoted to family and friends, but also to improving health care and finding a cure for cancer for once and for all. And she would have appreciated this event, where <u>we are coming together to look for solutions</u>.*

For this clozing blank, the quality of anticipation based on the types identified above was assessed across 3 years; the results are presented in Table 5.

Table 5

Results for the clozing blank in the example text, 2014–2016

Years Number of anticipation type	2014 (n=7)	2015 (n=7)	2016 (n=6)
Extract anticipation	1	3	2
Generic anticipation	2	3	2
Erroneous and missed anticipation	4	5	2

Most anticipation types for this clozing blank combined exact and generic anticipation. In the erroneous and missed anticipation category, and on several occasions, students missed a whole sentence in the interpretation and had no chance to make an inference at all. This result indicates that students who succeeded in accurate generic anticipation could identify contextual clues and make inferences under the time pressure.

Nevertheless, it is important to note that the improved consciousness of applying anticipation did not necessarily lead to better results, as shown in the assessment of the six clozing blanks in the final DST. Compared with the 2014 results, the percentage of accurate anticipation, including extract and generic anticipation, did not increase significantly; see Table 6.

Years Percentages of different types of anticipation	2014	2015	2016
Extract anticipation	33.33%	28.13%	33.33%
Generic anticipation	9.53%	6.675%	5.66%
Erroneous and missed anticipation	57.14%	65%	61.1%

Table 6 shows that, compared with 2014, the number of erroneous and missed anticipation opportunities still accounted for the majority, and the percentage of extract anticipation did not increase in 2015 and 2016; these results suggest that the earlier introduction of anticipation in the strategy teaching sequence does not necessarily result in immediate improvement on the quality of anticipation.

That being said, the acknowledgment of value in anticipation, the increase in voluntary attempts, and reflections on anticipation from students demonstrated that the clozing DST provided them with more incentives for active listening and led them to make inferences and, it is hoped, accurate anticipation with clues. Therefore, the hypothesis is only partially proved.

The unsatisfactory anticipation quality and efficiency of its transfer in SI could depend on multiple factors, such as the amount of practice and students' overall comprehension capacity, which are not discussed in detail in this article. Therefore, the focus of this review is on limitations of the exercise that could have contributed to the results.

4.2 Limitations of the Exercise

Two factors limited, to varying extents, the expected value of DST (i.e., a simulation to SI that is easier in task condition). The first factor involved two design-related defects, and the second factor related to an intrinsic feature in DST itself, leading to difficulty in finding an inclusively adequate unfolding rate and the lack of concurrent vocalization of input and output, respectively.

In this AR project, feedback from students generally indicated that when the unfolding rate increased to 120 words per minute and above, the time lag was reduced to such an extent that the window space became too small, leaving the display length of the text too short. Regarding the difficulties arising from the DST exercise set at Level 3 dynamicity with high unfolding and erasing rates, 15J complained that "I immediately forgot about what appeared before me and I had to try extremely hard to retrieve the message while seeing the upcoming information slip away right in front of my eyes. . . . I was completely lost." This frustration was shared by 15I as well, who grumbled that "[t]he text disappeared too fast that there might be only one word remaining on the screen before I could manage to do anything." Following the final DST task featuring the combination of Level 3 dynamicity and an input rate of 130 words per minute, 16D reflected in dismay that "I only could see one word clearly at a time when previous words already had disappeared."

These comments suggest that it is problematic to mechanically set up the input rate range in DST in line with that in SI. Although an input rate of 90–120 English words per minute is suggested to be a "comfort zone" in SI teaching, this range is not necessarily completely applicable in DST, considering the discrepancy between reading comprehension and listening comprehension. The issue with text displayed at fast speed directly impinges on comprehension and production processes in DST, and it becomes detrimental to the original training purposes.

In terms of comprehension, the display issue could aggravate the imbalance between ear-voice span (EVS) and working memory (WM) with novice students: If they choose short EVS to reduce cognitive load on WM, they might not acquire enough information for delivery (Goldman-Eisler, 1972). If they keep a longer EVS for a more comprehensive and clearer view of the evolving message, they may experience overload in WM, in information storage and computation (MacWhinney, 1997). This explains why in this research, more than half of the students reported increased temptation to interpret based on whatever information was visually available at a given moment of reading when DST was run at 120 words per minute or more. When the length of text displayed was excessively short, students were likely to be forced to adopt a short EVS, having had inadequate information to constitute adequate rendition, or to clarify meaning ambiguity before delivering. Visually subject to the condition, students' WM was strained, with memory demanding more input information for analysis and comprehension.

In terms of production, short EVS induced by the above visual influence could put students under more pressure. This is likely because short EVS is associated with increased numbers of syllables in the production, which means that more words are uttered, and longer time is required in production (Lee, 2012).

The research also found that students had different degrees of preference or tolerance for visual stimuli in comparison to audio stimuli. Students who preferred for audio stimuli could find visually distracting the display effect of the Level 3 dynamicity at high rates. Some students reported that it was visually uncomfortable, and they

tended to miss lines when reading the fast-changing text displayed at Level 3 dynamicity, causing much more anxiety and pressure than processing audio input at a similarly fast speed. Complaining about the text going at lightning speed, 14E was of the view that SI was easier and "[w]ith pauses, stress, etc., from the speaker, it is easier to get the idea." Similarly, 15B reported in the interview that "[d]ue to my slower processing in reading than in listening and poor eye-sight, I am under huge visual pressure when the unfolding and disappearing occur at the same time." Obviously, reading the dynamic text displayed at Level 3 dynamicity could require extra time and effort for these students to adapt to the textual display visually before they could start discerning and analyzing the texts cognitively. This difficulty confronted them as early text reading.

The dynamic textual display also caused an extra burden on WM among students who preferred audio stimulus. These students reported that the information temporarily stored disappeared faster in reading (i.e., the visual decay was reported to be faster than audio decay in their WM). Given that information staying active in WM is the prerequisite for computation to accomplish reading comprehension (Daneman & Carpenter, 1980), it is reasonable to assume that faster decay of stored information would make the retrieval and computation more difficult and affect the speed and accuracy of comprehension.

The above issues could impose extra cognitive loads on or set barriers to visual perception, making DST harder than SI to some students and thus undermining the design's intention of providing an easier simulation of SI for scaffolding purposes. Given that students had various tolerance thresholds for the text display at high rates, simply keeping the display under a prescribed rate would not be a cure-all.

On top of that, the intrinsic characteristic of input in DST could limit the simulation achieved by DST, compromising the effect of skill transfer. As Lambert (2004) and Moser-Mercer (1997) argue, the concurrent vocalization of input and output in SI is a unique feature, making the simultaneity involved special. Such simultaneity of SI involves articulatory suppression to keep apart the audio input and vocal output, which requires extra attention to execute (Christoffels & De Groot, 2005. To manage this, SI interpreters have developed superior coordination for concurrent processes that involve articulatory suppression (Padilla et al., 2005). Although DST and SI involve the execution of coordinated concurrent subprocesses, the presence of articulatory suppression in SI requires extra attention to manage the channel interference, which demands extra coordination in comparison to DST. As a result, the simultaneity required for DST exercises is at a lower hierarchy than that for SI.

The implication of the channel interference for simultaneity was not able to be mitigated by the manipulation of dynamic features in the DST-related exercises. The unfolding rate and the dynamicity level could only contribute to practicing agility for the subprocesses at lower-level simultaneity that would not cause channel interference. In other words, if properly designed, DST could be an easier simulation in SI, making it appropriate to function as a scaffolding tool to lead students to gradually transition to SI.

5. Conclusion

This study involved the use of DST exercises for teaching SI in postgraduate students interpreting between Chinese and English. The findings suggest that DST exercises are beneficial to practicing anticipation in SI in that, thanks to clozing blanks integrated in DST, students were incentivized to detect and utilize various clues for anticipation and managed to implement the strategy under the SI-like and SI circumstances to some extent. Students' performances and statements unambiguously indicated that they were purposefully guided to practice the strategy with the well-defined simulation and thus consciously used anticipation in practicing SI. Even though the exercises might not have yielded immediate and significant improvement in execution results, they helped heighten the consciousness of students regarding the use of anticipation and other strategies and kept them proactive in input processing for comprehension. Given the value of anticipation in reducing uncertainty and relieving cognitive load before difficulties appear (Gile, 2009b), it would be more beneficial to use clozing DST to develop proactive comprehension approaches among novice learners.

By adopting the DST exercise and measuredly selecting the combination of dynamicity levels and text display/disappearing rates, it is possible to achieve the skill component teaching that serves "to isolate a student's cognitive

strengths and weaknesses and, subsequently, developing interpreting strategies that will maximize the former and compensate for the latter" in SI (Moser-Mercer, 2000, p. 85).

The DST-related exercise, including clozing DST designed for anticipation, does require fine-tuning to better accommodate students' skill-development needs. To improve skills in novices, a demanding task condition that features advanced dynamicity levels and high input rates may not always be the optimal choice. Instead, the two variables should be considered in a concerted way, manipulating the exercise features to jointly keep the task condition stimulating yet not too demanding. From the present findings, the combination of an unfolding rate of 100 words per minute and Level 3 dynamicity made an optimal task condition, which was more conducive to skill development and transfer. Taking into account the pros and cons, the greatest number of students nominated the DST exercises featuring this variable combination to be the most useful for skill development and transfer over the course of the 3-year study. Its applicability in other contexts is still open to testing, which makes DST valuable as a tool to be studied in SI teaching.

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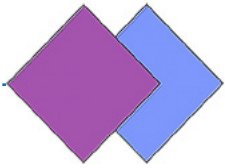
Public Service Interpreter Education in the Gulf States: Ideas for Curriculum Design and Teaching

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Abstract

The Gulf States host large numbers of non-Arabic-speaking residents and visitors. These non-nationals need to deal with such public services as hospitals, schools, courts, and other local administrations. In many cases, English is used as a lingua franca; however, not all public service staff or clients are able to speak or communicate effectively in this language. The communication needs in such situations require the assistance of professional public service interpreters, which, in turn, calls for appropriate education. In this paper, I outline education needs in public service interpreting in the Gulf States; provide an overview of common curricular contents and teaching methods in this area; put forward a proposal for learning outcomes, course contents, and teaching strategies; and highlight the importance of an interpreting practicum for graduate employability and community engagement.

