

RUNNING HEAD: Saying too Little can Make a Big Impact

**Saying too Little can Make a Big Impact:
Graduate Student Knowledge and Use of Telegraphic Input**

By

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Abstract

Introduction: Telegraphic communication is considered a simplification of speech by shortening utterances. This includes omitting function words but keeping content words like nouns and verbs. For example, telegraphic communication may read: “See car.” “More toy?” “Put in box.” “My turn bubbles.” “Doggie run!” (Stronach & Venker, 2017). Methods: A total of 44 Speech-Language Pathology (SLP) graduate students completed an online survey of 20 questions that analyzed their current knowledge, attitudes and practices, and terminology exposure. These questions were taken into comparison when reporting data between first year graduate students and second year graduate students. Results: The majority of participants (59%) answered “yes” as in knowing the term telegraphic communication. Graduate students reported that they use shortened utterances “most of the time” when speaking to children with language delays. Researchers found that the majority of SLP programs do not use the term telegraphic communication. The majority of participants reported not hearing the term mentioned by graduate professors (48%). When comparing first year graduate students with second year graduate students, researchers found that the majority of their attitudes and practices with telegraphic communication aligned with minor differentiation of limiting function words during play.

Introduction

Telegraphic communication is a style of language use that includes content words such as nouns and verbs but omits function words. These omissions include articles and morphological endings. For example, telegraphic communication may read: “See car.” “More toy?” “Put in box.” “My turn bubbles.” “Doggie run!” (Stronach & Venker, 2017). Adults conduct this natural simplification to their speech – most often by shortening the length of their utterances – when speaking to young children, thus providing telegraphic input (e.g., van Kleeck et al., 2010). Adults assume these shortened utterances ease processing demands on children, but research suggests the opposite (Venker, Bolt, Meyer, & Sindberg, 2015). With telegraphic speech being a normal process in language development, many communicators support the use of modeling telegraphic input with little consideration for learners who have communication disabilities such as autism (Brown 1973).

Defining Grammatical Input Versus Telegraphic Input

There are two ways language can be simplified: one is grammatically, and the other is telegraphically. Grammatical simplifications are shorter than typical adult utterances and do not violate grammatical rules (e.g., Mommy goes, Put it in, The cup is full). On the contrary is telegraphic simplifications which break the grammatical rules of English. Some examples of telegraphic simplifications are as follows without the information in brackets: Mommy go[es], Put [it] in, and [The] cup [is] full. As noted from the examples, telegraphic simplification contains clear grammatical errors (Fey, 2008; van Kleeck et al., 2010). Because of its focus on content, telegraphic speech often omits adjectives, articles, and other grammatical morphemes—similar to the concise messages contained in telegrams decades ago (Van Kleeck et al., 2010).

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Rather than placing a burden on children's processing, grammatical features of language may facilitate language processing by helping children anticipate upcoming words (Stronach & Venker, 2017). Communicators can model simple utterances in a correct manner that can promote children's language development. For those who struggle with language due to speech impairments, the ability to have cues that allow for predictions and understanding can assist in their expressive and receptive language skills.

Evidence for Telegraphic Communication

Proponents of telegraphic communication argue it is beneficial for three major reasons: it simplifies language processing, facilitates verbal imitation, and focuses children's attention on the relationships between semantic elements (van Kleeck et al., 2010). Van Kleeck (2010) also argues telegraphic communication allows children to imitate adult models more easily. For example, a child who says "car" may be more likely to imitate the simpler utterance, "Car drive", than the more complex utterance, "The car drives." To confront this argument with opposition, the single-case alternating treatment design by Bredin-Oja and Fey (2014) found that three of five participants with language delay imitated more grammatical morphemes when presented with grammatical models than with telegraphic models. The authors concluded telegraphic prompts are not advantageous and discourage the imitation of grammatically correct utterances in children who are developmentally ready to produce them. Another argument made in favor of telegraphic communication is the idea of presenting only the "most important" words in an utterance—content words—makes it easier for children to process spoken language and learn new words (Wolfe & Heilmann, 2010). In line with this hypothesis, Plunkett, Munakata, and Johnson (2006) found that presenting isolated words was beneficial for word recognition in 17-month-old infants. A case study by Wolfe and Heilmann (2010) found a slight advantage for

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vocabulary learning in a telegraphic input condition. However, other research has shown that inclusion of determiners facilitates language processing in typically developing children by allowing them to anticipate upcoming content words (Fernald & Hurtado, 2006; Kedar et al., 2006; Lew-Williams & Fernald, 2007).

