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Isabel Snyder, Campbell McDermid

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ISABEL SNYDER AND
CAMPBELL McDERMID

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Abstract

Currently, there is little research on the ability of interpreting students to translate texts from English into American Sign Language (ASL), nor is there much research on how their skills change as they progress from being a signer of ASL to an interpreter. At the same time, a gap has been identified between the requirements of the workplace and the abilities of many sign language interpreters (Godfrey 2011; Resnick 1990; Sadler 2009; Schick, Williams, and Kupermintz 2005). For example, the Registry of Interpreters for the Deaf (RID) reported only a 25 percent pass rate for the national interpreter performance exam in 2017. To begin to address this gap, we did a pilot study to look at the rehearsed sight interpretation abilities of students of interpretation as compared to students of ASL. The theoretical framework for this study drew on McDermid's (2012) pragmatic model of interpretation, where interpreters can work at the literal, enriched, or implicature level. Ten students translated an English text into ASL. Students who had taken some coursework in interpretation evidenced more text restructuring ($p^{\star} < 0.01$), included more potential implicatures ($p^{\star} < 0.05$), and enriched their target ASL texts ($p^{\star} < 0.05$) more so than the ASL students who had not studied interpretation. It is hoped these findings may help frame

Isabel Snyder is a recent graduate of Rochester Institute of Technology/National Technical Institute for the Deaf in Rochester, NY, where she also worked as a postsecondary interpreter. Campbell McDermid is an assistant professor at the University of North Carolina at Greensboro, with research interests in interpreter assessment, models of interpretation, and pragmatics.

further studies concerning benchmarks for students of interpretation and ASL to perhaps address the gap that exists between interpreters' abilities and the expectations of the field.

The act of interpreting is a very complex task, and several decades ago, McIntire (1986) reported on the findings of a focus group of interpreter educators who outlined the cognitive abilities needed to succeed. These included at least thirty-two subtasks such as listening, attending, and monitoring. Since then, authors have described a gap between the abilities of recent graduates of an ASL-English interpreter education program and what is required in the field (Godfrey 2011; Resnick 1990), perhaps due to the complex nature of the task. In 2017, the Registry of Interpreters for the Deaf (RID) published an annual report on the number of interpreters who had passed the national interpreting performance assessment. The report noted that these percentages were low, ranging from 19.44 percent to 25 percent between 2013 and 2017. In a review of the scores for 2,091 educational interpreters who took the Educational Interpreter Performance Assessment between 2002 and 2004, Schick, Williams, and Kupermintz (2005) found that on a five-point rating scale, "Only 17% of the interpreters would be able to meet minimum standards if set at 4.0, and 38% would meet minimum standards if set at 3.5" (11). They designated a 3.5 as the minimum acceptable level and operationally defined it as an interpreter who had "basic vocabulary, but [who] may lack vocabulary for more technical, complex, or academic topics" (18). At this level, an interpreter could evidence grammatical errors "especially for complex structures" and "may need repetition and assistance" to translate from sign language into English (18). Such descriptors call into question the efficacy of such an interpreter, especially in a school setting.

In order to address this gap, this study looked at a small cohort of American Sign Language (ASL) students who had not studied interpreting and compared their work to a group of interpreting students. The goals of this study were to address the following research questions:

1. Do students who have studied ASL-English interpretation produce different target texts when working from English into ASL than students who had only studied ASL? What do those differences look like?

2. Can a pragmatic model of interpretation be used to classify and compare the changes in the work of student interpreters?

Literature Review

Gap in Abilities

There have been a number of studies on the effectiveness of sign language interpreters (Brener 1990; Hurwitz 1986; McDermid 2012; Nelson 2016; Nicodemus and Metzger 2014; Russell 2002; Sadler 2009; Schick, Williams, and Kupermintz 2005). Many of these studies have shown that interpreters have high levels of inaccuracies in their target texts. As mentioned earlier, Schick, Williams, and Kupermintz (2005) found that only 38 percent of educational interpreters were able to interpret at an acceptable level, and RID (2017) reported that only a quarter of the interpreters who took the national interpreter certification test actually passed.

In one study, Sadler (2009) found that among interpreters in the secondary education setting, accuracy while interpreting ranged from a high of 97 percent to a low of 45 percent (46), with an average of 73 percent (54). Sadler determined this by measuring the number of key scientific words the interpreters accurately translated, as recorded in transcripts from videos of them interpreting. Errors included "For example, instead of using the sign for MIDDLE or CENTER of the hurricane, I-1 [a participant designation] signed the word for the human EYE" (46). Another interpreter used WARNING for the English word WARMING in "warming of the ocean temperatures" (Sadler 2009, 46). While counting the number of scientific terms accurately conveyed may not be the best measure of fidelity, a finding that over 25 percent of terms were omitted or mistranslated does seem to indicate a significant level of inaccuracy.

Russell (2002) looked at four expert sign language interpreters, three of whom were certified, in a mock trial setting. She noted an accuracy rate of between 83 percent and 87 percent in their simultaneous work, meaning that the experts omitted or inaccurately conveyed between 13 percent and 17 percent of the information while working simultaneously, a mode often used by sign language interpreters. Russell called for more use of consecutive work, since she found an accuracy rate of between 95 percent and 98 percent in this modality.

Hurwitz (1986) looked at thirty-two interpreters in a postsecondary setting, all of whom had RID certification, and asked them to interpret for a Deaf signer who was using ASL and for a Deaf signer using pidgin signed English. He divided them into LO (low experience) and HI (high experience) groups, in which members of the LO group averaged less than 600 hours of experience over two years of work. Members of the HI group averaged at least 1,800 hours of interpreting over a minimum of ten years of work, and eight had Deaf family members. Hurwitz found that the HI interpreters had an accuracy rate ranging from 68 percent to 88 percent. The LO interpreters' accuracy rate ranged from 48 percent to 79 percent. This suggests that both groups omitted from 22 percent to 52 percent of the information.

In addition to the research on the accuracy of sign language interpreters, interpreter educators have also recognized a serious gap between the abilities of recent graduates and the expectations of the field (Patrie 1994; Resnick 1990; Ross and Criner 2002). Resnick (1990) defined the gap as the inability of graduates to achieve national certification several years after graduation. As evidence of a gap, in a study of thirty-three interpreter education programs, Godfrey (2011) categorized only nine as what she would call Tier 1, which she operationally defined as a program in which students achieved certification within six to eighteen months of graduation. Ten programs reported nineteen to twenty-four months for certification, and fourteen reported more than two years.

In a recent survey of 102 interpreters, Wilbeck (2017) found that they did not have a clear sense of program exit requirements, and she wrote, "Perhaps like other professions, sign language interpreter education programs could establish entrance and exit requirements" (48). In a discussion of the assessment of sign language interpreters, Ross and Criner (2002) identified a related aspect of this gap. They wrote, "Despite this overwhelming consensus [in the field] that a successful interpretation is more than a lexical transfer, there has been much discussion, and little agreement, on how to measure or assess the interpretations of students or practitioners within the field" (151–52). In short, Ross and Criner referred to the lack of unity as "the result of a number of remaining gaps between theory and practice" (2002,

152). A decade earlier, Cokely (1992) suggested the need for a model of interpreting to be used for teaching and assessment purposes, which would be one means of utilizing theory to guide practice.

The Commission on Collegiate Interpreter Education (CCIE; 2014) has tried to address this gap and has published standards for the accreditation of programs. However, the outcomes predominately focus on the interpersonal skills of interpreters or their role and provide little guidance in terms of the interpreting process. For example, exit requirements in terms of the ability to interpret are broadly defined as knowing "theories of interpretation and translation" (8), having "advanced" language fluency (10), and possessing "the ability to process a message from a source language discourse into a dynamic equivalent message in a target language" (10). An additional descriptor included "the ability and flexibility to render a consumer-driven interpretation" (CCIE 2014, 10).

In a similar manner, the descriptors RID uses to operationally define the requirements for national certification are also very broad. RID advises candidates to "construct equivalent discourse in the target language while monitoring message comprehension and feedback to modify interpretation accordingly" (Center for the Assessment of Sign Language Interpreters [CASLI] 2016a, section 1). In a similar vein as CCIE, RID describes language fluency in ASL as the ability to proficiently make use "of sign vocabulary, use of sign modification to show variation in meaning and grammatical function, and appropriate use of space, facial expression, and body movement" (CASLI 2016a, section 1). For English, the requirements are a bit more specific and for both receptive and expressive abilities refer to "proficiently construct an equivalent message in the target language, including appropriate vocabulary choice, tone, grammar, and syntax, with appropriate use of register, pausing, rhythm, intonation, pitch, and other supra-segmental features" (CASLI 2016a, section 1). According to the example rubric used for rating the performance test, a successful interpretation is defined as "a good interpretation that accurately conveys the meaning and the substantive details of the communication" (CASLI 2016b, section 3). Again, however, there is no clear sense of a model of interpretation nor descriptors of what these outcomes could look like. Instead,

this definition uses subjective and emotive descriptors such as "good" and suggests information is just conveyed and not co-constructed among the participants (Wilcox and Shaffer 2005).