Keywords: public service interpreting, curriculum, teaching, Gulf States

1. Need for Public Service Interpreting Education

The Gulf States have for decades been associated with oil-based development, which has attracted large numbers of expatriate workers and experts. The economies of Saudi Arabia, Qatar, and the United Arab Emirates, for example, are heavily dependent on a migrant workforce. In some Gulf countries, the percentage of expatriates in the labor market and the overall population is greater than that of citizens (Abdullah, 2009; Al-Najjar, 2009). At the same time, Saudi Arabia, the largest and most populated Gulf State, receives millions of pilgrims every year. Migrants and pilgrims come from different parts of the world, with such Asian countries as Indonesia, Malaysia, India, and Pakistan as major sources. With such cultural and linguistic diversity, there is a clear need for professional public service interpreters, who would facilitate communication between migrants, pilgrims, and visitors on one hand and public service providers (immigration officers, police, healthcare workers, lawyers, religious advisors, etc.) on the other. Unfortunately, the need for professional public service interpreters is hardly recognized in the Gulf States (or in the rest of the Arab world, for that matter), and little has been done in terms of regulation, education, and certification (Qadi, 2011; Raddawi, 2015; Taibi, 2011). When communication facilitators are available, they are often untrained and unqualified (ad hoc) "interpreters" (Al-Tenaijy, 2015; Fatani, 2010; Hannouna, 2012; Mahmoud, 2010). Hannouna's (2012, p. 89) survey shows "that most of the language services offered at Al-Ain hospitals [United Arab Emirates] are now performed by ad hoc interpreters who are neither professional and well-trained, nor accredited or certified. They are non-specialists in Translation and Interpreting and have not taken sufficient and effective university-level courses in the field." In relation to court interpreting in the same country, Al-Tenaijy (2015, p. 9) agrees that "the use of ad hoc interpreters is common, especially when court interpreters in certain languages are simply not available." In Saudi Arabia, Abu-ghararah (2017) points out a shortage of translators and interpreters in the court system and a lack of regulation and assessment to ensure that only qualified professionals are employed. Some media reports (e.g., Alharbi, 2015) go further to note that in some cases, defendants are asked to interpret for other defendants.

Adequate language service provision and the professionalization of interpreting in this region (as well as elsewhere) require a number of interventions in different areas: policy, education, and quality assurance (e.g., a testing and certification system, rigorous recruitment processes, and monitored compliance with the relevant code of ethics; Taibi, 2011, 2014). In this paper, the focus is on education, so the other two levels are not addressed, although education is related to both of them: (a) In many respects, the availability, organization, and quality of relevant education depends on policies and national and local directives; and (b) education and training naturally make a significant and foundational contribution to quality assurance. As Hale (2007, p. 166) argues, "[T]he most important [reason for compulsory training] is that of equipping community interpreters [public service interpreters] to provide quality services, in order to avoid the potential negative consequences associated with incompetent interpreting." "Training also has a social function," in that it provides a context for professional socialization and contributes to advancing the interpreting profession and improving its status (p. 167). In the case of public service interpreting (PSI) in particular, one could go further to assert that the social mission of education relates not only to the interpreters themselves but also, and most importantly, to the communities they serve (facilitating communication and access for disempowered minority members, upholding human rights, serving justice in courts, etc.).

The translation and interpreting programs in the Gulf region and the rest of the Arab world do not (sufficiently) cater to education needs in PSI (Taibi, 2014, 2016). Interpreting in general is not given its due share, as most translation programs in the Arab world focus mainly or exclusively on translation. Even within translation, Al-Batineh and Bilali (2017, p. 198) note a mismatch of focus between these translator education programs and the translation industry: "[L]iterary translation represents 25% of the field-specific courses offered at the graduate level while the required experience in literary translation represents 3% of market demand."

2. Curriculum Design in Public Service Interpreting

This paper puts forward a PSI curriculum proposal for Gulf States, but as interest in PSI education is still emerging in this region, the suggestions are mainly based on PSI teaching experiences and literature from

other parts of the world. PSI teaching programs are available mainly in Europe, Australia, New Zealand, and North America (Stern, 2011, p. 491). Although the types of PSI education in these countries and regions can provide insights into a number of areas (e.g., organization, curriculum design, teaching, and certification), Gulf Cooperation Council (GCC) countries would not need or be expected to reproduce curricula that were designed with other national contexts in mind.

PSI programs usually cover public service settings, such as courts, hospitals, and immigration and social services. They vary in terms of provider category (e.g., universities, colleges of further education), duration, and curriculum and teaching standards. There are short programs (e.g., 2-week on-site induction or further education before commencing employment in a court system) as well as bachelor's and master's degree programs. In relation to the region of interest here, the Gulf States, either a short-term or a long-term approach may be adopted, depending on the needs and resources: (a) relevant ministries, public services, and agencies may organize intensive programs for specific purposes when needed (e.g., urgent needs, emerging new languages in the local context); or (b) universities and other education providers may offer specific undergraduate or postgraduate programs in PSI or a significant number of courses within an existing generalist translation and interpreting program. Thus, for instance, a short-term approach could target a specific need—such as interpreting for pilgrims in Saudi Arabia—by providing short training courses (setting-specific, pilgrimage-related) for translation and interpreting graduates a few weeks prior to the commencement of pilgrimage. A long-term approach could address the desirability of a rounded PSI education by purposely catering for it in existing or new undergraduate or postgraduate programs. In this paper, the focus is on the long-term academic option.

To design a curriculum or a curricular component in PSI, program leaders and teaching teams need to be guided by the requirements of the profession. Angelelli (2017, p. 42) points out that prospective dialogue interpreters[1] need to develop basic skills common to all interpreting, in addition to those that are specific to dialogue (public service) interpreting. In relation to the latter, Hale (2007, p. 177–178) lists several competences and types of knowledge that the relevant literature establishes as requirements for the work of a professional public service interpreter:

- Knowledge of professional issues, especially role and ethics

- Advanced language competence

- Excellent listening and comprehension skills

- Excellent memory skills

- Adequate public speaking skills

- Adequate note-taking skills

- Advanced interpreting skills, including in different interpreting modes and sight translation

- Appropriate interactional management skills

- Knowledge of the context and subject matter

- Understanding of the goals and discourse practices of the relevant institutions

- Cross-cultural awareness

- Knowledge of relevant linguistic, sociolinguistic, discourse and translation and interpreting theories.

Phelan et al. (2019, pp. 8–9) classify the core competencies into linguistic (grammar, specialized terminology, register, etc.), thematic (identifying relevant topics for interpreting assignments, searching for and extracting relevant terminology from resources, demonstrating knowledge of different interpreting modes), interpersonal (coordination of interaction, trust-building strategies, awareness of bias, etc.), intercultural (awareness of cultural differences and related power asymmetries, knowledge of users' cultural backgrounds), technological (e.g., terminology management and, in light of current developments in the profession, video-conferencing), business-related (e.g.,

client and assignment management, finance, membership in professional associations), and developmental (ongoing learning, working with others, flexibility and change management, etc.).

Excellent listening and comprehension skills, memory and note-taking skills, public-speaking skills, skills in different interpreting modes, and knowledge of the thematic and institutional context are core components of all types of interpreting. A good understanding of professional role and ethical considerations, interactional management skills, and awareness of the nature and discourse practices of each public service (e.g., court, police station, social security, hospital) are particularly important for PSI (Cirillo & Niemants, 2017; Hale, 2007; Phelan et al., 2019; Tipton & Furmanek, 2016; Wadensjö, 2013). The inclusion of other areas, such as language competence, cross-cultural awareness, and knowledge of the context and subject matter, will depend on the local curricular constraints and the backgrounds and needs of student cohorts. Even if these aspects are not specifically taught in dedicated modules, they can be addressed as part of the learning activities in other modules.

The interpreting settings to focus on will vary from one local or national context to another. However, court and healthcare settings would be essential in any PSI program for two main reasons: (a) they are high-stake settings where untrained or ad hoc interpreters may compromise the health, well-being, freedom, or vital interests of their clients (e.g., Flores et al., 2003; Hale, 2007; Pym, 2021); and (b) they involve specialized terminology and discourse that are challenging to interpret accurately and effectively without adequate education. PSI programs in different parts of the world often include these two settings (e.g., the Bachelor of Arts and the Master of Interpreting and Translation at Western Sydney University, Australia; the Master in Intercultural Communication, Public Service Interpreting, and Translation at Alcala University, Spain; the Master's Program on Court and Public Service Interpreting for Arabic, Dari, Farsi, and Turkish in combination with German at the University of Vienna, Austria; or the Spanish Community Interpreting Graduate Certificate, offered by the Middlebury Institute of International Studies, USA).

As mentioned above, the local or national context will have a role in determining priorities. A case in point is the PSI needs in Saudi Arabia. Like other Gulf States, the country hosts many migrant workers, who have frequent interactions with public services, such as hospitals, police stations, courts, or immigration offices. Unlike other GCC States, however, Saudi Arabia hosts millions of pilgrims throughout the year and during the annual Hajj (Islamic pilgrimage). Pilgrims may require public services, such as healthcare, emergency services, or police assistance, but they also engage with other specific services, such as religious advisers, crowd-management services, pilgrimage-related administration, and so on. Designers of interpreting curricula in Saudi Arabia would need to account for these unique situations. As interpreting courses generally are designed and labeled according to setting or domain (e.g., legal interpreting, medical interpreting, business interpreting), one of these courses would need to focus on interpreting for pilgrims. If programs were structured based on interpreting skills or modes (e.g., consecutive, simultaneous, dialogue, sight translation), then the pilgrimage context would need to be part of the communicative situations in which students practice their skills (e.g., dialogue interpretation in interviews with lost pilgrims, simultaneous interpretation of religious sermons, sight translation of pilgrims' statements at a police station).

3. Learning Outcomes, Teaching Strategies, and Resouces

Naturally, the aim of a PSI program is to enable students to develop and demonstrate the skills required of a professional public service interpreter. The summary provided by Hale (2007) above is a good point of reference for what to include in such a program. If there were institutional, time, or other constraints, the following learning outcomes would need to be prioritized, as they relate to core skills in this type of interpreting:

- Apply the standards and ethics of the professional role (if a code of professional ethics and conduct does not exist in the country in question, an appropriate code from another country may be taken as a reference while local efforts continue to establish a national code, in collaboration with relevant professional organizations and institutions).

- Demonstrate understanding of the discourse patterns and practices in (relevant) public services.

- Accurately and appropriately interpret the speech of participants in public service interviews (especially in the most relevant settings in the national context).

- Produce an accurate and appropriate oral rendition (sight translation) of public service texts (relevant to the settings covered in the program).