One of the most common theoretic arguments made in support of telegraphic input is that telegraphic models are easier for children to verbally imitate rather than grammatical models (Venker et al., 2019). This claim may have its share of popularity amongst speech-language pathologist's, but the scientific evidence to support this theory is limited. Ten children with moderate intellectual disabilities between 5 and 13 years old were participants in this study on reduced and non-reduced language (Willer, 1974). Half of the children were presented with telegraphic (reduced) imitation models and the other half were presented with grammatical (non-reduced) models. Children presented with reduced models showed better verbal imitation than children presented with grammatical models, which has led some to interpret it as providing support for telegraphic imitation prompts (Venker et al., 2019). However, the grammaticality of the adult models was comprised by length showing telegraphic utterances were always shorter than grammatical utterances. For this reason, the findings of this study cannot speak to the impact of telegraphic versus grammatical input, independent of utterance length.

Evidence Against Telegraphic Communication

The topic of telegraphic input can provoke significant debate; some clinicians passionately support its use, while others argue strongly against it. There are even expert clinical researchers who remain divided on this issue (van Kleeck et al., 2010). The uncertainty on the use of telegraphic communication resides with the lack of knowledge on the subject. There are many reasons to believe that the use of telegraphic communication may not be beneficial to

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young language learners. In fact, telegraphic input may complicate learning processes (Bredin-Oja et al.,2014). According to Bedore and Leonard (1995), telegraphic communication is detrimental to language growth. Use of telegraphic models has the effect of making grammatical forms less consistent. Rather than simplifying language learning, telegraphic adult input can provide positive evidence to children that grammatical details are optional rather than obligatory, thus making them more difficult to learn (Bredin- Oja et al.,2014). These grammatical details are called morphosyntactic features. Telegraphic communication lacks the morphosyntactic features of language which provide useful information about the structure of language and the meaning of words, and omitting these features can put children at a disadvantage (Fey, 2008; van Kleeck et al., 2010). The omission of grammatical features is taking away helpful clues for learning language. This is further penalizing children who have already fallen behind their peers (Stronach & Venker, 2017). Such clues like progressive -ing, third-person singular -s and plural -s are important details in language that help children learn new words (Stronach & Venker, 2017). There is considerable evidence that children do not comprehend adult utterances more readily when grammatical functions are removed (Fey, 2008; van Kleeck et al., 2010).

With it being evident that telegraphic communication causes language delays, what is it doing to language learners with communication disabilities such as specific language impairment (SLI), autism spectrum disorders (ASD) or Down syndrome (DS)? The impact on children with SLI was displayed in a study by Fey and Loeb (2002). They hypothesized that exposing children to sentence-initial auxiliaries (i.e., inverted questions) would increase the saliency which would lead to greater auxiliary development. Three-year-old children with SLI were exposed along with 2-year-old typically developing children who were not yet producing auxiliaries to play sessions. During these play sessions, the adult produced frequent auxiliaries in declarative sentences or an

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experimental protocol in which auxiliaries were presented as recasts in interrogative form (e.g., Child: “Baby eat.” Adult: “Will the baby eat?”; Fey et al., 2002). The researchers compiled data showed the use of auxiliary-fronted questions failed to facilitate auxiliary development. Also, the children in the experimental group used fewer auxiliaries than the children in the play group (Fey et al., 2002). The results suggest that if children early in development do not fully process the auxiliary immediately before the sentence subject, frequent adult use of subject–auxiliary reversals may wrongly convey to the child that unmarked strings such as “the baby eat” are acceptable in main clauses (Fey et al., 2002) which circles back to the idea of the obligatory nature of morphological markers.

Understanding how telegraphic input affects language development in children with ASD is particularly important because many autism interventions approaches explicitly incorporate the use of telegraphic communication for teaching language (Lovaas, 2003; Maurice, Green, & Luce, 1996). As stated before, grammatical structures, such as, verb endings, plural markers, and determiners provide statistical and linguistic clues about language, and children can use those cues to learn the meanings of new words. Gleitman (1990) coined this process as “syntactic bootstrapping”. An example of syntactic bootstrapping is seen in a study conducted by Brown (1957). In his study, children were asked to point to pictures of “sibbing,” “a sib,” or “some sib.” Preschoolers unfailingly identified pictures of an action, an object, and a substance. The only way children were able to identify the correct meaning was by using information from the morphosyntactic features seen in the “-ing”, “a”, and “some.” Studies of syntactic bootstrapping have focused on typically developing children, but new works have been suggesting that some children with ASD are also capable of learning new words through syntactic bootstrapping (Naigles, Kelty, Jaffery, & Fein, 2011; Shulman & Guberman, 2007). These findings indicate