Not only is there a gap in the abilities of interpreters and in clear operational definitions regarding effective interpreting or national certification, there may be a gap in available educational opportunities for working practitioners. In two separate surveys of interpreters, a 2013 National Interpreter Education Center (NIEC) report found that only 42 percent of respondents in 2007 and 67 percent in 2012 believed there was adequate training available (41). In 2012, the participants were asked if they wanted to learn more about the interpreting process, and 18 percent wanted training on working at the discourse level and 26 percent wanted to know more about how context and content impacted interpreting (NIEC 2013, 49).

In summary, there appears to be a serious gap in the profession in terms of interpreters' ability to interpret successfully and in their ability to pass the national interpreter performance certification process. There also seems to be a lack of clear program outcomes in terms of the interpreting process and an opaque definition of what is needed to achieve national interpreter certification. At the same time, research has noted an interest among professional interpreters in further education regarding the interpreting process.

Model of Interpretation

To begin to understand why interpreters fail to achieve certification or struggle to interpret successfully, this study was constructed on the premise that more research was needed into the abilities of students before graduation and their progress in an interpretation program. Through the identification of their major milestones, targeted instruction could be utilized to address the gap.

To examine the work of students, a model of interpretation was needed for assessment and analysis purposes as argued in the literature (Cokely 1992; Ross and Criner 2002). One was sought out that included the concepts of a literal or dynamically equivalent interpretation, as these two levels of meaning are typically referred to in the literature as the predominate forms of interpretation (Napier 2002; Nida 1964). A literal interpretation can also be thought of as a ver-

batim or formal interpretation (Nida 1964), in which the interpreter works more at the surface level of meaning and only conveys what is said or signed. The intent is to produce a target text of similar form as the source text, without much regard for the participants' intended meanings. A dynamically equivalent interpretation may also be referred to as "free" interpretation (Napier 2002) or functional, and at this level, the interpreter alters or adds something in the target text that was not present in the source or that may break from the form of the source to convey a potential meaning. The intent is to construct meaning with the participants, as happens in every interaction, and to produce a message that reflects that meaning.

Several models from the field of sign language interpretation were considered as a means of assessing the abilities of interpreters, such as Cokely's (1992) seven-step process (message reception, preliminary processing, short-term memory retention, semantic intent realized, semantic equivalent determined, syntactic message formulation, and message production); Colonomos's (1992) three-stage model (concentration, representation, and planning); or the various models by Humphrey and Alcorn (2001) or Russell (2002). These models share in common that they theorize the internal cognitive processes of an interpreter. However, similar to the outcomes established by CCIE (2014) and the requirements of the national certification (CASLI 2016a), there was no mention of or operational definition for a literal or dynamically equivalent interpretation.

McDermid's (2012) model was chosen since it defined a literal interpretation and then two additional levels of types of interpreting, enriched and implicature, different levels of dynamic equivalence. In addition to operationally defining these levels, McDermid provided examples of various ways a text could be translated at all three levels. His (2012) model also drew upon a number of fields such as work in pragmatics and spoken language translation and interpretation (Blum-Kulka 2000; Gumul 2006; Sequeiros 1998, 2002), thus providing support for the levels of interpretation and examples provided. It also borrowed from Grice's (1975) definition of literal meaning and implicatures as well as that of Relevance Theory (Sperber and Wilson 1995). Stone (2009) also applied the Relevance Theory model in his work on Deaf interpreters to understand how they translated texts.

The following is a synopsis of the model.

Literal. According to McDermid (2012), at the literal level, an interpreter does not add or remove information from a target text. He or she chooses words or signs for the target text that are semantically similar in meaning to the source text meanings. The interpreter could also "fix" anaphoric pronouns—those that have a clear antecedent—by replacing the pronoun with the referent. The interpreter then engages in a process of restructuring to ensure the target text conforms to the grammatical structure of the target language audience. This may be thought of as surface-level processing and occurs because language pairs such as English or ASL may be asymmetrical or anisomorphic in surface structures. However, authors have argued that a literal interpretation of an utterance leaves meaning underdetermined (Sperber and Wilson 1995), and interpreter educators have called for interpreters to go beyond the literal level to infer additional speaker meanings (Wilcox and Shaffer 2005).

The following is a description of what a literal interpretation could look like with reference to the literature and with examples drawn from the English source text used as the stimulus in this study (see appendix). The signs in ASL have been glossed in uppercase English words and correspond to the glosses used in a number of online ASL dictionaries (Lapiak 2018; Signing Savvy 2018; Vicars 2015). In addition, a Deaf native signer reviewed the examples to confirm they were grammatically correct. As expected, the native signer said some of the examples were grammatically correct but at the literal level did not convey the meaning of the English source.

To begin with, the source message in English includes a number of pronouns that could be translated into ASL with the referent. Line 16, for example, includes "she" and "them" and reads: "She hadn't seen them in an hour!" This could be translated in ASL at a literal level in a number of ways, such as in example 1.

Example 1

MOM NOT SEE CHILDREN SINCE ONE HOUR
CHILDREN, MOM SEE SINCE ONE HOUR "head-nod no"
MOM, NOT-YET SEE THEM SINCE 1-HOUR

At a literal level and in terms of restricting, the translation works from the English source sentence, with a subject-verb-object order, to an ASL target sentence that follows a topic-comment, object-subject-verb, or subject-object-verb order and does not add to or take away information. This is possible because ASL supports the use of a topic-comment structure (Janzen 2007). It also supports the movement of the verb to the end of the sentence or the reduplication of a verb before and after the object (verb sandwich) where the verb is inflected or includes information about its aspect (duration, manner) (Matsuoka 1997).

Also, the marking of time can be promoted to the head of a sentence (Mikos, Lentz, and Smith 2001), to indicate the tense of the verbs for the rest of the sentence. This can be achieved by moving an adjunct in English, such as adverb or adverbial phrase or prepositional phrase, which modifies a clause by providing additional information about the time of an event or its location (Brinton and Brinton 2010). Line 16 of the source text reads, "She hadn't seen them in an hour!" Here the prepositional phrase as an adjunct, "in an hour," could be moved to the head of the sentence in ASL, which would also fix the verb tense for "see" in the past, without forcing the audience to wait for the indication of time, as in example 2.

Example 2

ONE HOUR, MOM SEE CHILDREN NONE
SINCE ONE HOUR, MOM SEE CHILDREN NONE or NOT

The subject and object of the sentence can also be reordered in ASL, as in example 3.

Example 3

SINCE ONE HOUR, CHILDREN, MOM SEE NONE

Another strategy that results in a literal interpretation and that was evident in the participants' target texts was the use of pseudoclefts, labeled as rhetorical questions in the field of sign language interpretation. A pseudocleft occurs in ASL, according to Wilbur (1994), when a WH-question is inserted at the end of the initial clause, followed

by the answer to the question. Looking at line 21 in the appendix, the simple declarative sentence, "Eventually, the kids were found at the front counter," could be translated in ASL as shown in example 4.

Example 4

KID GROUP, PARENT NOTICE FOUND, WHERE? FRONT COUNTER. KID 3 STAND+++ FRONT COUNTER. PARENT NOTICE FIND THERE

This emphasizes the location of the children but doesn't really enrich the text.

The third aspect of restructuring at the literal level was the omission of a pronoun that appeared in the English source text. Instead, the referent was implied through the use of spatial mapping, such as a body shift, the inflection of a verb, the use of space, or some other means directed toward the entity's established reference point in space (see Winston 1991 for a discussion of various means of creating or implying reference in ASL). As noted by a number of authors, ASL could be considered a pronoun-drop (pro-drop) language in comparison to English (Kegl 1987; Wulf et al. 2002). English does evidence pronoun dropping, as in the imperative, "Take my car!" in which the assumed pronoun is "you," in what Halliday and Hasan (1976) would call the "context of situation." But compared to ASL, speakers of English may expect more overt pronouns in a discourse overall. Returning to the stimulus story for this study, line 2 reads, "They needed groceries." Given the context that the parents and children were just mentioned in the sentence before, the pronoun "they" could be dropped from the ASL translation as in example 5.