- Coordinate interaction between the main participants in an effective manner (e.g., Wadensjö, 2013, on coordination).

The development of PSI skills and the acquisition of knowledge of professional standards and discourse practices need to be based on a sound theoretical grounding, including interpreting theories, pragmatic and discourse theories, intercultural communication, deontology, and so on. Students may be exposed to a number of interpreting exercises, role-playing, and ethical scenarios, but without a strong theoretical foundation and a two-way interaction between theory and practice, they will be less likely to develop the required skills to a satisfactory standard and in a meaningful manner. As Stern (2011, p. 502) notes, "knowledge of interpreting theory promotes reflective independent learning, enhances students' progress, and assists with decision-making and the maintenance of appropriate strategies and tactics." Thus, for example, if students are to understand accuracy and appropriateness or be aware of the meaning and function of certain discourse practices, they need to be grounded in a good understanding of how communication works, how semantic meaning differs from pragmatic meaning, how language is used for discursive purposes, and how meaning and discourse functions are expressed differently across languages and cultures. Translation and interpreting students, especially in their first semester or year, tend to expect ready solutions (e.g., the teacher's "model" translation/interpretation of a given sentence or utterance, readily available equivalent terms). However, as can be inferred from Stern's statement, translation and interpreting are matters of strategizing and decision making that need to be informed and justified by processing language input against a solid theoretical understanding.

In addition to a strong theoretical background, which provides a framework for teaching, learning, and interpreting strategies, the development of PSI skills needs to be closely linked to real-life public service situations. As Ozolins (2017, p. 46) affirms, "[u]nless a training programme is based upon a theory of situations, a taxonomy of encounters, much vocabulary building and practice will be the equivalent of 'snatching at words,' practice out of context." Situating practice in scenarios and simulated public service encounters enables students to make sense of and reflect upon theory and professional ethics, learn about procedures and discourse features in a specific setting, integrate different curriculum components and identify links between them, and practice their own judgment in terms of appropriate interpreting strategies and professional conduct.

In relation to the point about situated practice, Angelelli (2017) proposes a problem-based approach to learning and teaching PSI. This is "a pedagogical strategy in which learners are confronted with significant, contextualized, real world situations" (p. 37). Students address real-life PSI situations equipped with what they already know about theory, the setting at hand, and the interlocutors involved. In the process of addressing this situation or problem, students develop "both content knowledge and problem-solving skills" (p. 37). PSI courses usually rely heavily on role-play activities (Corsellis, 2008, p. 73), which are a type of problem-based learning; thus, to simulate "triadic exchanges" (Mason, 2014) in public services, students are asked to play the role of a public service provider (e.g., police officer, doctor, lawyer), a client (e.g., detained person, patient, defendant), and a PSI interpreter. This is usually a very stimulating classroom practice, as the role-players have opportunities to develop their public-speaking skills, interpersonal skills, and, most importantly, dialogue interpreting and coordination skills. At the same time, their classmates have opportunities to observe and be exposed to setting-specific terminology and practices. They are also able to take notes, provide peer feedback, and engage in discussion of the role-players' performance and the different aspects of interaction during the activity. This type of activity also creates a relaxed and enjoyable learning environment, as the simulation scenario, the dialogue between participants, and the student-interpreters' own interventions often give rise to humorous situations.

Angelelli (2017, p. 38), however, argues that PSI role-play does not necessarily constitute or lead to problem-solving learning for a number of reasons: (a) It is limited to the safe classroom context, (b) it focuses on the interpreter's

performance or "product" rather than the process, and (c) the resources used seldom reflect the complexity of real-life PSI situations. Angelelli's criticism appears to be related more to the way in which PSI role-playing is planned, conducted, and resourced rather than to the effectiveness of the exercise itself. This takes us to the last point in this section: teaching and learning resources.

In a doctoral thesis on teaching and learning PSI, Maximous (2017, p. 244) finds that most of the dialogues used for in-class interpreting practice are quite unlike real-life PSI interactions. After observing a number of English-Arabic PSI classrooms at an Australian university, Maximous concludes that the dialogues used are not as complex as real public service interviews, lack the conversational features of these encounters (e.g., speech interruption and overlapping), and are not as "content-loaded" or as lengthy as the speech of public service providers and clients can be. Certainly, PSI teachers understandably use scripted dialogues, shorter segments, less challenging speech turns (e.g., no overlapping speech), and simple terminology as part of a carefully planned approach to expose students gradually to different levels of PSI challenges. However, as Maximous (2017) and many others (e.g., Angelelli, 2017; Rudvin & Tomassini, 2011) recommend, the materials used for PSI practice in general and role-play activities need to be as authentic as possible.

Authentic materials (e.g., audio- or video-recorded public service encounters) can be used unedited or adapted to serve specific learning objectives. A strong link between professional practice, teaching, and research can assist significantly in facilitating access to such materials. As far as the link between professional practice and teaching is concerned, it is ideal to count on qualified teachers who are or have been professional interpreters, as their experience assists them not only in teaching the different dimensions of interpreting and its settings but also in designing activities that are similar and relevant to the future interpreting assignments of their students. In Australia, for example, most PSI teaching staff are practicing interpreters certified by the National Accreditation Authority for Translators and Interpreters and therefore bring a wealth of professional experience to the classroom. They can also draw on the PSI settings and cases encountered in their own professional practice to develop plausible role-play scenarios for their students. As for the link between teaching and research, what is of interest here is that PSI teaching teams who also engage in research on PSI, or on public service discourse generally, are able to generate useful resources for their classes as a by-product of their research projects. For example, in GCC States, the presence of large numbers of migrants and pilgrims offers opportunities for public service interviews and consultations (interpreter-mediated and monolingual) to be video-recorded and transcribed for research purposes; these same resources can also be adapted for PSI exercises or role-playing. Authentic materials may be used in class and at home for developing various attributes, such as background or institutional knowledge, comprehension skills (e.g., summarizing), listening and memory skills, or the core interpreting (meaning transfer) and interactional management skills. The materials can be used as a basis for improvised (but carefully planned) role-play exercises. Care must be taken, however, to adapt and construct the dialogues in a manner that serves the desired learning outcome (Rudvin & Tomassini, 2011, p. 109).

In relation to authenticity of material, it is worth noting that the public services in the Arab world use colloquial Arabic in their interactions with users, except in particular limited contexts that call for Modern Standard Arabic, such as when a judge or a prosecutor is reading from a written text or is citing relevant legislation. However, there is a tendency (e.g., among teachers whose main professional background is conference interpreting) to inappropriately use Modern Standard Arabic throughout PSI exercises, making them unrealistic and inconsistent with everyday PSI encounters in Arabic-speaking services and administrations. Therefore, unless a specific case requires otherwise, the Arabic parts of dialogue used for interpreting practice should be in the local variety of spoken Arabic (not Modern Standard Arabic).

4. Language Diversity and Program Viability

PSI addresses some of the challenges posed by language diversity in communities, yet this diversity may itself pose a challenge to PSI programs and the organizations that offer them. PSI education requires a significant amount of language-specific learning and feedback; however, programs and institutions are unable to cover all the languages needed in a given community, either because of lack of resources or lack of expertise (Hale, 2007; Sawyer, 2006; Stern, 2011). Before proposing new programs or major program variations, education providers would normally

conduct feasibility studies. In a higher education environment that is increasingly conscious of budgetary constraints and cost-effectiveness, only programs or language combinations that are judged viable would normally be approved. As Angelelli (2017, p. 39) suggests, "census data as well as results obtained from sociolinguistic studies on language communities of specific areas is essential to respond to the local market and social needs." This needs to be complemented with data about potential student cohorts and qualified teaching staff. In terms of languages needed, the significant presence of South Asian migrant workers in GCC countries and the large numbers of South Asian pilgrims visiting Saudi Arabia suggest that such languages as Urdu, Bengali, Sinhalese, Pashto, and Persian would be among the major community languages requiring interpreter education (Taibi, 2014, 2016). In addition to these, Alharbi (2015) notes a high demand also for Tagalog, Indonesian, English, Thai, Swahili, Amharic, and Vietnamese.

When language diversity and social needs exceed the resources available, one possible solution is non-language-specific PSI tuition, or what Slatyer (2015, p. 236) refers to as "multilingual interpreter education": "The curriculum is a multilingual curriculum; there is no language pair-specific tuition and no language pair-specific feedback to the students in the face-to-face components." Hale and Ozolins (2014) report on a short program offered in this generic mode to a group of participants from 11 languages. The selection of languages was based on census data, immigration data, and interpreter directories (to identify unmet PSI demand). The program was conducted almost entirely in English and focused on basic knowledge and skills, including professional ethics, dialogue interpreting (with some sight translation and chuchotage), and setting-specific knowledge (health, law, and domestic violence). They also report that a number of short and longer courses has been offered internationally, using the strategy of mixed-language groups. This multilingual interpreter education has its own problematic aspects, but at the same time, it offers opportunities to cohorts and language groups that would not be catered to otherwise.

In the case of GCC educational institutions, such interpreter education would cover the core PSI skills outlined in Section 2; the classes would combine different working language groups, and the teaching would be undertaken only in Arabic (or only in English at institutions where English is the main language of instruction). To ensure that students engage in some language-specific practice and receive feedback, professional interpreters in the relevant languages could be employed as casual teachers or mentors. This might be a challenge for some language pairs, for which few professional interpreters are available. This and other challenges associated with multilingual PSI education could be overcome through the use of technology (e.g., online delivery of some curriculum components, remote teleconferencing with language-specific tutors) and collaborative teaching (e.g., modules or activities covered by teaching teams working cross-institutionally or even cross-nationally).

5. Professional Practicum and Employability

Translation and interpreting programs often include a professional practicum, a capstone course or module that facilitates students' transition from the classroom to the industry through immersion, observation, and/or supervised practice, followed by a final reflective report on the experiences, challenges, professional relationships, and learning involved. On the importance of this part of interpreter education, Sawyer (2004, p. 77) affirms: "Perhaps the most powerful form of apprenticeship can be achieved through a reflective practicum, which is situated both internally and externally to the educational institution. Such a practicum provides an environment that encourages reflective practice."