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that children with ASD can take advantage of information contained in the grammatical structure of language. However, when grammatical information is removed—as seen in telegraphic communication—the linguistic clues it provides is also removed; therefore, children can no longer take advantage of the prospective benefits presented by grammatical input. With support in research that shows children are aware of grammatical morphemes and recognize some of these morphemes' grammatical functions well before they produce them, why hinder their linguistic abilities, especially when language-impaired children are already at a disadvantage? Fernald and Hurtado (2006) took 18-month-old toddlers' recognition of words in contexts with grammatical detail (e.g., look at the baby) and compared it to their recognition in contexts with all grammatical detail omitted (Look. baby.). They proved children are faster to respond accurately to target words when those words are presented in a short grammatical sentence. Thus, it appears that complete phrases and sentences with preserved prosodic contours and predictable co-occurrences of forms, such as determiners with nouns, offer an advantage rather than a disadvantage to young children learning language (Fernald et al., 2006).

Characteristics of Down syndrome (DS) include language deficits beginning early in development and intellectual disabilities. In terms of expressive language, productive language skills in children with DS often remain telegraphic throughout development, lacking many grammatical markings (Lorang et al., 2020). In fact, when matched to typically developing children on expressive vocabulary skills, children with DS demonstrate significantly fewer grammatical structures (Lorange et al., 2020). With children with DS, telegraphic input may inhibit the ability to learn novel words obtained by word learning through grammatical structure, this is called syntactic bootstrapping, a common method of word learning in children with DS. Previous research indicates that individuals with DS are able to use syntactic bootstrapping to

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learn novel nouns and verbs, though they may do so less efficiently than typically developing children. This suggests that DS requires more consistent input of grammatical structures to utilize this word learning mechanism (2020). Removing function words and bound morphemes may further hinder the ability to acquire the grammatical aspects of language children with DS struggle with.

Language abnormalities and problems in communication are primary criteria in the diagnosis of autism (Prizant & Duchan, 1981). With communication deficits being a primary identifying factor in autism, the question of how telegraphic communication can further cause deficits in language must be addressed. There is substantial evidence that children do not comprehend adult utterances more easily when grammatical functions are eliminated (Fey, 2008; van Kleeck et al., 2010). Studies of telegraphic communication either indicate no significant difference in comprehension between grammatical and telegraphic sentences or favor the grammatical models (van Kleeck et al., 2010). Second, it is acknowledged that children have greater difficulty learning grammatical forms that are sparsely represented and/or optional in the language (Leonard et al., 2003; Leonard, Eyer, Bedore, & Grela, 1997; Rice & Wexler, 1996). Lastly, evidence suggests certain types of grammatically correct input can have negative consequences if they are not fully processed by young language learners.

A type of disordered pattern children with autism use when communicating is called echolalia. Echolalia is the meaningless repetition of a word or groups of words that were just spoken by another person (Prizant & Duchan, 1981). Researchers Venker and Stronach (2017) shared concern saying, “children may continue speaking ungrammatically if [telegraphic communication] is practiced and reinforced by their communication partners”. They believe this could be problematic for children with ASD who regularly use echolalic language. One of

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Venker's studies showed higher rates of telegraphic communication among parents of children with ASD (Venker & Stronach, 2017). These higher rates were associated with less-developed language skills two years later. The relationship continued to be reflected when accounting for children's early language abilities. Although treatment studies are needed to confirm this finding, this investigation provides preliminary evidence that telegraphic input may have a negative impact on language learning.

Summary and Research Questions

Despite children's already acquired grammatical knowledge and the potential negative consequences telegraphic communication has on children with language impairments, there still remains advocates of this simplified way of communication. The purpose of the current study was to examine the knowledge and use of telegraphic input by graduate students studying speech-language pathology.

Specific Research Questions:

1. What is the current knowledge of graduate students related to telegraphic speech?
2. What are graduate students' attitudes and practices with telegraphic speech?
3. What exposure have graduate students had to the term "telegraphic communication"?
4. Is there a difference between attitudes and practices depending on if the student is in their first or second year of the graduate program?

Methods

Recruitment

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Through email distribution to graduate programs and social media outlets, graduate students in the speech-language pathology (SLP) programs were provided a survey link. The invitation to participate as well as the survey link was posted on message boards of nationwide graduate social media groups. These social media pages were chosen as the researchers thought the members of these private social media groups were accepted in based on their graduate school acceptance and communication sciences and disorders degree which fit the quota of the necessary information inquired for the presented research questions. In addition to the social media postings for research participation, 37 graduate students from the University of Wisconsin- River Falls were emailed the participation invitation and survey link as contrast to the nationwide invitation through social media graduate student SLP groups.