Example 5

NEED FOOD BUY
FOOD NEED BUY

Another reason to restructure a text from English when translating it into ASL could be to establish figure-ground relationships. Emmorey (2005) looked at eight native signers who described fifty-six pictures in ASL. She noted how they usually situated the largest or most prominent object first, the "ground," before placing the people

or objects in space, the "figures" in relation to the ground. Line 21 in the stimulus story reads, "Eventually, the kids were found at the front counter." This could be restructured to start with the word "counter" as a ground first, as in example 6.

Example 6

FRONT COUNTER, PARENT NOTICE FIND (or SEE) CHILDREN THERE FRONT COUNTER, KID 3 STANDING+++, PARENT NOTICE FOUND THERE

It might be necessary to reorder an English sentence prior to translating it into ASL, as it has been suggested that it is more common to see the antecedent (the cause of an action) come before the result of the action (Isham and Lane 1994). For example, line 10 of the English source texts reads, "There were complaints that the costume aisle was a mess!" This could be reordered in the ASL target texts as shown in example 7.

Example 7

HALL/HALLWAY, COSTUME MESS-UP. COMPLAIN, COMPLAIN.

Of note is that reordering also occurs when working from ASL into English. For example, a signer produces the sentences shown in example 8.

Example 8

HUNGRY ME NOT, EAT REFUSE/WON'T ME

This sentence could be reordered and translated in English as "I am not hungry and won't eat."

In summary, an interpreter can work at a literal level of meaning at which nothing is added to his or her target text or taken away. However, some restructuring may be required, as well as the clarification of some aspects such as anaphoric pronouns with their referent.

Dynamic Equivalence. An interpreter may work beyond the literal level of meaning and produce a dynamically equivalent target text.

As described by Ross and Criner (2002) and Wilcox and Shaffer (2005), there is recognition in the field of sign language interpreting that the works goes beyond just a literal or lexical level of meaning. This can be done by enriching a target text or by producing an implied but unstated meaning, an implicature (McDermid 2012). The act of enriching has also been referred to in the literature on translation and interpretation as the Explicitation Hypothesis (Blum-Kulka 2000; Klaudy 1998) or an expansion (Nida 1964). Some sign language interpreter educators have also used the term *expansion* (Humphrey and Alcorn 2001; Lawrence 1994) but may incorrectly teach that this process only occurs when working from English into ASL.

At the level of enrichment, the interpreter believes that it is necessary to clarify some aspect of the target text for the audience. This holds true whether the interpreter is working into ASL or into English. For example, example 9a shows a sentence in ASL.

Example 9a

BOB, JACK, SALLY THREE-OF-THEM GO

At a formal or literal level, an interpreter could produce this target text as in example 9b.

Example 9b

"Bob, Jack and Sally went," or
"The three of them went."

In this example, it could be argued that to maintain the grammar of the target language (English), the conjunction "and" and the specification or fixing of the tense of the verb GO as "went" are mandated. However, take example 9c, in which an interpreter produces the target text in one of two ways.

Example 9c

"Bob, Jack and Sally went to the store," or
"The three of them drove together to the store."

The interpreter has enriched the English translation in the first sentence by including a prepositional phrase as an adjunct of the sentence,

"to the store" that was implied in the ASL source through the direction of the verb GO. In the second sentence, the interpreter has also clarified the verb GO by describing how the action was carried out, "drove together," which would only be known from context.

Several studies of sign language interpreters have shown that they enrich their target texts when working into ASL (Livingston, Singer, and Abramson 1994; McDermid 2012; Russell 2002) or British Sign Language (BSL) (Stone 2005). In one of the earliest studies of enrichment, Livingston, Singer, and Abramson (1994) noted how they used strategies like "creating contrast through negation," "repetition through the use of alternate signs" (165), and provided "summaries" (167) of what had been spoken. In Russell's (2002) study of interpreters in a mock court setting, she noted how one interpreter interpreted, "So you would agree with me that it really didn't hurt that much," by fixing the pronoun as a hammer, by showing where it struck (on the person's head), and by showing a contrast that it struck lightly, and not with force (see example 10).

EXAMPLE 10

HAMMER HIT HEAD HURT NOTHING, RIGHT LIGHT, NOT HARD, HURT NOTHING (Russell 2002, 101)

McDermid (2012) found that the interpreters in his study enriched a number of aspects of the English text such as the focus particle "only" in the sentence, "According to Bill, I was the only one who mentioned liking outdoor activities [in my interview]" (176). They included that other people had also been interviewed. Another aspect of the source text that was enriched included change-of-state verbs such as "lived," as in, "Bill, by the way, lived to the age of seventy-eight," to which the interpreters then added that he passed on (HE GONE) (McDermid 2012, 186).

Stone (2009) also found a number of enrichments in the BSL target texts of Deaf interpreters who translated the nightly news from a teleprompter. These included geographic enrichments, in which the Deaf interpreter identified an army regiment as being from "Wiltshire" (102). The Deaf interpreters also enriched proper names, such as by adding "Beatles" to their BSL target text when Paul McCartney was discussed (Stone 2009).

To conceptualize enrichments for this study, Halliday and Hasan's (1976) model of cohesion was used. Their work has been applied to the work of spoken language interpreters (Blum-Kulka 2000; Gumul 2006; Klaudy 1998) and has been utilized to examine the work of sign language interpreters (McDermid 2014b) or noted as a framework to examine or teach cohesion at the level of discourse (Stone 2009; Winston 1991; Zimmer 1992). Other models of enrichment and cohesion were considered, such as Winston's (1991) work on spatial mapping or Lawrence's (1994) taxonomy of expansion techniques. However, it was decided to use Halliday and Hasan's model as it was perhaps more robust than the seven expansions identified by Lawrence and looked at various means beyond pronominal or spatial referencing.

To create cohesion and to enrich a text, a speaker can refer back anaphorically to something he or she said or can refer forward cataphorically to something they will say, and this creates cohesion. Cohesion can be enhanced or achieved through the use of five devices: lexical cohesion, reference, conjunctive devices, substitution, and ellipsis (Halliday and Hasan 1976). This study looked at how the participants added or fixed four of these aspects (ellipsis, reference, lexical cohesion, and conjunctive device) in their ASL target texts at the level of dynamic equivalence and specifically as an enrichment.

Ellipsis. Various sentences in the source text were created that had elided information, in particular adjuncts. Adjuncts were defined as adverbs, adverbial phrases, or prepositional phrases that specified parameters of the verb, such as the time or location of the action. Adjuncts, unlike subjects and objects, can be omitted without changing a sentence's grammatical acceptability. It was believed an interpreter working into ASL could choose to include or omit such adjuncts in an ASL target. Including an unstated adjunct in an ASL target text would then make that text more cohesive (Halliday and Hasan 1976) and be an example of an enrichment.

As an example, in the appendix, line 11 reads, "An announcement was made . . ." The interpreter could choose to enrich the text by including the adjunct "on the overhead speakers" or "on the PA system" in ASL, as in example 11.

Example 11

IX (pointing at the ceiling) (describe the shape of the speakers) ANNOUNCE . . .

The location of the announcement could also be indicated by eye gaze toward the ceiling. In consultation with a Deaf native signer, he believed an equivalent translation would show the shape of the overhead speakers, anchor it to the ceiling, and show that the announcement was made in spoken English.

Reference. Another aspect of cohesion is reference. One aspect of reference that can be enriched or fixed is agentless passive voice. Both English and ASL share agentless passive voice, but the form (Janzen, O'Dea, and Shaffer 2001) and frequency perhaps differ. Janzen, O'Dea, and Shaffer describe agentless passive voice as a sentence in which "an agent might be deemphasized or even avoided because it is unknown, irrelevant or suppressed" (2001). They write that agentless passive voice can be represented in ASL through eye gaze and the inflection of the verb from or toward an unidentified agent, outside of the signing space.

Turning to the stimulus story for this study, line 10 is one example of agentless passive voice and reads, "There were complaints that the costume aisle was a mess!" The agent for the action of complaining is not stated but instead is represented by the existential "there," and the verb COMPLAIN in ASL cannot be inflected for person. A literal translation, as in example 12a, may give the audience the impression that the narrator was responsible for lodging the complaints.

Example 12a

COMPLAIN ++ HALLWAY, COSTUMES MESS-UP

As a form of enrichment and to increase cohesion, the participants of this study could shift into a different space, insert a potential agent such as one or more shoppers or people, or point to some location in space to indicate one or more unidentified agents doing the action of complaining, as in example 12b. This was, in fact, the approach the Deaf consultant suggested.