As indicated in Section 3, for PSI students to develop necessary and relevant skills, the course teaching and learning activities must be close to real-life public service encounters. This also means that students need not wait until the final practicum to be exposed to the reality of public services and PSI professional practice. As Corsellis (2008, p. 72) notes, PSI education often involves observation visits to relevant public services and presentations and role-plays by public service staff, such as doctors, social workers, and police officers. This exposure may be extended further by allowing students to undertake their practicum as an ongoing subject throughout their degree program rather than as a discrete bloc at the end, as is usually the case. The underlying rationale for a last-stage practicum is that students need to be equipped with the necessary theoretical knowledge and practical skills before they are sent out to a placement. However, depending on what the administrative and logistic environment allows, they will probably benefit much more if a practicum placement is arranged for them from early stages of their education

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program (e.g., Trede & McEwen, 2014, on early placement experiences). This would allow them to engage in a cyclical interaction between reflective learning and reflective practice. Understandably, beginning students would not be expected to engage in supervised practice, but their involvement could be gradually planned to go from on-site observation to supervised interpreting in noncritical encounters. This experience would enable students to better contextualize and comprehend the contents of their learning program and would trigger interesting observations, questions, and reflections, which they would bring into the classroom as active participants. Especially in countries or domains where PSI has not yet been professionalized, students in a practicum placement would also be likely to question existing practices. As Trede and McEwen (2014, p. 28) state, one pedagogical purpose of workplace learning is "to enable students to question the practices they observe on placement and use placement experiences to trigger reflection and search for new knowledge and deeply understand theoretical relevance." Some students may also be negatively affected by less professional practices (e.g., noncompliance with ethical standards), which is an additional reason for teachers to provide debriefing sessions and/or provide corrective feedback when they become aware of such undesirable influences.

Many translation and interpreting programs in GCC countries already have a practicum component (e.g., the Master of Arts in Translation and Interpreting at the American University of Sharjah, UAE, or the translation stream of the English and Translation undergraduate program at Effat University, Saudi Arabia). In a PSI program or a translation and interpreting program with a significant curricular share for PSI, the practicum would offer placements in particularly relevant settings (e.g., courts, police stations, ports of entry, hospitals, pilgrimage sites). Where applicable, practicum students would undertake their observation and interpreting practice under the supervision of a professional interpreter. When this is not possible, supervision could be provided by relevant staff at the public service entity, in collaboration with the program teaching staff or practicum coordinator. At early stages of the practicum, even unsupervised observation of institutional settings would be extremely useful. Like other aspects of the curriculum, the practicum would need to be carefully planned and its learning outcomes, requirements, expectations, and assessment criteria clearly outlined—not only in the program documentation processed internally or externally for approval but also in the information provided to students.

The importance of a practicum cannot be stressed enough, especially in a translation and interpreting education context such as the Arab world, where students are exposed to much more theory than practice (En-nehas, 2018, pp. 50–51). A practicum would provide valuable opportunities for programs and universities to engage with their social environment, local and national public services, and relevant industries. For students, it would enhance employability in at least three different ways: (a) It would enable them to develop their interpreting skills and institutional knowledge further, thus bringing them up to, or closer to, professional performance standards; (b) it would assist in their socialization and identity development as members of a PSI community of practice; and (c) it would allow them to develop their own professional network, including in the practicum organization, which would later facilitate access to employment.

6. Conclusion

The Gulf States are home to millions of non-Arabic-speaking workers. Millions of non-Arabic speakers also visit for religious and other purposes. These speakers of other languages engage with local public services of different types (healthcare, police, courts, immigration, etc.). These interactions and transactions between Arabic-speaking (and sometimes English-speaking) public service staff and speakers of other languages require professional interpreting services to overcome the challenges of language diversity in institutional settings. For migrants and visitors from South Asia and elsewhere to communicate effectively with doctors, lawyers, police officers, religious service providers, and so on, qualified public service interpreters are essential. Only adequately educated and appropriately selected interpreters can bridge the communicative gap in these settings.

Public service interpreter education is still an area requiring attention and development in GCC countries. When universities and program leaders are in a position to propose new education initiatives to address the existing needs, they will have a body of relevant publications and curriculum design experiences at their disposal. Work done elsewhere around the world in PSI research, curriculum design, and teaching can offer GCC curriculum

developers a strong foundation to build upon. Rather than reinvent the wheel, curriculum designers and teachers in the region can draw on the PSI training experiences of such countries as Australia, Spain, the United Kingdom, and the United States. Existing literature also provides guiding principles in relation to institutional settings, the position of theoretical knowledge, essential PSI skills, teaching methods, and learner resources. The literature also suggests that a hands-on approach to teaching and learning, accompanied by or concluding with an internship or practicum, is effective not only in developing students' interpreting skills and other competencies but also in enhancing their employability and professional integration.

However, although PSI programs within the GCC can usefully draw upon experiences from other countries, it is indispensable for designers to examine and consider the existing local needs and resources and to adapt course objectives, contents, teaching methods, and delivery modes to the strengths and constraints of the local environment.

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Endnotes

1   Dialogue interpreting is another term that is commonly used to refer to public service interpreting, although it may also cover other settings, such as business and media interviews.
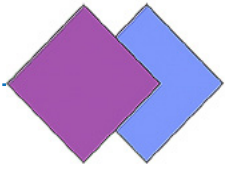
Re-examining "Practice" in Interpreter Education

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Abstract

In this commentary, the authors explore "practice" in interpreter education. They outline differences in meaning and usage of the term, including the notions of "reflective practice" and "deliberate practice," discuss the importance of high-quality skill development-focused practice (SDFP) in skill acquisition, and call for a systematic program of research into SDFP in interpreter education, particularly within the context of dialogue interpreting.

Keywords: skill development-focused practice, deliberate practice, reflective practice, interpreter education, dialogue interpreting

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Practice activities aimed at skill acquisition and development ("skill development-focused practice," or SDFP) are fundamental to the attainment of professional-level ability in interpreting (Motta, 2011; Schafer, 2011; Tiselius, 2018). As a group, the authors of this commentary have varied backgrounds and experiences with SDFP[1] in interpreter education, encompassing spoken language interpreting (conference and public service) and signed language interpreting, in settings ranging from vocational to university-level. In this commentary, we draw on our collective knowledge and expertise to define SDFP and argue for more systematic exploration of it in interpreter education of all types and levels, but particularly in the context of dialogue interpreting.

One challenge we face in discussing practice is the fact that the term has several commonly used meanings. To illustrate a few, we may put knowledge into practice (that is, apply or make use of), practice a profession (that is, exercise or carry out), engage in good business practices (routine habits or ways of doing things); and practice piano or sports or even interpreting (engage in activities aimed at increasing skill or proficiency). In addition, two compound terms including the word practice are frequently encountered in research and education: *deliberate practice* and *reflective practice*. The sense in which the word *practice* is used and the concept being described are different in these two compound terms, as further explained below.

Deliberate practice is a term used in research, primarily within the area of expertise studies, to describe and identify the type of exercises that very successful performers engage in to become highly proficient and to sustain their level of performance. If we apply this concept to a pianist, it would be understood as the complement of exercises and activities that the player carries out with the specific aim of improving their skills. These may consist, for example, of daily arpeggios, rehearsal of a new piece, private classes, playing together with peers, and so forth. These exercises are also characterized by the fact that they are goal-driven and often include feedback. The concept of deliberate practice was introduced by Ericsson et al. (1993) and has been challenged by, for example, Hambrick et al. (2020) and Miller et al. (2020). In interpreting, deliberate practice has been used as a concept in research on expertise in interpreting by a number of authors, including Hoffman (1997), Ericsson (2000), Moser-Mercer (2000), Ivanova (1999), Motta (2011, 2013), and Tiselius (2013).

Reflective practice, on the other hand, is a term used primarily in the contexts of teaching and professional activity and refers to how professionals carry out their work. A professional who applies a reflective framework is one who allows time for discussion and evaluation about their work to learn from previous experiences. As Tipton and Furmanek (2016, p. 29) explain, "[I]n continuing professional development, reflective practice can be a useful way of evaluating experiences in the workplace as it encourages their externalization and verbalization." To carry out one's work reflectively also implies having an open mind or an open climate, if working in groups, to allow for unbiased discussions and debriefings and receptivity to new ideas. The concept of reflective practice has been discussed in connection with interpreting by, for example, Tipton and Furmanek (2016), Dean and Pollard (2013), and Bancroft et al. (2015).

As becomes clear from these descriptions, there is a notable potential for confusion, given the need to distinguish between deliberate practice as described by researchers, skills-focused practice (as part of skill acquisition and development), and reflective (professional) practice in general. In this paper, our focus is on the sort of practice activities carried out in interpreter training programs, which are aimed at developing the skills needed to competently carry out a complex performance task (namely, interpreting). We argue that use of the label *deliberate practice* in classroom/educational settings is potentially problematic and that *reflective practice* is a professional rather than a training concept. Therefore, we suggest the label SDFP for the type of activity we describe. Admittedly, SDFP is closely related to, and in some aspects overlaps, deliberate practice and reflective practice. Research focused on deliberate practice and expertise in interpreting undoubtedly informs SDFP as carried out in training environments, but we believe that defining and labeling the goal-focused practice typically present in a learning environment is valuable and necessary.

Given the consensus that practice (in the sense of engaging in activities aimed at increasing skills or proficiencies) is a sine qua non for skill acquisition (Anderson, 2015), one important question to consider is whether all practice is created equal. The literature on expertise and skill acquisition suggests that the answer to this question is "no"—that high-quality practice that is more likely to lead to improvements in skill has certain characteristics. This view

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1　　We recognize that this name and acronym may prove unwieldy; it does, however, clearly describe the concept.

of practice is closely associated with Ericsson et al.'s (1993) notion of deliberate practice (see also Ericsson, 2006, 2021), as previously mentioned.

Multiple definitions of deliberate practice appear in the literature; see Hambrick et al. (2020) and Ericsson (2021) for in-depth discussion of the concept. For the purposes of this commentary, we quote Ericsson (2000), from the journal *Interpreting*:

> Improvement of performance was uniformly observed when individuals, who were motivated to improve their performance, were given well-defined tasks, were provided with feedback, and had ample opportunities for repetition. (p. 193)

This definition highlights a number of important features of high-quality skill-focused practice:
- it requires motivation, a desire to improve one's skills;
- the tasks given to the learner are structured and clearly delineated;
- practice is seen as a cycle, rather than a 'one-and-done' task;
- learners are provided with opportunities for practice;
- feedback is provided to the learner

To these we would add (see also Herring, 2015; Herring & Swabey, 2017; Motta, 2011)
- systematic planning and structuring of the learning experience--individual practice activities fit into a planned, coherent learning progression
- goals for practice activities that are specific, achievable, measurable, and clear to the learner
- feedback that is regularly provided to the learner and is tailored to the goals of the activity and its place/ purpose in the learning progression
- learners engaging in self-assessment and reflection
- practice is seen as an integral part of skill acquisition, requiring sustained focus and investment of time and energy

See also Figure 1.