The survey was available for 9 weeks and a total of 44 communication sciences and disorders graduate students responded. All 44 participants completed the survey with participants having the option to opt out of questions. Due to 100% completion, all responses were included in the data analysis. Of the 44 participants, 57% (n=25) completed the survey through the email distribution while 36% (n=16) accessed the survey through private graduate student social media pages for communication sciences and disorders. Noncompletion of the item asking for University name was noted in 7% of participants (n=3).

Participants

Participants took the survey between February through March, 2021. All participants were graduate students (100%) with 50% (n=22) being first year graduate students and 50% (n=22) second year graduate students. One participant selected other with reasoning of being a 3rd year student through a 3-year track graduate program. This student was paired with second year graduate student data. Hours of clinical experience ranged from 7 hours to 386 hours with

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an overall average of 161 hours amongst the n=44 participants who answered this question.

Demographic information revealed that all participants (n=48) were females. In regards to race, those who identify as white made up 96% (n=42) of participants with 2% (n=1) answering Asian, and 2% (n=1) marking “prefer not to answer.” When referring to participants ethnicity, 96% (n=42) replied “not Hispanic or Latino,” 2% (n=1) replied “Hispanic or Latino,” while 2% (n=1) selected “prefer not to answer.”

Materials

A 20-question, web-based survey was developed by the researchers in order to analyze participants current academic standing (i.e., 1st year graduate student, 2nd year graduate student), the institution where they are receiving their master’s degree, followed by additional demographic information (i.e., gender, race, ethnicity). The bulk of the survey involved gathering information based on their current knowledge of telegraphic communication, followed by telegraphic communication scenarios in which they rated “always,” “most of the time,” “about half the time,” “sometimes,” “never,” or “prefer not to answer” in their personally instances and preferences for addressing certain communication scenarios. Refer to Appendix A for complete survey. Some questions required qualitative input regarding a personal definition of telegraphic communication. On average, it took participants 612.3 seconds (approximately 10 minutes) to complete the survey. Internal consistency of the survey was measured using SPSS, Cronbach’s $\alpha = 0.615$. This reliability statistic is likely low given the brevity of the survey instrument (Tavakol & Dennick, 2011).

Prior to accessing the survey, a one-page description of the purpose of the study was given: “This survey project explores the understanding and use of telegraphic communication amongst graduate students enrolled in speech-language pathology programs.” The survey

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introduction also highlighted the participants role in the survey process, time to complete the survey, and risks and benefits of participation. Confidentiality assurance was included to acknowledge that the information collected will be used for the stated purposes of the research project only and will not be provided to any other party for any other reason at any time except and only if required by law. The surveys were also stored on a password protected web platform for one year. The de-identified responses were stored in a file shared only by the investigators for up to seven years following the conclusion of data collection.

Following the approval of the institutional review board at the University of Wisconsin-River Falls (IRB-FY2020-88), the researchers distributed the survey using the secure, online survey software Qualtrics (2014). The participants of the survey consented to participating in this research by selecting *yes* or *no* at the end of the survey introduction on the survey's first page. Data that was gather was kept anonymous and was analyzed using a data spreadsheet pulled from Qualtrics.

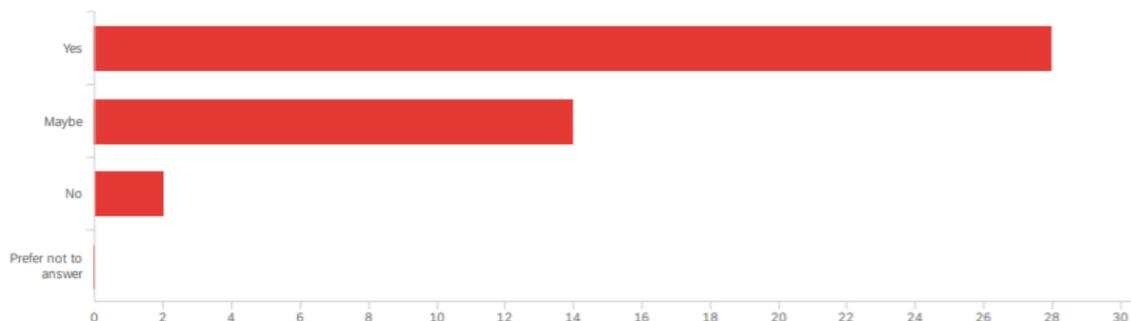
Results

Current Clinical Knowledge

The first research question aimed to investigate the current clinical knowledge of graduate students in communication sciences and disorders with the term “telegraphic communication”. When asked if they knew what the term telegraphic communication is, 63% (n=28) responded “yes”. A total of 32% (n=14) responded “maybe” in regard to their current knowledge of the term. Lastly, 5% (n=2) responded “no” they did not know what telegraphic communication is. All participants (n=44) responded to this question.