Example 12b

PEOPLE, SHOPPERS COMPLAIN++.
WHY? COSTUME AISLE MESS-UP

Another example can be seen in line 13: "So the police were called." Here, the party or parties who called the police (i.e., the "agent") was elided and could have been included or at least implied in ASL through some act such as a body shift, eye gaze, or a change in verb inflection. In this example, in which an interpreter fails to imply or include an agent, the resulting interpretation might/could incorrectly appear as shown in example 13a.

Example 13a

HAPPEN POLICE CALL/SUMMON

This example can be literally translated as, "The police called (something/someone)." A Deaf audience member would not have access to the past participle verb "was called," and so potentially would have to work harder than someone with access to the English utterance to understand the sentence. Therefore, to ensure comprehension in the target language audience, an interpreter would need to at least imply, if not add in or "fix," the missing agent, as in example 13b. Again, the Deaf consultant agreed with this enrichment.

Example 13b

HAPPEN SOMEONE CALL/SUMMON POLICE COME-HERE

Conjunctive Devices. The inclusion or addition of conjunctive devices can increase a text's cohesion (Halliday and Hasan 1976) and so were examined. Conjunctive devices add cohesion across sentences when they work to show the relationship between two independent clauses (Halliday and Hassan 1976). In the context of this study, lines 1 and 2 read, "On the day before Halloween, a family consisting of a mother, father, and three children went to Walmart. They needed groceries." A potential relationship between these two sentences could be included in ASL with the addition of WHY, as in example 14.

Example 14

HALLOWEEN, ONE-DAY BEFORE, FAMILY GO WALMART.
WHY, FOOD NEED BUY.

The Deaf consultant for this study supported this enrichment but also believed the implied relationship absent the WHY was acceptable.

Lexical Cohesion. Text cohesion can be enhanced at the lexical level through the use of synonyms and near synonyms (Halliday and Hassan 1976), what was referred to earlier as the strategy of "repetition through the use of alternate signs" (Livingston, Singer, and Abramson 1994, 165). One way to do that is through the clarification of nouns or noun phrases through the addition of hypernym (also referred to as a superordinate) or hyponym words acting as synonyms, something noted in the research on interpreting (McDermid 2012). According to McDermid (2012), hypernym nouns or noun phrases represent large classes of objects and can be replaced with exemplars, referred to as hyponyms. The stimulus story in this study included a number of hypernym terms that could be enriched with the inclusion of exemplars, such as "dairy section" (line 18), which could be translated in ASL as MILK, CHEESE, EGGS and "produce section" (line 19), which could be rendered as "fruits" and "vegetables" or with hyponyms for "fruit" (such as APPLES, ORANGES, BANANAS, ETC.) and "vegetables" (POTATOES, CORN, LETTUCE, ETC.). Again, the Deaf consultant agreed with these examples of enrichment.

The use of synonyms for verbs or potential verb entailments can also add clarity to a text (McDermid 2012). To enhance lexical cohesion, for example, an interpreter could "create contrast through negation" (Livingston, Singer, and Abramson 1994, 165) by including a verb and its antonym. Certain verbs may imply a number of other verbs and are known as implicative verbs (Karttunen 1971). For example, an implicative verb can "carr[y] a presupposition of some necessary and sufficient condition which alone determines whether the event described in the complement took place" (Karttunen 1971). In Russell's (2002) study of a mock courtroom setting, a lawyer posed, "So you would agree with me that it really didn't hurt that

much . . ." which was successfully translated in ASL as shown in example 15.

Example 15

ME RIGHT YOU AGREE – HAMMER HIT HEAD HURT NOTHING, RIGHT LIGHT, NOT HARD, HURT NOTHING. (Russell 2002, 101)

In this example, the interpreter replaced the pronoun "it" with HAMMER but also indicated where the hammer had struck ("on your head," an adjunct and prepositional phrase) and gave examples of the manner of the blow, as LIGHT, NOT HARD.

Line 21 of the source text in this study reads, "Eventually, the kids were found at the front counter." According to the Deaf consultant, this could be enriched by not only adding in the agent (the parents), but by adding in the verb "search," in that they had been searching for the children for a while, and the verb "go/went" could be included, as the parents had to go to the front counter to find the children (example 16).

Example 16

PARENTS SEARCH+++, GO FRONT COUNTER,
FIND/NOTICE CHILDREN THERE

So as a summary, an interpreter can create a dynamically equivalent target text by enriching it. This could include adding in or fixing a number of language structures that may enhance a text's cohesion. This is done by creating ties between sentences (Halliday and Hasan 1976). Four of the language structures Halliday and Hasan (1976) identified were examined, and they included the addition of elided information, missing or ambiguous referents, conjunctive devices, and the creation of lexical cohesion through the use of synonyms or near synonyms.

Implicatures. The final level of processing in McDermid's (2012) model is that of implicature, another level of meaning that can be conveyed in a dynamically equivalent target text. Here, the interpreter breaks from the form of the source text to produce a target text that conveys

a potentially implied meaning or function. Based on the literature and some research, interpreters do not do this often—in one study, only 10 percent of the time (McDermid 2012). It was suggested that while target texts could diverge from the source, they were still constrained by the source in terms of the speaker's topics, style, and goals (Vermer 2000, 222), and so they are not produced whimsically. In a discussion of dynamic equivalence, Robinson (1997) explained how the interpreter is constrained by the expectations of the people in the context and wrote, "In those real-world contexts, anything does not go, translation is very closely regulated by sociological forces" (311).

According to Lakoff and Johnson (1980), English speakers make use of many different metaphors in spoken language, such as "time is money" (7), and the "personification" of abstract concepts (33). These serve as triggers for implicatures and a few were included in this study. These included the sentence in the source text, "They were in a pickle" (line 5).

Another trigger for implicatures are verbs of judgment, which were noted in one study of interpreters working from English into ASL (McDermid 2012) and in another study of interpreters working from English into BSL (Stone 2009). These verbs have an implied value judgment in them, which an interpreter may or may not want to include. For example, in line 8 of the source text, the speaker says, "One child tried on the tiger costume." Some of the interpreters in this study added in, "This was fun" (example 17).

Example 17

ONE CHILD PICK TIGER COSTUME, WEAR. FUN!

This would not be the first study to look at implicatures in interpreters' target texts. Livingston, Singer, and Abramson (1994) referred to the strategy of "explicitness," in which the interpreters broke from what was said to give the implied meanings (165). In Russell's (2002) study of court interpreters, she noted how one translated a lawyer's yes/no question, "And is your teacher in court today?" as the imperative, "Point to her" (100), thus altering the function of the utterance. In McDermid's (2012) study, twelve interpreters simultaneously interpreted the English sentence, "She then asked me where I was at

the Deaf rally for ASL rights at the government building, the past weekend!" Three native signers evaluated the ASL target texts and first thought to translate it as in example 18a.

Example 18a

WHERE YOU STAND

After discussion, however, they agreed on a more effective translation, and one provided by an interpreter, shown in example 18b.

Example 18b

WHY YOU NOT SHOW-UP/SKIP. (203)

Various researchers have also investigated or hypothesized the existence of implicatures in ASL and noted the use of metaphorical language (Padden and Humphries 1988; Taub 2001; Wilbur 1990; P. Wilcox 2004; Zimmer 1992). Valli and Lucas (1995) suggested that HOME YOU? could range in meaning from "a request for a ride home," a simple yes/no question, or a reprimand from an employer "to an employee who is leaving too early" (161). Padden and Humphries (1988) suggested that from a culturally Deaf perspective, a Deaf person would consider a friend A-LITTLE HARD-OF-HEARING as a person who was closer to culturally Deaf (they followed Deaf norms). If they knew someone who was VERY HARD-OF-HEARING, that person was more culturally hearing (41). However the opposite was true for a hearing speaker, who considered a person who was "a little hard-of-hearing" as closer to them, a hearing person, while someone who was "very hard-of-hearing" would be considered closer to being deaf.

ASL also includes various metaphorical structures. The extended thumb can act as a metaphor for "negative concepts, such as NOT, DENY, REFUSE, BLAME, ALCOHOLIC, and SUFFER" (Wilbur 1990, 163). A container can be used to metaphorically represent the mind or brain (Wilbur 1990; Wilcox 2004). Information can be represented by a finger, and a signer can think about information (THINK) or share/tell information (TELL), comprehend it (UNDERSTAND), or get an idea across to someone (THINK PENETRATE) (Wilcox 2004, 215). Space is also used metaphorically, so "topics are locations" (Taub 2001,

105), and when signs are produced closer to the body or to location in space that represents an entity, that location implies "intimacy is proximity" to the signer or object of discussion (Taub 2001, 118).