Figure 1. The building blocks of deliberate practice (Motta, 2013).

At this point, it is important to clarify a couple of points related to the notion of deliberate practice. Ericsson et al. (1993) argue strongly for deliberate practice as the crucial mechanism explaining superior performance (see also Ericsson, 2006, 2021). Other scholars (e.g., Hambrick et al., 2020) take issue with this view, arguing that although practice may be an important factor in the development of expertise, it is not the only determinant. However, even those who are skeptical about deliberate practice being the sole explanation for development of expertise do not dispute the importance and effects of sustained, focused practice. The issues pointed out by such authors as Hambrick et al. (2020) are primarily related to the definition of deliberate practice employed in research studies, the relative size of effects in study groups, and so forth. We argue that the point made by these authors—that deliberate practice is not the only explanation of expertise—does not mean that high-quality SDFP is useless or unimportant or that educators should abandon approaches that are informed by the notion of deliberate practice. We can recognize that practice is only one component of the development of skilled performance ability and that not all practice is created equal and still work to better understand and implement approaches to practice that will effectively support learning and performance.

Research carried out within the framework of expertise studies focuses, to a large extent, on the identification of 'experts' whose performance meets specific criteria that allow them to be identified as such, description of said experts' performance, and investigation of the factors that led to or enabled development of their expert-level performance. The notion of deliberate practice is closely associated with this research paradigm; indeed, as described above, some researchers identify it as the primary explanation for the development of superior (expert) performance.

In the context of interpreter education and education-focused research, the primary goal is not to identify or separate 'expert' performers, study their performance, evaluate and compare more- or less-expert performers and point out the characteristics of their performance, or establish where one stands in relation to a given level or criteria for performance. Rather, the goal is to support learners (novices) as they develop their skills and become proficient practitioners of interpreting and to prepare them for continuing development throughout their careers. The educational focus on acquisition and improvement of skills is compatible with the expertise paradigm and the idea of deliberate practice, but the focus of educational activities should, in our view, be first and foremost on learning and development. Moreover, given that deliberate practice is a (somewhat controversial) accepted concept—a term of art—within expertise studies, borrowing it wholesale for application within the context of interpreter education may, in our view, lead to confusion and muddying of the concept. Thus, although we support and advocate for the inclusion of high-quality practice, characterized by the features mentioned above, in interpreter education and training, we prefer not to employ the term *deliberate practice*. Rather, in the interests of clarity and precision, we use the term SDFP to refer to activities and exercises employed to improve and develop interpreting skill, whether inside or outside a classroom environment.

Although reflective practice is by no means as controversial an issue as deliberate practice, in this context, it differs in scope, as discussed above. Tipton (2014) describes it in terms of growing into a reflective professional and taking ownership of the learning process. She also ties it to the metacognition of the learner. Hetherington (2012) describes reflective practice used in a professional context through supervision and debriefing. Compared to deliberate practice, the teaching and exercising of reflective practice have received less research focus in interpreting studies (although they are more frequently addressed by authors focused on interpreting signed languages; see, for example, Dean & Pollard, 2013). In our case, we argue that SDFP contributes to becoming a reflective practitioner and that some parts of SDFP surely overlap with reflective practice. Yet, just as argued in the case of deliberate practice, we put forward that in interpreting training, there is a need for the more specific concept that we call SDFP.

Given the relevance of high-quality SDFP for interpreting skill acquisition, we would expect it to be a subject that generates considerable interest and research. A number of papers discuss or touch on skills-focused practice in interpreting, often in the context of assessment, self-assessment, and metacognition (e.g., Cañada & Arumí, 2012; Gile, 2009; Maximous, 2017; Moser-Mercer, 2008; Motta, 2016; Ozolins, 2017; Postigo Pinazo, 2008; Schafer, 2011), but, to our knowledge, no systematic program of research into skills-focused practice has been implemented.

A scan of didactic materials suggests that inclusion of material related to effective skills-focused practice is more common in textbooks/manuals aimed at students of signed language interpreting and conference interpreting than in those aimed at dialogue interpreter trainees. For example, such textbooks as Patrie's (2000–2018) 10-book *Effective*

Interpreting series, Taylor's (2002, 2017) *Interpretation Skills: ASL to English*, and Maroney et al.'s (2019) *Integrated and Open Interpreter Education* encourage trainee signed language interpreters to engage in systematic, skills-focused practice to improve skills and remediate areas of weakness. Such manuals as those of Gillies (2013) and Setton and Dawrant (2016) focus heavily on the role of practice in the development of conference interpreting skills and include recommendations for effective practice and detailed instructions for learners. Arguably, the books mentioned above can also be used by dialogue interpreting students, but the knowledge and skills required in dialogue interpreting contexts differ slightly, as do the usual conditions of work. Moreover, it is reasonable to have on the market textbooks tailored to specific needs and contexts that contain examples designed for the intended audience of students.

In contrast, in many manuals aimed at spoken-language dialogue interpreting students, skills-focused practice is implicit or briefly touched on but is not a major focus. In particular, many authors focus on setting-specific aspects of dialogue interpreting (e.g., context, setting, vocabulary, cultural dimensions, ethical dimensions, interactional dimensions) and discuss classroom activities, including role-playing, but they do not generally dedicate significant space to presenting the core cognitive skills of interpreting as a set of skills and knowledge to be developed in a systematic, stepwise fashion. Self-assessment and reflection are also discussed, but generally not in depth or with extensive exploration of relevant theoretical frameworks. The following, from Lee and Buzo (2009, p. 1), is illustrative:

> In all modes of interpreting, interpreters need to monitor their performance. Accurate interpreting of the source message and smooth delivery without hesitations, long pauses, or frequent self-correction are essential hallmarks of quality interpreting.
>
> Therefore, we strongly recommend that you record your interpreting from the passages in each unit for self-monitoring. Whether consecutive interpreting, dialogue interpreting or sight translation is involved, your client or the person who depends on your interpreting should find your rendition smooth and natural, not hesitant and repetitive. The aspiring interpreter should be under no illusion about the enormous amount of work required to achieve this standard.

We agree with the premise that self-assessment, reflection, and development of critical-thinking and self-monitoring skills are fundamental to skill acquisition and the development of professional-level interpreting skills. However, simply instructing learners to "reflect" and "self-assess" is not sufficient. Although we quote from Lee and Buzo (2009) as an example, their approach to the topic is not unique. We certainly do not wish to single out or criticize their manual, or any other volume. Rather, our wish is to point out a gap in the available materials. Critical reflection and self-assessment are skills to be acquired, just like interpreting skills, and learners are likely to require active support and scaffolding from instructors to develop their abilities in this area (see, for example, Beard & Wilson, 2013; Bown, 2013; Evans, 1999; Han & Fan, 2020; Li, 2018). We cannot expect learners to automatically know what we mean by the instruction to "self-assess"; rather, they need guidance with regard to such aspects as relevant parameters and benchmarks for their current level of skill. Despite this need, there is a dearth of research—especially within the field of community/public service interpreter education—focused on effective structuring of SDFP and scaffolding of learners as they develop their ability to practice effectively.

We also argue that although the existing literature provides a theoretical basis for considering the characteristics of deliberate practice discussed above to be sound approaches to encouraging the development of effective SDFP habits, many questions remain. Tiselius (2018, p. 141) notes that "deliberate practice is not studied in a satisfactory way in interpreting studies. Deliberate practice in interpreting deserves more quantitative and qualitative studies before we can remove it from the list of skills necessary to become an expert interpreter." This observation applies equally well to interpreter education if we insert "SDFP" in place of "deliberate practice."

We thus encourage educators and researchers to engage in research and discussion aimed at increasing our understanding of the place and function of SDFP in interpreting skill acquisition and of effective practices for developing SDFP skills in interpreting trainees, particularly in the context of dialogue interpreting. Research questions that merit further investigation include the following:
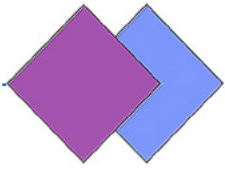
- Does an approach modeled on the characteristics of highly effective practice, as discussed above, lead to greater/more efficient gains in interpreting skill acquisition?
- What factors or characteristics of the learning environment, with specific reference to SDFP, tend to support or hinder the acquisition of interpreting skills?
- How can learning and practice activities be structured and scaffolded to increase the efficacy of SDFP?
- How do individual characteristics influence the learner's ability to engage with and benefit from SDFP? Areas of specific interest might include motivation, mindset, anxiety/stress, metacognitive/self-regulatory characteristics, and linguistic fluency, among others.
- What role does feedback play within SDFP approaches to teaching and learning? What are the characteristics of effective feedback on SDFP?
- How can SDFP be contextualized in order to form an effective part of a range of learning environments (e.g., differences in course length, course setting/level, learner profiles)?
- What role does SDFP play in continuing education/lifelong learning?

A systematic program of inquiry focused on such questions is necessary, in our view, to clarify the characteristics, structure, and effectiveness of SDFP in interpreter education, with the end goal of facilitating learners' acquisition of interpreting skills and, thereby, improving the quality of the interpreting services they will one day provide.

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Shades of Us:

The Need for Culturally Pluralistic Educational Tools and Practices in ASL-English Interpreter Education

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Abstract

The aim of this paper is to detail one professor's use of storied experience as a strategy to engage and stimulate interpreting students. It also maps out a proposed dream project intended to move students past the confines of interpreting classrooms and toward an exploration of community that spans time.

Keywords: culturally responsive, cultural pluralism, storied experience, diversity, inclusion, experiential learning

1. Introduction

In the fall semester of 2020, as a third-year faculty member in the Department of Interpretation and Translation at Gallaudet University, I was assigned to teach my first graduate-level course, History of Interpreting (INT 701). The course was intended to map the trajectory of the emerging field of signed language interpreting by spotlighting milestones from 1800 to the 21st century. The prior syllabus contained this objective: "students undertake a discovery to understand how signed language interpreting and translation has evolved, as well as its relationship to the history of spoken language translation and interpreting."

Considering Bloom's taxonomy (Armstrong, 2010), I noticed immediately that the course didn't go beyond the first level of learning to "retrieve, recall or recognize relevant knowledge" to the advanced levels of evaluation, creation, and the ability "to put elements together to form a new coherent or functional whole" (p. 1). I also observed that "culturally pluralistic perspectives," a phrase initially coined by philosopher Horace M. Kallen in 1915, was limited in the course design (Ratner, 1984, p. 185). For all its strengths, to my eye, the syllabus seemed slightly "color-less"—that is, the historical lived experiences of many people were not represented in the assignments. As one of two faculty of color in the department and the only Black faculty member, I was highly motivated to include "shades of color" by filling in the missing pages of those who have been absent from the history of the interpreting profession.