In summary, to produce a dynamically equivalent target text, an interpreter may not only enrich the text but may also break from form to produce a potentially implied but unstated meaning. This does not occur frequently (McDermid 2012), but there is evidence that speakers of English or signers of ASL go beyond stating facts to imply their meanings. These have to be inferred, or worked out. Interpretation therefore is not just a process of decoding signs or words and representing them in the target language, but it is also a process of inferring speaker or signer intent and then deciding whether or not to state or imply such intent in the target text. Previous research into sign language interpreters has noted this phenomenon (McDermid 2012; Russell 2002).

Methodology

This was a quantitative pilot study done to observe the target texts of ASL students and students of interpretation, who were asked to work from English into ASL. It drew upon an elicitation task, a short English text, and the participants were asked to produce a rehearsed sight interpretation into ASL. The definition and justification for utilizing a rehearsed sight interpretation will be discussed in the section on measures.

The unit of study in the sight interpretations was the changes made in the participants' ASL target text, including additions or substitution of information, as compared to the original English source text. As context, it was conducted at a higher education institution in the northeast region of the United States. All of the data were recorded within a three-week period in late October and early November.

Participants

Table 1 outlines the ten students who took part in this study. Convenience sampling was used as students were selected based on location. This group of ten students represents just over 6 percent of the total enrollment within the interpretation program (approximately 150 students). Participation was low because many students in their

Table 1. Participants

Pseudonym	Frequency	Gender	Year in BS	ASL Fluency	#ASL Classes	Years Using ASL
Ethan1	18	M	1	7.5	6	5
Mara1	19	F	1	6.0	5.5	4
Rebecca1	21	F	1	7.0	6	5
Olivia2	20	F	2	4.5	5	3
Steve2	25	M	2	5.0	11	5
Emma3	21	F	3	8.0	7	5
Matt3	19	M	3	7.0	8	5
Gregory4	23	M	4	7.0	10	7
Veronica4	21	F	4	8.5	7	6
Claire4	28	F	4	6.0	6	5

freshman or sophomore year (first or second year) were concerned that they would not be able to interpret the text since they had only studied ASL at that point. As the text was created by two sections of senior students (fourth year), approximately half of the senior students had seen it and so were ineligible for the study. This greatly limited the number of available participants from the first, second, and fourth years of the program. Each participant was given a pseudonym, and their year in the program was appended to their name. The participant named Ethan1, for example, was in his first year of a four-year program.

As part of the demographic questionnaire, participants were asked about their gender, year in the program, the number of ASL classes they had taken, and the number of years they had been signing. They were also asked to rate their ASL fluency on a scale of 0 to 10 (eleven categories) using an ASL Proficiency Interview Rubric (Caccamise and Samar 2009). Justification for these self-reported fluency assessments will be described within the section on the measures used in the study. The eleven categories ranged from "No Functional Skills" to "Novice," "Novice Plus," "Survival," "Survival Plus," "Intermediate," "Intermediate Plus," "Advanced," "Advanced Plus," Superior," and "Superior Plus" (Caccamise and Samar 2009, 43). Some choose two adjacent ratings and these scores were then averaged. One ranked

herself at Survival Plus/Intermediate (Rank 4–5), one at Intermediate (Rank 5), two as Intermediate Plus (Rank 6), and the remaining six ranked themselves at "Advanced" (Rank 7) or "Advanced Plus" (Rank 8) and one senior (fourth-year student) rated herself between "Advanced Plus" and "Superior" (Rank 8–9).

Raters

The researchers evaluated the rehearsed sight interpretation samples of the participants. The primary researcher was a senior student in the interpretation program and had been using ASL for approximately five years. She had been studying the interpretation process for two years and had experience working with ASL glosses and the theory of rehearsed sight interpretation used in this study. The second was a program instructor, who was a certified interpreter with thirty-four years of experience using ASL, twenty years of teaching experience, and an extensive background in research. The senior student undertook this study as a capstone project and approached the second researcher, who was not one of her instructors, to be her co-researcher. As the process required identifying changes between the English source text and the ASL target texts, both researchers felt confident in their abilities and language fluency to discern those differences.

A Deaf native signer and experienced ASL teacher was also employed as part of this study. While he did not look at video recordings of the sight interpretations of the participants, he was asked to look at the various examples of literal and dynamically equivalent glosses of ASL used as examples throughout this text and those in the appendix. He then compared those to the English source. He believed that the enrichments and implicatures could enhance the cohesion of an ASL text and made sense in context. In fact, he suggested a variety of enrichments in ASL for several sections of the English source text and believed a literal interpretation was not adequate for many utterances. Following are some examples of his comments about the need to enrich the English source.

In the English source text, line 2 reads, "They needed groceries." While the Deaf rater agreed that the pronoun "they" could be dropped, he felt that a literal sight interpretation as shown in example 19a was not enough.

Example 19a

NEED FOOD

He suggested that enrichment should occur through the addition of the verb "buy," as in example 19b.

Example 19b

NEED FOOD BUY

For line 10, the English source texts reads, "There were complaints that the costume aisle was a mess!" the Deaf rater considered a literal sight interpretation, as shown in example 20a.

Example 20a

HALL/HALLWAY, COSTUME MESS-UP. COMPLAIN, COMPLAIN.

However, he wanted to know who was making the complaints and so suggested the interpreters identify "customers" or "people." He also didn't feel MESS-UP, a literal interpretation, was enough and instead suggested that the interpreters include that the "clothes were in several piles" (example 20b).

Example 20b

CUSTOMERS/PEOPLE COMPLAIN+++ CLOTHES HALL/HALLWAY MESS-UP, CLOTHES PILE (on the right), CLOTHES PILE (on the left)

Line 11 reads, "An announcement was made . . ." and here, again, the Deaf rater suggested enrichments. He wanted the interpreters to point to the ceiling, outline the shape of the overhead speaker, and add TALK, implying that the information was in spoken English (example 21).

Example 21

IX (pointing at the ceiling) (show shape of speaker) TELL, TALK IX (speaker) ANNOUNCE . . .

Finally, as another example, line 21 reads, "Eventually, the kids were found at the front counter." Here, the Deaf rater again felt a

literal sight interpretation was not enough and wanted the addition of "parents" and the verbs "notice" or "see" in addition to "found" (example 22).

EXAMPLE 22

FRONT COUNTER, PARENT NOTICE FIND
(or SEE) CHILDREN THERE

Groupings

As part of the methodology of this study, the students were grouped into two cohorts, the "Lower Year" and the "Upper Year" groups (see table 2) The "Lower Year" participants consisted of the students in the fall semester of Year 1 and Year 2, as they had only studied ASL within the program's curriculum up until that point. The "Upper Year" group consisted of students in the fall semester of Year 3 and Year 4 and who had finished at a minimum two classes in interpretation theory and some translation work within the curriculum.

In addition, each participant was asked to assess their own level of fluency in ASL using the descriptors from the Sign Language Proficiency Interview, as will be described next. The range of scores for the Upper Year students was slightly higher (6–8.5) than the range for the Lower Year students (4.5–7.5), though the difference was not significant in a one-tailed analysis ($U = 5.5$, $z = -1.36$, $p = 0.07$).

TABLE 2. Groupings

Pseudonym	Upper Year Lower Year
Ethan1	1
Mara1	1
Rebecca1	1
Olivia2	1
Steve2	1
Emma3	2
Matt3	2
Gregory4	2
Veronica4	2
Claire4	2

Measures

ASL Proficiency Rating. A variety of measures were used to collect the data. Prior to performing a rehearsed sight interpretation and as just mentioned, the participants were asked to complete a self-analysis of their ASL fluency, using the Sign Language Proficiency Interview (SLPI) descriptors utilized by Caccamise and Samar (2009). Their self-assessments were deemed appropriate, as several other studies utilized a similar methodology (Laird 2005; McDermid 2014a; Stauffer 2011) and the descriptors for the categories were described as well defined and could be used by untrained raters (Laird 2005; Stauffer 2011). Laird (2005), for example, asked seven untrained raters who were native or near-native signers of ASL to rate twenty-one students assessed by the ASLPI. He found an interrater reliability of 86 percent between the raters with at most one category difference in ratings (52). Stauffer (2011) compared the scores given by a trained SCPI rater and the individual self-assessments of 156 novice and advanced ASL students. The correlation between the students' and the instructor's ratings was 0.62 and considered "moderately strong" (Stauffer 2011, 88). Beal-Alvarez and Scheetz (2015) asked ten untrained students to assess their fluency on the Sign Reading Fluency Rubric and compared their rankings to those of the two authors. They found a 91 percent agreement when the rankings varied by only one level (327). McDermid (2014a) had twelve interpreters rank their own performance, again using the SLPI descriptors. He found that the experts consistently ranked themselves as more fluent than the novices, an assessment agreed to by three Deaf native signers. Again, like the studies described previously, the Deaf raters and the interpreters had similar ratings within one category deviation. However, the three Deaf native raters typically ranked each participant one category lower than they ranked themselves. McDermid (2014a) suggested the difference could have been due to a different "center," where the hearing interpreters were comparing themselves to their hearing peers and the Deaf raters compared the hearing signers to Deaf native signers.

It should be noted that the SLPI scores were not used in this study as an example of overall fluency or attainment in ASL. Instead, the scores provided a means of differentiating the Lower Year and Upper

Year students. They also helped gauge whether the students were fluent enough in ASL to be able to sight translate the text. Based on their self-assessments, it was determined they were.

English Source Text. As part of the methodology, an English script (see appendix) was created with the intent of eliciting certain enrichments or implicatures. The topic was a family's trip to Walmart, and the central characters were parents who were Deaf with hearing children. At some point, the parents and children became separated and the Deaf parents were unaware that the children had been led to the front counter and that an announcement to collect them had been made. This script was created as part of a class project by two sections of senior students (out of a total of four sections) in an interpretation program. The script included 231 words, and a video recording of two minutes in length was made from the script into spoken English. Unadjusted for pauses, the speed of the speaker was 115.5 words per minute.

As ASL vocabulary was not the focus of this study, the stimulus story was created by the senior students with what they deemed to be ASL vocabulary common to ASL 2 through ASL 4 students and relatable in English to undergraduate students. As a group, they believed students in Years 1 through 4 would thus be able to understand and translate the story into ASL with little difficulty. In fact, none of the participants reported concerns about the vocabulary when given the opportunity to discuss the text prior to sight translating it.

Mode. As the participants in the Lower Year group had not been formally taught how to interpret within the program, rehearsed sight interpretation was selected as the mode for the study. Lambert (2004) defined a rehearsed sight interpretation as the act of preparing with a text for five to ten minutes and then interpreting it while it was read aloud. In this study, a short pause was inserted between each sentence in the source text as it was read. It was believed this mode and the addition of a short pause between each sentence would give the participants time to produce a target text without worrying about managing the interpretation process. As a rehearsed sight interpretation, the participants were given the complete text to study for five to ten minutes and allowed to ask questions. They could rehearse the

text and plan out how they would translate it, and they could request help with vocabulary choices.

As a rehearsed sight interpretation process, the participants were not given time to research terms or talk to the creator of the text as they would in a translation, though they did have time to practice translating the text or sections of it. A rehearsed sight interpretation also differs from the consecutive and simultaneous modes in which interpreters may not have access to the complete speaker text (though they may have a synopsis) but instead must interpret short sections (in consecutive mode) or a shorter segment such as a phrase or perhaps a sentence or two (in the simultaneous mode). In the consecutive and simultaneous modes, an interpreter may have to use different cognitive skills, such as predicting what the speaker will say next or using cloze skills to guess at words or signs that were missed, and they may have to make repairs in their use of space or grammar. All of this must be done "on the fly" while continuing to interpret; on the other hand, while in the rehearsed sight interpretation mode, the text can be made "constantly available to the interpreter" and so they may not have to deal with these simultaneous challenges (Lambert 2004).

A rehearsed sight interpretation gives a translator complete access to the text and in this study allowed the participants to plan out how they would use their signing space when talking about a trip to Walmart, the focus of the story. It also gave them the time to come up with ways to translate things like "costumes" (line 7) or "dairy section" (line 18) in advance. The rehearsed sight interpretation process used in this study is also similar to what may occur in the field, where a presenter or teacher may give an interpreter a text, such as handouts, sections of a book to be read aloud, or, as described in one study, prepared speeches (Nicodemus, Swabey, and Taylor 2014), and the interpreter is allowed to review the entire text and practice translating it before sight translating it as it is being read.

Text Construction. As noted earlier, a number of structures in English were selected for inclusion in the source text based on Halliday and Hasan's (1976) model of cohesion. In terms of lexical cohesion, adjuncts were omitted from the English source text and could be triggers for pragmatic enrichment. As noted earlier, these include the

adjunct "from the overhead speakers" for line 11, which begins, "An announcement was made [from the overhead speakers] . . ." Other examples include line 4, "They needed them for breakfast [tomorrow, to cook]!" and line 12, "After half an hour, the kids had not been claimed [in the manager's office]."

A number of hypernym terms are embedded in the source text that are candidates for enrichment through the addition of hyponyms. Doing so would increase the lexical cohesion of the ASL target text. They include "dairy section [milk, eggs, cheese, etc.]" (line 18) and "produce section [vegetables, fruits, meats, etc.]" (line 19).

Various verbs were included in the English source text that could act as triggers for enrichment in ASL. These enhanced lexical cohesion, as defined by Halliday and Hasan (1976), by including synonyms or related words in the target text that were included in the source and that may have acted to clarify how an action was carried out or the speaker's implied feelings about the action. As mentioned earlier, line 21 includes the verb "found," which in this context entails "searching" and "going" to the front counter. Lines 22 and 23 read, "The family then sued Walmart for lack of accessibility and for causing emotional distress. They now live on their own private island and have their orders delivered by Amazon drones." The word "sued" in the sentence entails other verbs, such as "going" to court and "winning" or "losing." "To live on a private island" entails potentially "buying" it. Including the potential entailment of "won" could lead to a clearer and more cohesive target text as it explains how the family was able to then purchase and live on a private island.

Also embedded in the source text are a number of triggers for pragmatic enrichment tied to reference. In the line, "After half an hour, the kids had not been claimed" (line 12), the participants could have enriched the text by adding in an agent, for example, that the parents had not claimed the children. Other examples of missing agents can be seen in brackets in line 10, "There were complaints [by someone] that the costume aisle was a mess!" and in line 13, "So the police were called [by someone]." Line 11 has two instances in which the agent was left unspecified: "An announcement was made [by someone] that three unattended children had been found and should be collected [by someone] at the manager's office."

Throughout the text, the researchers looked for instances in which a conjunctive device was added to the ASL target text that was not specified in the English source text. This would potentially enhance the cohesion of the ASL target text. Conjunctive devices in ASL were identified from the list used in the research by McDermid (2014b), such as HIT and HAPPEN.

Finally, as another aspect of dynamic equivalence and as noted earlier, several sentence structures are embedded in the source text as triggers for implicatures. These include, "They were in a pickle" (line 5), where it was thought the interpreters would avoid literally signing that the family was inside a large gourd.

Procedure

Each participant's rehearsed sight interpretation was recorded separately and independently. Before doing the sight interpretation, the participants were given five to ten minutes to read over the written English script and to ask the researcher questions. The participants typically asked about one or two specific sign choices, except for one participant who asked about the target Deaf consumer. Once the time elapsed, each participant listened to the recorded version of the story in English and performed a sight interpretation. This was recorded for analysis.

Analysis

The data were collected and quantified (see the appendix for an example of the rating form and examples from the study). Both investigators reviewed the interpretations independently and identified instances of restructuring, enrichments, and implicatures. These were then compared. Typically, the raters only disagreed on five to ten items out of forty or fifty rankings, and so there was a minimum of 80 percent interrater concordance. Where discrepancies occurred, they were jointly reviewed and agreed upon.

A total score was then calculated for the number of strategies used to create a literal interpretation (restructuring, the dropping of pronouns, the addition of a cleft), an enriched interpretation (by adding in an agent, a conjunction, an adjunct, a hyponym for a hypernym, or a verb entailment), and for the total number of implicatures produced.

All of the raw data were ranked so as to give each one an equal weight, as there has been no similar study done nor baseline frequency data to compare these findings against and no value placed on using one strategy over another. Given there were ten participants, the rankings were done so that the smallest number of occurrences or frequency would be 1 and the largest number would be 10. Where raw scores were equal, they received the same ranked score.

The analysis done was a comparison of the different features between the Upper Year and the Lower Year groups. The Mann-Whitney test was used and the one-tailed test results were recorded, with the assumption that the Upper Year students would demonstrate more strategies while performing a rehearsed sight interpretation. The total for each major category (Literal, Enrichment, Implicature) was compared. In addition, each individual strategy of each category was compared across the two groups.

As the sample size was small, the power of the statistical analysis done was admittedly weak. To supplement that, the raw scores and descriptive statistics were included as well as the range for the scores, the mean, and the mode. The mode was chosen over the median because it gave a better sense of the distribution of ratings.