In this commentary, I describe how my own lived experiences as a Black individual shaped the philosophy I bring to interpreter education. I discuss my attempts to include more diverse voices in my courses. I share ideas and resources for implementing changes in interpreter education programs (IEPs). Finally, I conclude with my own dream of creating a culturally pluralistic video repository that could be used by IEPs.

2. My Formative Experiences

Perhaps the seeds planted by my parents, who came of age in a segregated America, taught me the importance of education as a tool. By promoting educational achievement, they pushed me to see beyond what is and gave me what I needed to create a world of possibilities. When faced with an obstacle, I used the pursuit of knowledge to light my path and the path of those around me. The metaphor of "lighting pathways" was one of the many gifts I received from my mother. When I was growing up, she methodically supplemented my public-school education by coloring in shades of experience through the diverse voices of such individuals as Sojourner Truth, Shirley Chisholm, Maya Angelou, James Baldwin, Frederick Douglass, and a host of others. When I had questions, she continually pointed me to reference materials, such as encyclopedias of Black history. She also made things personal by proudly relating stories about successes within my own family. In addition, my well-traveled mother would encourage me to think more broadly with such statements as "You gotta get out of your zip code, Pam!" These early formative experiences (and many others) made me acutely aware of the incompleteness of the American narrative taught in public schools. That same gap also exists in IEPs, and when I became a faculty member, I was eager to guide students to gateways like those that were made available to me.

In many interpreting programs across the United States, students of color study in isolation. I was struck by this during two presentations in the Department of Interpretation and Translation. One Black graduate student's research topic was titled "Same Degree, Different Story? Exploring the Experiences of Students of Color in Interpreting Programs." The second research presentation given by an undergraduate student was titled "I'm Here—Where Are the Rest of Us?" These students' work catapulted me back to my own academic isolation as a Black IEP student and my first semester as a Black faculty member. What became salient through the students' presentations and upon reflection on my own journey is that students of color frequently speak about feeling supported, nurtured, and "brought up" in their home communities but unsupported in the mainstream academic community. Clearly, there is much work to be done.

This sense of isolation is felt in many ways, in the classroom and in the professional community. For example, marginalized communities may only be called upon to interpret for specific events, such as those held during Black History Month. However, those same interpreters are often not considered for nonspecialized events, such as a routine assignment on any given Monday at 2:00 p.m. As a result, my person-of-color colleagues have expressed feelings of

anger, frustration, and being devalued. The pattern is cyclical, and each time it occurs, it opens old wounds from scars still visible. Although I recognize and have researched this cyclical pattern of scheduling interpreters (Collins, 2020), I have even found myself venting, "I am not interested in cultivating relationships with individuals and/or agencies who only call me one month out of the year when they need me for a specialized request. I am building community partnerships with those who know me so well, they don't have to search for me in February—or any other day, for that matter." My proposal in this paper is that interpreter educators can create a rich "12-month experience" for all interpreting students by integrating diversity across the entire program.

My reflections are woven into a larger collective story, which has become an integral part of my teaching philosophy. I believe that each one of us is the sum of every moment we've ever experienced with all the people we've ever known. I believe that these moments become part of our individual and collective history. Using this view, I argue that interpreter education instructors can incorporate these collective moments by creating space for them in the curricula. Historically, rich narratives by marginalized groups have been tucked away, off the beaten paths of academia, due to centuries of mistrust, harm, and communities' need to protect the stories of their past. Consider, for example, the story of the Black Wall Street, which was kept hidden from public consumption for more than 100 years. Similarly, Viola Fletcher, 107 years old, recently shared her experience of the Tulsa, Oklahoma, massacre at a hearing before the U.S. Congress, concluding her remarks by saying, "Our country may forget this history, but I will not."

At this point in the article, you may be nodding your head in agreement, saying, "Yes, Pam, I get that we need change. But how?" I suggest that we make changes by consciously and thoughtfully gathering, preserving, and incorporating rich, storied experiences into our pedagogical approaches. Perhaps it is helpful to consider the metaphor of learning as a tunnel of wisdom, with educators mapping a pathway to knowledge. With respect and in partnership with learners, people's stories illuminate and light the way through the tunnel.

3. My Own Growth in Teaching

My introduction as a full-time faculty member in Gallaudet's program began by teaching two undergraduate foundational courses—Fundamentals of Interpreting (INT 325) and Discourse and Analysis: Field Experience I (INT 346). Both courses provided fertile ground needed to plant the seeds of my thinking about creating an inclusive classroom. Admittedly, in these early semesters, I barely scratched the surface with my efforts when I incorporated the tools and resources that I believed were missing in the classroom. Later, I moved beyond merely providing resources to employing more holistic approach of effective and sustainable strategies in the classroom. This change was reinforced by training I received at Gallaudet through a Multicultural Training Institute (MCTI), which helped me pivot past focusing solely on classroom resources and solidify my own teaching philosophy. I became anchored to the pedagogical frame of culturally responsive teaching, a concept advanced by Ladson-Billings (1995). I came to realize that it was not necessary to reinvent the educational wheel; rather, the goal of teaching and learning is to "read between the lines and connect beyond the pages" (Ladson-Billings, 1992, p. 312). That is, the aim is to connect students to a robust body of knowledge and experiences that already exist but have traditionally gone missing from the history books, thereby creating opportunities to produce new knowledge projects.

Being assigned to teach History of Interpreting finally provided the opportunity I needed to fashion a pluralistic view of history by using a culturally responsive frame. I assigned traditional texts as a springboard but incorporated new activities in which students explored narratives not captured in the pages of history. I guided students through an assignment in which they were instructed to answer three specific questions about the era being studied: (a) what was going on in the world during this era, (b) what was going on in the interpreting community (interposed by examining interpreting models during the era), and (c) whose voices were missing from the narrative? Students worked together to co-construct a historical timeline, develop an annotated bibliography, and select community guest speakers for the class based on their explorations. All their efforts culminated in a final research project called "The Missing Pages." Ultimately, the students' stories traversed points along the total historical timeline based on their interests and, as a result, spotlighted marginalized communities by "writing in" the narratives they had collected.

The adaptation of a pedagogical approach rooted in plurality resulted in students' curiosity and wonder at their points of discovery. Foregrounded in this learning was Adichie's wise warning about the "danger of a single story" (2009, p. 85). Evident immediately was the value of beginning with one initial story that connected to another and another until, ultimately, unbounded by the classroom walls, students' contributions merged with presenters, mentors, and community partners. Thus, in the course, we worked to cultivate multiple conversations spanning decades that would lead to historical revelations for the students. As Bloom (1956) would put it, we worked as a collective to create a "new, coherent, or functional whole" (Armstrong, 2010, p. 1).

In this section, I have briefly recounted my teaching experiences to document how my students (and I) grew and were shaped over time in an iterative process. In the next section, I offer five ideas for your consideration about how your own classrooms might evolve as well.

4. Creating Plurality in IEP Classrooms

The devastating social events of 2020 remind us that change is often borne of painful experiences. But such tragic experiences can also lead to hope. People across the globe are now more firmly planted in their rejection of the status quo of representation as established by educational, institutional, and governmental systems. A crucial societal transformation is the acknowledgment and inclusion of underrepresented minorities—that is, groups whose percentage of the population is lower than the population in the country. Inclusion means including people of color, members of various socioeconomic classes, persons who are LGBTQ, senior citizens, veterans, persons with intellectual and developmental disabilities, persons with mental illness, prisoners, persons with diverse gender identifications, and immigrants, among others.

As these changes transform societal systems, interpreter educators are also reexamining their systems. Programs are seeking ways to create plurality among their faculty and students and in their curricula, including diverse representation in guest lecturers, books and other readings, source language materials, course activities, admissions criteria, mentor selection and placement, and faculty lectures. The intentions are in place, but in what concrete ways can IEPs include individuals who historically have been underrepresented? What can individual interpreter educators do in their classrooms? How can community stakeholders be a part of this movement?

I offer five suggestions for ways to move forward with creating greater plurality in interpreter education classrooms and programs. Perhaps some of these ideas are already in the works within your programs, but I encourage us all to consider our specific dreams and how we can turn them into reality. My hope is that these ideas will provide you with a few seeds to cultivate your dreams for your programs.

Idea 1. Broaden and Fortify Your Current "People Links."
I suspect that your program has developed a set of "people links"—that is, a list of individuals who regularly serve as guest lecturers, mentors, language coaches, and in other roles for students. However, this may be the time to revisit and reinvigorate your list of "regulars" to include individuals whose voices are rarely heard in your program. Some ideas of how to cultivate relationships with these individuals are provided below. Further, seek out opportunities to connect authentically through direct dialogue, informal mentoring, and, perhaps ultimately, co-creating a video repository (see my dream project below).

Idea 2. Seek Out, Create, and Incorporate Seminal Information in your Classrooms.
A rich body of information exists that can address questions that have gone unanswered within IEP programs. In this brief commentary, I can only scratch the surface of available resources, but I provide a sample of related literature (i.e., research-based, narratives, websites). In addition to resources, I encourage you to create opportunities for students to partner with others to create new resources that can be incorporated in your classrooms and shared with other educators. Below are a few samples of culturally pluralistic perspectives:

- Research: *Persistence of African American/Black Signed Language Interpreters in the United States: The Importance of Culture and Capital* by Erica West Oyedele (2015); *Interpreting While Black* by Folami Ford

(2021); *Navigating Language Variety: ASL/English Interpreters: Giving Voice to African American/Black Deaf Signed Language Users* by Nicole Shambourger (2015)

- Websites: Joseph Hill (https://www.josephchill.com/); RID demographics, Signing Black in America (https://www.talkingblackinamerica.org/signing-black-in-america/)
- History: Black and Deaf in America by Ernst Harrison (1983); *The Encyclopedia of Black History; Black Perspectives on the Deaf Community* by Fuller et al. (2005)
- Linguistics: *The Hidden Treasure of Black ASL* by Carolyn McCaskill (2011)
- Biographies: *Unspeakable: The Story of Junius Wilson* by Susan Burch and Hannah Joyner (2007); "*Miller v. Board* paves the way for *Brown v. Board*" (https://www.facebook.com/DeafThat/videos/deafthat-miller-v-board-paves-the-way-for-brown-v-board/2671398726269165/)
- Presentations: "Is Diversity a Mask for Tokenism in the Field of Sign Language Interpreting" by Tiffany Hill (https://streetleverage.com/2018/02/is-diversity-a-mask-for-tokenism-in-the-field-of-sign-language-interpreting/); *Implicit Bias* by D'Lisa Robinson
- Video Resources: The National Visionary Leadership Project (http://visionaryproject.org/); the National Multicultural Interpreter Project (https://pdf4pro.com/cdn/training-of-interpreters-for-individuals-who-are-270eb.pdf)

Idea 3. Connect with Key Organizations.