Results

Characteristics of the ASL Target Texts

The appendix provides examples of how the students enriched their target texts or added in an implicature. At the literal level, all of the participants omitted or dropped from eight to twelve pronouns (see table 3). Everyone except Rebecca1 restructured his or her ASL target texts at least once. Five of the ten individuals used a pseudo-cleft (rhetorical) even though none were present in the source text.

Based on only the descriptive statistics (range, mean, and mode), the Upper Year students appeared to restructure their texts and include more strategies at the literal level than the Lower Year students. Examples of text restructuring were WALMART GO, to translate " . . . went to Walmart" (Veronica4) (line 1), ONE-HOUR NOT SEEN MY CHILDREN for "She hadn't seen them in an hour!" (Olivia2) (line 16), and FRONT DESK, CHECK THERE (Emma3) for "Eventually, the kids were found at the front counter" (line 21). The most frequently used

Table 3. Literal Characteristics

	Cleft	Rank	Restructure	Rank	Pro-Drop	Rank	Total	Rank
				Lower Year				
Ethan1	1	6	1	2	8	1	10	1
Mara1	1	6	1	2	11	8	13	6
Rebecca1	0	1	0	1	12	9	12	3
Olivia2	2	10	1	2	8	1	11	2
Steve2	1	6	1	2	10	4	12	3
Range	0–1		0–1		8–12		10–13	
Mean	0.6		2.2		9.9		11.6	
Mode	1		1		8		12	
				Upper Year				
Emma3	0	1	5	9	10	4	15	9
Matt3	1	6	3	7	12	9	16	10
Gregory4	0	1	3	7	10	4	13	6
Veronica4	0	1	5	9	8	1	13	6
Claire4	0	1	2	6	10	4	12	3
Range	0–1		2–5		8–12		12–16	
Mean	0.2		3.6		10		13.8	
Mode	0		3,5		10		13	

cleft was WHERE, and examples included RUN WHERE? CLOTHES/COSTUME AISLE for "They found their way to the costume aisle," (Olivia2) (line 7) and FINALLY, FIND CHILDREN WHERE? FRONT COUNTER for "Eventually, the kids were found at the front counter." (Steve2) (line 21).

Turning to enrichments (table 4), everyone enriched his or her target text in ASL in some manner. They all substituted broad hypernym terms, such as "dairy" (line 18), with potential hyponyms, such as MILK, CHEESE. Or they enriched a hyponym, such as Walmart (line 1), with a hypernym term, such as STORE, C-O (company).

Everyone included at least one conjunctive device in his or her ASL target texts that was not mentioned in the English source. Gregory4, in fact, added nine conjunctive devices. Popular conjunctive devices were HAPPEN, WHY, and DO-DO.

At the same time, the students also dropped conjunctive devices that were included in the source text. None of them, for example,

TABLE 4. Pragmatic Enrichment

Person	Adjunct	Rank	Agentless Passive Voice	Rank	Conjunction	Rank	Hypernym Hyponym	Rank	Verb	Rank	Total	Rank
					Lower Year							
Ethan1	0	1	3	7	1	1	3	2	3	3	10	2
Mara1	1	3	2	3	1	1	5	6	6	6	15	4
Rebecca1	0	1	2	3	1	1	6	9	1	1	10	2
Olivia2	1	3	1	1	5	7	5	6	5	5	17	5
Steve2	1	3	3	7	1	1	2	1	2	2	9	1
Range	0–1		1–3		1–5		2–6		1–6		9–17	
Mean	0.6		2.2		1.8		4.2		3.4		12.2	
Mode	1		2,3		1		5		NA		10	
					Upper Year							
Emma3	3	10	5	9	8	8	3	2	10	8	29	9
Matt3	2	8	1	1	8	8	3	2	4	4	18	6
Gregory4	2	8	2	3	9	10	7	10	16	10	36	10
Veronica4	1	3	6	10	2	5	4	5	6	6	19	7
Claire4	1	3	2	3	4	6	5	6	11	9	23	8
Range	1–3		1–6		2–9		3–7		4–16	18–36		
Mean	1.8		3.2		6.2		4.4		9.4	25		
Mode	1,2		2		8		3		NA	NA		

translated the adverb "While" as in "While looking through the store . . ." (line 3) and "While the parents searched for eggs . . ." (line 6). The signs DURING or SAME-TIME could have been used to maintain the same level of overt, stated cohesion as the source text. Instead, the audience would have to infer the time frame from context.

Everyone "fixed" or included at least one agent that had been implied but not stated in the source text. For example, where the English text read, "So the police were called" (line 13), several translated this as MANAGER CALL POLICE. Where the existential "there" was used as a pronoun, as in "There were complaints that the costume aisle was a mess!" (line 10), it was replaced with PEOPLE or CUSTOMERS. Veronica4 used this strategy frequently and clarified six implied agents.

In terms of enhancing lexical cohesion, eight of the ten students included an adjunct that was plausible but not stated. As an example, Emma3 added ACCESS FOR DEAF to the English source text, "The family then sued Walmart for lack of accessibility . . ." (line 22). Most indicated that the announcement (line 11) was coming from the ceiling and overhead speakers. Only two of the participants did not include a possible adjunct in their target texts, and both of these individuals were ASL students and had not yet formally studied interpreting (Lower Year).

Everyone also included some potential verb entailments, again enhancing the lexical cohesion of their target texts. Looking at Emma3's translation for "The family then sued Walmart for lack of accessibility . . ." (line 22), she added that the FAMILY SUE, WON. This made sense in context, as it is stated in the next sentence that the family bought a private island. Several students described how the drones brought packages to the island and then dropped them from the air (line 23).

Again, looking at the descriptive statistics (range, mean, and mode), there seemed to be a difference between the Upper and Lower Year students in terms of the number of conjunctions, verb entailments, and total number of enrichment strategies used. The Upper Year students had a higher frequency of these features.

In terms of implicatures (table 5), everyone translated the metaphor, "They were in a pickle" (line 5), with either STUCK or NO EGGS, DO-DO. Others such as Matt3 and Mara1 include a few other

TABLE 5. Implicatures

	Implicatures	Rank Implicatures
	Lower Year	
Ethan1	1	1
Mara1	3	5
Rebecca1	1	1
Olivia2	1	1
Steve2	3	5
Range	1–3	
Mean	1.8	
Mode	1	
	Upper Year	
Emma3	5	9
Matt3	4	7
Gregory4	6	10
Veronica4	1	1
Claire4	4	7
Range	1–6	
Mean	4	
Mode	4	

implicatures, based on verbs of judgment such as how putting on costumes was FUN and living on a private island was ENJOY (able) and PERFECT. The difference in range, mean, and mode between the two groups appeared to be different, with the Upper Year students including more. A statistical analysis, discussed next, verified that there was a difference and that the Upper Year students included more implied speaker meanings (implicatures).

Between-Groups Analysis

A between-group analysis was performed (Upper Year, Lower Year) using the Mann-Whitney test (see table 6). Looking at totals for the ranked sums in each category, the Upper Year students (Years 3 and 4) restructured their texts more often ($p < .05$) and included more total enrichments overall ($p < .05$) and implicatures ($p < .05$) than the Lower Year students (in Years 1 and 2).

Table 6. Between Groups Analysis—Total Scores

	Total Literal	Total Enrichment	Total Implicature
Lower Year or Upper Year	$U = 3$, $Z = -1.88$, $p^{\star} = 0.03$	$U = 0$, $Z = -2.51$, $p^{\star} = 0.01$	$U = 3.5$, $Z = -1.78$, $p^{\star} = 0.04$

The three strategies within Literal were compared (cleft, restructuring, pronoun-drop). There was a significant difference only in restructuring ($U = 0$, $z = -2.51$, $p^{\star} = 0.01$), as the Upper Year students used this strategy more frequently. There was no difference in the number of cleft sentences produced ($U = 4.5$, $z = 1.57$, $p = 0.06$) or in the number of pronouns dropped ($U = 12$, $z = 0$, $p = 0.50$).

Next, the five areas within Pragmatic Enrichment were compared (Adjunct, Agentless Passive Voice, Conjunctive Device, Hypernym/Hyponym, and Verb Entailments). A significant difference was noted in three strategies, as the Upper Year students used the following strategies more often than the Lower Year students:

- Addition of conjunctive devices ($U = 2$, $z = -2.09$, $p^{\star} = 0.02$),
- Addition of verb entailments ($U = 2.5$, $z = -1.98$, $p^{\star} = 0.02$), and
- Addition of adjuncts ($U = 3$, $z = -1.88$, $p^{\star} = 0.03$).

There was no significant difference in the inclusion of agents for agentless passive voice ($U = 10.5$, $z = -0.31$, $p = 0.39$) or in the enrichment of hypernyms/hyponyms ($U = 12$, $z = 0$, $p = 0.5$).

Overall, it was found that the Upper Year students restructured their texts more often than the Lower Year students. They included more total enrichments—specifically, more conjunctive devices, verb entailments, and adjuncts. They also included more implied speaker meanings, or implicatures.

Limitations

There were a number of limitations to this study, one of them being the text itself. It was a monologue and formal and was crafted with vocabulary chosen by a group of senior students who believed the story would be familiar to all interpreting students. In addition, it was crafted to include triggers for things like implicatures and included various aspects such as agentless passive voice to see if the participants

would work dynamically. In addition, the length and frequency of pauses at the end of each sentence was increased in order to let the students do their best possible work. In the real world, spontaneous texts may not include such features, and a speaker would probably not pause for such a long duration at the end of each sentence. Also, the ability to interpret a narrative about a family's trip to Walmart may not transfer over to the ability to interpret other topics.

The participants were also asked to perform a rehearsed sight interpretation of the text. This meant they had time to read the entire text and then make use of that information to practice translating it or sections of it. They were also given an opportunity to ask about specific aspects of the text, such as how to translate specific terms. While this is representative of the sight interpretation process in a real-world context, sign language interpreters must also be able to operate in the consecutive and simultaneous modes.

Another limitation of the study was the low number of participants, who were drawn from a single program. These individuals may have shared signing characteristics based on their instructors' language use or the community in which they resided. Also, only students who were willing to demonstrate their work partook in the study. These individuals may have felt more confident in their abilities than their peers, who may not have volunteered due to more limited fluency. Thus, the results may be positively skewed.

Due to the limitations noted, the quantitative analysis done, therefore, had little power. This study can only be deemed exploratory in nature. If another study were to be done, greater participation would allow for a more comprehensive assessment and representation of patterns that emerge among students.

This study would have benefited from input from a pool of Deaf graders. If this study were to be repeated, having such a pool would enhance the triangulation and veracity. However it should be noted that many of the areas under investigation have been researched in the past and identified in the literature. For example, the dropping of lexical pronouns when working from English into ASL has been described by other researchers (Kegl 1987; Wulf et al. 2002). The addition of conjunctive devices in ASL target texts has been reported in other studies (McDermid 2014b).

Discussion

Looking at the findings and returning to the data, one of the research questions addressed was, "Can McDermid's pragmatic model of interpretation be used to classify and compare the changes in the work of student interpreters?" Based on the findings for this cohort, it was possible to use a model of interpreting based on two broad levels of meaning—literal and dynamically equivalent—to differentiate the target text characteristics of the ASL students and students of interpretation in this sample. Perhaps this or a similar model could be used to help clarify national certification expectations and program outcomes and perhaps address the gap noted in the literature (Godfrey 2011; Wilbeck 2017).

The second research question was, "Do students of interpretation and students of ASL produce different target texts when working from English into ASL? What do those differences look like?" Looking at the literal level of meaning and based on the performance of this group, the Upper Year students used more strategies to produce an ASL target text ($p^{\star} = 0.03$). Specifically, they made use of more text restructuring than the Lower Year students ($p^{\star} = 0.01$). These differences in the surface structure of ASL and English were noted in the literature, which triangulates with the findings of this study (Emmorey 2005; Isham and Lane 1994; Kegl 1987; Wilbur 1994; Wulf et al. 2002).

What this means is that the Upper Year students were making more use of restructuring strategies like placing the ground first before the figure, a preference of the Deaf signers in Emmorey's (2005) study. The Upper Year students restructured their ASL texts more than twice as often as the Lower Year students. For example, Emma3 produced FRONT DESK, CHECK THERE to translate, "Eventually, the kids were found at the front counter."

Looking at the strategies used by the participants to achieve dynamic equivalence, and specifically enrichment, the Upper Year students included more strategies than the Lower Year students ($p^{\star} = 0.01$). Specifically, they included more adjuncts ($p^{\star} = 0.03$), conjunctive devices ($p^{\star} = 0.02$), and potential verb entailments ($p^{\star} = 0.02$). Many of the strategies were noted in the target texts of working sign language interpreters, and so there is some support or triangulation

for the findings of this study. For example, several studies have shown that sign language interpreters include some comparisons and verb entailments in their ASL target texts (Livingston, Singer, and Abramson 1994; McDermid 2012; Russell 2002). They also include both hypernyms and hyponyms (McDermid 2012) or synonyms (Livingston, Singer, and Abramson 1994). Further, McDermid (2014a) noted how certified interpreters included almost twice as many conjunctive devices in their ASL target texts as novice interpreters. Returning to the theoretical framework for enrichment, Halliday and Hassan (1976) argue that the clarification or filling in of these aspects can lead to more intra-sentential ties in a text and higher levels of cohesion.

At the level of implicature, also a facet of dynamic equivalence, the participants broke from the form of some utterances to include a potential but unstated meaning. The Upper Year students did this more frequently ($p^{\star} = 0.04$) with the text used in this study than the Lower Year students. However, even the Lower Year students, who had not taken any coursework in interpretation, were able to include at least one potential implicature in their ASL target texts, by translating, "They were in a pickle" (line 5), as THEY STUCK or NO EGGS, DO-DO? This, again, was supported by research on sign language interpreters, where other authors have noted the addition of implicatures to ASL target texts (Livingston, Singer, and Abramson 1994; McDermid 2012; Russell 2002).

In summary, more research is needed to confirm the results of this study, but preliminary findings indicate that the following areas may be quantifiable benchmarks to explore for differentiating between ASL students and students of ASL-English interpreting:

- text restructuring,
- the addition of conjunctive devices,
- the addition of verb entailments,
- the addition of adjuncts, and
- the addition of potential, relevant implicatures.

What did not seem to be significantly different in the students' ASL target texts was the use of cleft sentences (rhetorical sentences), the number of dropped pronouns, the filling in of agentless passive voice, or the addition of hyponyms or hypernyms.

Additional studies could be conducted to compare ASL signers, student interpreters, novice professional interpreters, and certified interpreters on the language structures noted. In such studies, the participants could be asked to work between both ASL and English and not just from one language to the other. A more comprehensive study could then lead to a significant taxonomy or benchmarks and would help interpreters understand the interlingual abilities of the field, from a student of ASL to certified interpreter. Of course, further research should also include Deaf researchers to ascertain the accuracy of the translated texts and expectations of an ASL-using audience. This would also build a shared understanding of the abilities of sign language interpreters at each stage of their careers.

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Appendix . Stimulus Story and Participants' Strategies.

		Conjunction	Agent	Adjunct	Entailment	Implicature
1	On the day before Halloween, a family consisting of a mother, father, and three children went to Walmart.				Shopping	
2	They needed groceries.	Why, they needed..				
3	While looking through the store, they realized there weren't any eggs left!	Understand				
4	They needed them for breakfast!				For tomorrow, to cook	
5	They were in a pickle.					Stuck, trouble, no eggs
6	While the parents searched for eggs, the kids took off!					
7	They found their way to the costume aisle.					
8	One child tried on the tiger costume.					It was fun!
9	Then they tried on all the rest.				Put on and took off costumes	Parents were still looking for eggs.
10	There were complaints that the costume aisle was a mess!		By People, customers			
11	An announcement was made that three unattended children had been found and should be collected at the manager's office.	Happen	By Manager, Parents should collect	On loud speakers, in ceiling	Children found and taken to the manager's office.	The parents weren't there, they didn't come.
12	After half an hour, the kids had not been claimed.		By parents	. . . in the office	And were waiting	

(*continued*)

Appendix. *Continued*

		Conjunction	Agent	Adjunct	Entailment	Implicature
13	So the police were called.	Happen	By manager		Police arrived.	
14	Unbeknownst to the store manager, the parents were Deaf.					Kids were not picked up.
15	Having realized the kids were gone, the mom asked the dad if he thought the kids were playing hide and seek.				While shopping	
16	She hadn't seen them in an hour!				They disappeared	
17	The dad said that if it was so, what were they to do?					
18	They headed to the dairy section but there was no trace of them!				Headed to and looked through	
19	Then they looked in the produce section.				Headed to and searched	
29	Not there either!					
21	Eventually, the kids were found at the front counter.	Happen	By the parents			
22	The family then sued Walmart for lack of accessibility and for causing emotional distress.	Why did they sue . . .			Sued and won	Walmart discriminated against the parents.
23	They now live on their own private island and have their orders delivered by Amazon drones.	How, drones brought things . . .			Moved to the island. Drones fly over, drop packages.	They don't go to Walmart. Interesting story. They enjoyed it and it was perfect.
	Total					