Link with your local and national organizations to build a larger community of learning and practice. Teach students about authentic connections by modeling them through service-learning experiences with various organizations. Encourage students to engage in current, critical conversations taking place in the interpreting field. Have students volunteer with deaf community organizations. A few examples of organizations in the D.C. metropolitan area include but are not limited to the following:

- National Black Deaf Advocates (NBDA; https://www.nbda.org/)
- District of Columbia Area Black Deaf Advocates (DCABDA; https://www.nbda.org/local_chapters/district-of-columbia-area-black-deaf-advocates)
- The National Alliance of Black Interpreters - DC (NAOBI-DC; https://www.naobidc.org/)

You may also attend major conferences to connect with other interpreting faculty from other institutions. Finally, become familiar with existing programs and organizations in signed language interpreting that provide minority fellowships to pre- and postdoctoral trainees.

Idea 4. Use Local Resources to Build Partnerships.

In D.C., we are fortunate to have an array of museums and institutions to draw upon and with which create partnerships. I feel certain that each interpreting program has local resources as well. Here in D.C., a few that I call upon include:

- National Museum of African American History and Culture;
- Ford's Theatre;
- Howard University (a historically Black college and university that is Gallaudet's sister university);
- National Museum of the American Indian; and
- National Great Blacks in Wax Museum (Baltimore, MD).

Idea 5. Create a Passion Project to Address the Needs in the Classrooms and the Community.

The sky's the limit on creating a passion project. Are you familiar with the concept of developer labs? Technology giants, such as Apple and others in Silicon Valley, use developer labs to provide up-and-coming information technology students with a platform to create their dream software or programs—"sandbox" to test their ideas. Gallaudet University is fortunate to offer similar opportunities through its Innovation and Entrepreneurship

program. Students, interns, and individuals serving as apprentices can apply what they learn in classes, workshops, and training and use any gaps identified to develop new possibilities. Mentors and instructors guide the learning by using their wisdom and experience.

I'm sure that you are aware of the gaps that exist within the field of interpreter education—specifically, those around teaching and learning, training and application, and tools and resources. Perhaps you can be the one to create spaces, such as interpreter think tanks, TerpTrans labs that allow students to dream, design, and later disseminate a passion project that is their answer to what is missing in the field. In doing so, students join communities of practice and learning.

It is my hope that these five ideas may spur your imagination regarding the steps you can take as an interpreter educator to build on your vision of a more pluralistic classroom.

5. Shades of Us

In this section, I provide a brief description of my own dream project, tentatively titled "Shades of Us." My dream is the creation of an oral and signed history archive that is designed to capture the shades of experience currently missing in interpreter education. I envision a video repository of storied experiences to showcase members across the globe. This proposed project will be designed to collect, preserve, and disseminate first-person narratives while simultaneously creating an electronic archive for the education of interpreting students in communities, schools, colleges, and universities across the United States. The vision is that the stories would represent people in the community as they go about their "everyday" lives, capturing their lived moments and reflections of milestones in their journeys.

The dream of "Shades of Us" is to create a resource/repository of diverse representation that will provide a resource for interpreting students to practice their craft with videos of everyday people who are living their authentic lives. This project will video-record interviews of first-person narratives with individuals whose lifework has had a positive and lasting impact on the community, as well as other narratives, gems that have been tucked away, waiting to be uncovered. In my effort to link novice interpreters to seasoned interpreters, I will collaborate with interpreting students and various members of the community, providing each partnership with the opportunity to link through direct dialogue (the interview process) and informal mentoring, which will ultimately result in a video record to be included in the dynamic video repository. I envision these videos as showcasing individual and collective histories, life lessons, and coming-of-age stories.

The mapping of the stages of the "Shades of Us" project is rooted in my long-time partnerships with Black and Brown members of the deaf community and the mutual trust developed over the last 24 years of my involvement. Although I am still in the early stages of musing, I envision my dream of a video repository as involving a four-stage approach:

Stage 1: Mapping the Goal in Community Partnership
The first stage of this project will be to establish a core team of community partners who will provide creativity. leadership, connections, and commitment to the "Shades of Us" project. Because it will be a collective experience by design, each participant will be connected to the project in a way that allows for the opportunity to contribute and benefit from others. Some connections may be long-standing, and others will be forged as the project develops. "Nothing about us without us," a call for inclusion from marginalized communities, will serve as the underlying principle for this work.

Stage 2: Laying the Groundwork
The second stage will use each partner's collective talents to determine the specifics of the project, answering such questions as "What is the 'Shades of Us' mission statement?" "What types of content will be housed on the video repository?" "How will the videos be collected and made available?" "What is our budget?" "What platform will be used to house the video repository?" and "Who will be the webmaster for the project? Will that be a paid position?"

Stage 3: Funding the Project

After the partners have determined the critical components of creating and sustaining the video repository, Stage 3 will involve funding the project. Grants are a critical method used to bring visibility to community-based initiatives and provide principal investigators the opportunity to design small- and large-scale projects. Other funding sources may be available through private donors, for-profit corporations, foundations, university funds, and not-for-profits, among others.

Stage 4: Documenting and Disseminating

As a small-scale project with large-scale possibilities, "Shades of Us" will be a documented experience used to connect students to language, culture, and community and to have those interviewed become a part of the historical context of interpreter training.

"Shades of Us" is my dream, and I've got my work cut out for me. In the end, my aim is to create and offer a valuable resource that all interpreting programs can use in their classrooms. I promise to keep you posted!

6. Conclusion—Beyond Knowing to Knowledge

In this commentary, I address the urgent need to transform our interpreter education classrooms into spaces of inclusion for the entire community. I briefly share my personal formative experiences, touch on my own journey as a faculty member, and suggest various ways to capture the rich diversity of language use (in terms of people and of where people live/work in their lives).

I suggest that such resources will be helpful in recruiting and retaining diverse students to interpreting programs as well as providing a resource for training in interpreting education programs and deaf organizations. Such tools can also promote interpreting as a viable career and create better understanding about the diaspora of individuals within the deaf and interpreting communities.
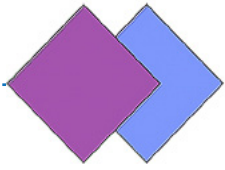
In closing, I suggest that we must speak when words are needed and share the silence when they are not to create a community of respect. To be clear, I do not support eliminating earlier documented history; rather, I suggest that we need to broaden historical perspectives by valuing knowledge that comes from experience. Indeed, it is only the sum of our parts as individuals that creates the inseparable whole of larger society. No matter what challenges may have driven us apart, we must find a way to use personal histories and cultural narratives to better understand one another.

Acknowledgments

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Book Review: *Theorising Interpreting Studies*

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Book Review:

Theorising Interpreting Studies

Over the past few decades, interpreting studies (IS) has enjoyed significant advances globally as a subdiscipline of Translation Studies (TS). Interest in IS has gained high momentum in China in the past two decades with the increasing presence of articles and theses on interpreting (p. xvii). Several publications have tried to theorize IS as a sub-discipline of TS from various perspectives (e.g., Zhong et al., 2012). Binhua Wang's *Theorising Interpreting Studies* is one of the latest works in this respect.

As the title suggests, this work, in the words of Wang, aims to "strengthen the theoretical basis of IS based on a large pool of empirical research outcomes" (p. xix). It is part of a series of books focusing on key topics in TS. Covering the latest research outcomes in IS, this book is intended for postgraduate research students in IS, interpreter educators, and interpreting researchers. However, it should be noted that because the book is written in Chinese, naturally, it addresses topics that have direct relevance to Chinese readers. The choice of the target audience, to some extent, leads to the stance and perspective taken by the author in presenting this book. With the target audience in mind, the author adopts an international versus Chinese perspective to illustrate how IS has emerged and thrived across the world and in China respectively in Chapter 1. Here, the comparison is made for the Chinese reader to better situate IS in China within the international arena. However, such a perspective is dangerous because it might result in the misunderstanding that the author adopts a China-centric view. Unfortunately, the author does not adequately explain the choice of this perspective, which could lead to confusion.

The 180-page work is organized around six chapters. The introductory chapter lays out a theoretical framework of interpreting studies based on five dimensions: (a) interpreting as an activity of bilingual and cognitive operation processing, (b) interpreting as an activity of real-time information processing, (c) interpreting as an activity of communication and mediation, (d) interpreting as a sociocultural activity, and (e) interpreting as a professional skill and competence. This framework is enriched by a large number of empirical research results explored in Chapters 2–5. It should be noted that the fifth dimension is not addressed in this book, as another book dedicated to this dimension will be published soon in Chinese. Chapter 6 concludes this book by describing the current state of IS in China and offering solutions for improvement by explaining different research approaches that could be adopted. Most importantly, at the end of this chapter, Wang proposes a comprehensive research framework to systematize interpreting studies.

The introductory chapter starts with basic definitions and features of interpreting. Subsequently, the author discusses the five key topics frequently explored in IS: the nature, process, product, and effect of interpreting and the skills required for interpreting. Correspondingly, the author proposes an IS theoretical framework based on these five topics. He then provides an overview of different stages of IS with representative works in China and across the world. Specifically, the author identifies five stages for the development of IS internationally and four stages for the development of IS in China, with representative and influential works being introduced in chronological order. Lastly, the author categorizes the just-reviewed interpreting research outcomes in China and across the world into the theoretical framework that he develops for IS. This chapter is a must-read for any novice researchers to grasp the history and developments of IS and how it has become a field in its own right.

Chapter 2 presents major theories and models exploring interpreting as an activity of bilingual and cognitive operation and processing, with a focus on simultaneous interpreting and longer sessions of consecutive interpreting. The author starts by explaining *théorie du sens* developed by Seleskovitch and Lederer in the 1970s, the first "relatively systematic theory in the history of interpreting" (p. 45). Specifically, the core model and key concepts, including interpretive translation, sense, and cognitive complement, are discussed. The author then explains the Effort Models of Interpreting developed by Gile in the 1990s. Wang maintains that Gile's model can be used

for explaining and predicting the interpreting process, as it is based on cognitive theories and clearly explained through equations. In parallel, Wang also illustrates theories put forward by such scholars as Gerver (1976), Moser-Mercer (1978), and Setton (1999). Unlike previous researchers, these authors adopt a psychological approach to study the interpreting process. More recently, as Wang suggests, new approaches, such as psycholinguistics, have been applied in the study of online processing of interpreting, represented by Macizo and Bajo (2004) and Dong and Lin (2013). However, although the author acknowledges the value of applying an interdisciplinary approach toward cognitive operation and processing in interpreting, he also points out that attention should be paid to ecological validity and other variables that are at play during the process of interpreting.

Chapter 3 touches on the literature on interpreting as an activity of bilingual information processing. The author reviews studies on the mechanism, product evaluation, strategy, and operation norms during bilingual information processing in interpreting. The highlight of this chapter is the multidimensional and multimodal approach for studying bilingual information processing of interpreting proposed by the author. He remarks that "so far, there is a lack of large-scale empirical research on the effect of paralinguistic features and non-verbal features on meaning-conveying in interpreting" (p. 84). The necessity of integrating linguistic, paralinguistic, and nonlinguistic analysis as they are interconnected in interpreting is also highlighted.

In Chapter 4, the author examines studies on interpreting as an activity of interpersonal interaction and intercultural communication, with a focus on community interpreting. Subsequently, the history of community interpreting research is presented by reviewing the collection of papers from the Critical Link International conferences. The author then explains a new research paradigm generated by studies on community interpreting, represented by Wadensjö (1998a) and Roy (2000): the dialogue discourse-based interaction paradigm (Pöchhacker, 2004). Based on the literature reviewed, Wang then summarizes three perspectives and correspondingly proposes three dimensions for research in community interpreting: participant framework, discourse management and power, and face and cross-cultural communication. The rest of this chapter illustrates representative research on community interpreting in different settings and modalities, including court interpreting (e.g., Berk-Seligson, 1990; Hale, 1997; Zhao & Zhang, 2011), healthcare interpreting (e.g., Angelelli, 2004; Leanza, 2005; Wadensjö, 1998b) and signed language interpreting (e.g., Metzger, 1999; Roy, 2000), clearly mapping the field of community interpreting for the reader. The author concludes this chapter by summarizing research on community interpreting from different perspectives, such as research approaches and research methods. At the same time, he offers suggestions for improvement in such areas as data analysis.

Chapter 5 reviews studies of interpreting as a sociocultural activity from four perspectives: roles and ethics, norms, sociocultural nature, and history. Studies by Anderson (1978), Kirchhoff (1976, 2002), Shlesinger (1991), Wande (1994), Wadensjö (1998b), and Angelelli (2001) and five models of codes of conduct by Chesterman (2001) are brought to the forefront to indicate the complexity of the interpreter's roles and the necessity to enhance studies on ethics of interpreters, as "research dedicated to this topic is rare" (p. 111). As for studies on norms, besides definition and early studies, Wang reviews his own 2009 research, in which he develops a research framework to describe norms in interpreting. The author then emphasizes the importance of norms in the teaching and practice of interpreting, as it depicts interpreting in a real socio-cultural context. Against the backdrop of the social turn in IS (Pöchhacker, 2006), research on interpreting from a sociocultural perspective is investigated by the author. More and more researchers, such as Inghilleri (2003) and Ren and Xu (2013), are borrowing concepts from sociological theories, such as field, habitus, and capital, to analyze community interpreting. At the same time, other scholars (Wang and Feng, 2018) are borrowing analysis instruments from sociolinguistics to analyze interpreting from a sociocultural perspective. With regards to the history of interpreting, the author highlights studies on interpreting as a profession, major interpreting events, and famous interpreters in history as well as roles played by interpreters in historical events from a sociological perspective.

Chapter 6 concludes the book by first reviewing progress in IS in China in terms of published journal articles, theoretical and methodological frameworks, and outstanding achievements in education and corpus-based IS. However, the author points out that despite progress, topics and approaches toward IS need to be broadened and expanded. One solution proposed by most scholars (e.g., Mu and Wang, 2009; Zhang, 2012) is the interdisciplinary approach. The author further explains that interpreting researchers can reexamine the approaches in IS by reviewing the development and changes that research on translation has undergone in the past 3 decades (p. 140), echoing the appeal of Western scholars for more interaction between interpreting research and translation research at the beginning of the 21st century (Gile, 2004; Pöchhacker, 2004). Subsequently, four potential interdisciplinary approaches are explored for furthering interpreting research. With the approach, the author raises questions and possible research topics for researchers to dig into. Based on the previous review, the author develops a comprehensive framework for IS in the last section of this chapter that includes five perspectives and seven research approaches. For each approach, possible research topics are also listed and explained. With a focus on IS in China, the author also points out difficulties or problems that might arise in IS in this particular context. Therefore, he suggests that more attention should be paid to differences between studies on interpreting and on translation, linguistic and paralinguistic information, emerging community interpreting in China, and integration of interpreting theories and practices. The author believes that the interaction and communication between the two subdisciplines of TS will create an impetus to further develop TS as a whole. This chapter will be invaluable, particularly to researchers in this field, as the author points out research gaps in IS and offers insights into approaches that can be considered and adopted for future studies.

Theorising Interpreting Studies offers a systematic and theme-based overview of the field. The work provides a clear roadmap for interpreting researchers, novice and experienced. Each chapter begins with a lead-in that sets the background, outlines the main points, and concludes with a summary. Wang gives a detailed explanation for studies that he reviews and engages in a conversation among different scholars. The book also recommends, in the end, references for further research to expand the reader's knowledge in this field.

Furthermore, the biggest strength of this work lies in possible approaches and topics suggested by the author for future studies, which will help the reader, especially early-career researchers, better identify research gaps and position their research in the broader field. Historical research, for instance, is one of the approaches highlighted. The author emphasizes the importance of using first-hand materials and analyzing historical facts to further IS and even TS (p. 149).

In particular, the author should be credited for developing and proposing the multidimensional and multimodal framework for analyzing interpreted language and the comprehensive research framework that includes multiple perspectives, dimensions, and approaches, all of which are significant in guiding future research.

However, the book is not without limitations. Although the author has tried to cover as many research topics as possible, he fails to touch on some problems and emerging topics. In the last chapter, the author stresses that researchers should closely follow the latest developments in the industry. Unfortunately, this book overlooks recent trends, such as remote interpreting. In Pöchhacker's (2016) view, the role of technology is no less a long-standing issue in interpreting than is globalization. "The most visible manifestation of 'the technologizing of interpreting,' to adapt Ong's (1982) phrase, is remote interpreting" (Pöchhacker, 2016: 217). Given the effects brought about by the COVID-19 pandemic, it is foreseeable that the increasing use of technology in interpreting will trigger more studies in this area. This opinion is supported by the research project of Ecole Supérieur d'Interprètes et de Traducteurs (ESIT).[1] A year into the COVID-19 pandemic, ESIT surveyed 946 experienced professional interpreters from seven regions and 19 countries, 78% of whom are members of an interpreter professional association. The findings show that 64% would like to keep working on remote simultaneous interpreting assignments. However, the author fails to review important studies in remote interpreting (e.g., Braun, 2013) or to call attention to the significance of studying the relationship between new technologies, translation, and interpreting (Carl & Braun, 2017). In addition, the book might be theory-heavy for those new to this field or those who do not read academic texts regularly. This volume is probably suited to an experienced readership.

Potential for improvement notwithstanding, on the whole, not only is *Theorising Interpreting Studies* essential reading for anyone wishing to pursue research in IS; it is also certainly bound to appeal to all those involved in this field, whether as trainers, practitioners, or researchers. It represents an outstanding contribution to this field of research and doubtlessly will play a role in systemizing IS in its own right.

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Endnotes

1 https://ec.europa.eu/education/knowledge-centre-interpretation/news/esit-research-project-remote-simultane-ous-interpreting_en
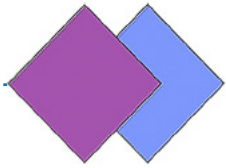
Dissertation Abstract

Exploring Healthcare Interpreting for Chinese Immigrants in New Zealand: Current Practices and Stakeholder Perspectives

In this section, we feature abstracts of recently completed doctoral or master's theses. If you have recently completed a thesis in the field of interpreter or translator education and would like it to be included, please send your abstract to IJIE@cit-asl.org. We urge all academic supervisors to encourage their students to submit abstracts of their completed dissertations for inclusion in the next issue of the journal, in order to help disseminate new research and to support the next generation of academic researchers.

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University of Auckland

Main supervisor: Dr. Vanessa Enríquez Raído, University of Auckland
Co-supervisor: Prof. Ineke Crezee, Auckland University of Technology

Abstract

This study explores the current state of healthcare interpreting services for Chinese immigrants in a large hospital in Auckland, New Zealand. More specifically, it seeks to (a) investigate current practices of interpreting for Chinese patients in healthcare consultations and (b) understand the perspectives of key stakeholders (interpreters, patients, and health professionals). To that end, this essentially qualitative research combines participant observations of interpreter-mediated health professional–patient interactions and one-to-one interviews with each group of stakeholders. Data are analyzed using Braun and Clarke's (2006) thematic-analysis method.

Through the theoretical lens of Dean and Pollard's (2013) demand control schema, thematic analysis of observations portrays an array of demands (challenges) that interpreters encounter and controls (resources and responses) they employ when mediating healthcare interactions. While some controls represent good practice, others appear to deviate from their prescribed professional ethics: notably, accuracy; role boundaries; and impartiality (NZSTI, 2013). Interview findings revealed several themes regarding ethical and professional practice in healthcare interpreting, including the interpreter role and role boundaries, impartiality, accuracy, cultural mediation, and interpreter competence. Findings show that patients and health professionals may not know what ethical and professional practice for interpreters entails. Often, their perceptions and expectations go beyond the interpreter's role and ethical boundaries, posing interpersonal demands for interpreters. Interpreters, by contrast, are generally aware of their role and professional ethics. However, they may at times deviate from ethical and professional requirements as a result of patients' and health professionals' expectations, or their own desires to facilitate effective communication and positive relationships. To my knowledge, this study is the first of its kind in the Aotearoa New Zealand context. It provides an empirical basis for developing strategies in training ethical and competent healthcare interpreters and raising patients' and health professionals' awareness of the interpreter's role and professional ethics.