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Table 1. Reported knowledge of the term “telegraphic communication” in communication sciences and disorders graduate students.



An additional question to assess participant current knowledge asked them to define/ describe telegraphic communication in relation to speech-language service using their prior knowledge or an assumption. A total of $n=39$ participants responded to this question. This was collected as qualitative data in which participants were able to type an entry into text box. Answers regarding “simple communication,” “speaking short phrases,” “phrases omitting articles,” or responses under the area of “only using content words and not filler words” were selected as correct. After analyzing responses, researchers interpreted that approximately 79% ($n=31$) had a similar definition or general idea of telegraphic therapy’s meaning. The remaining 21% ($n=8$) were marked as not defining the term correctly. Examples of incorrect definitions included responses that regard technology use as telegraphic communication (“using electronic resources,” “morse code,” “activities online,” “therapy through telepractice or email”).

Attitudes and Practices

Our second research question looked at the attitudes and practices that SLP graduate students have towards telegraphic communication. To gain data to meet this research question,

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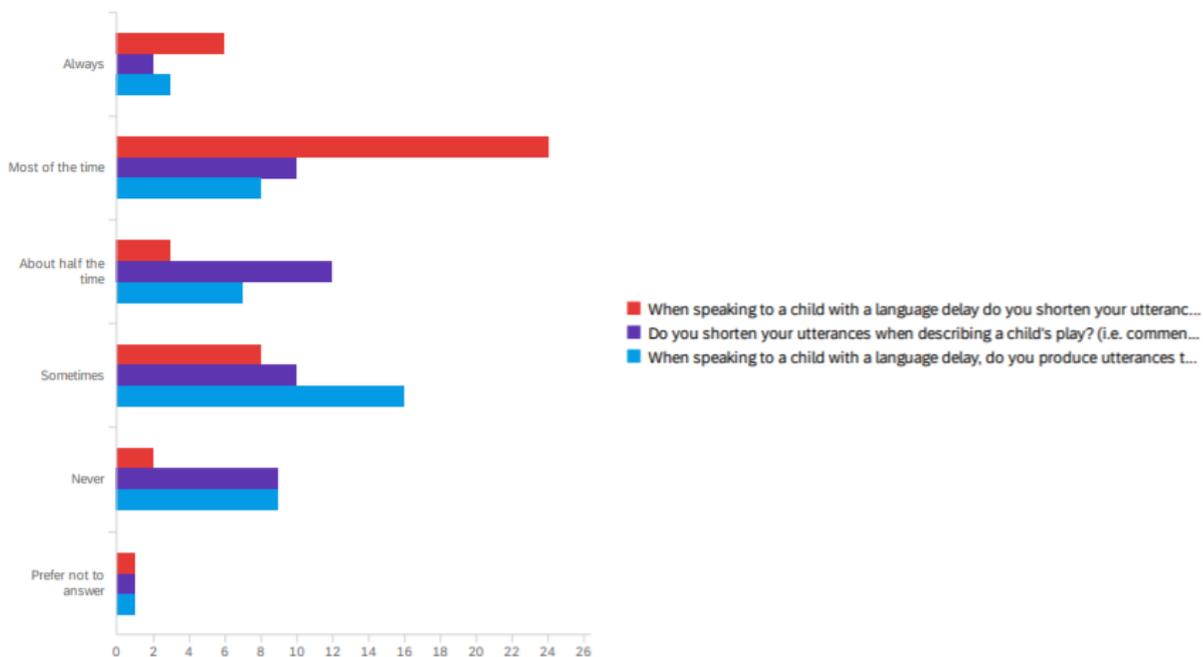
researchers constructed reflection questions which used a rating scale method. Reflection questions used the following scale: “Always,” “Most of the time,” “About half the time,” “Sometimes,” “Never,” and “Prefer not to answer.” The first question in which participants were asked to reflect using the rating scale, asked if when speaking to a child with a language delay do you shorten your utterances compared to utterances you would typically produce during adult conversations. All participants (n=44) responded to this reflection question. Of the 44 participants, 14% (n=6) responded “always” shortening their utterances. A rating of “most of the time” reported 55% (n=24) reflecting this rating. Participants who responded they “about half the time” shorten their utterances when working with a child language delays was 7% (n=3) of participants. About 18% (n=8) responded “sometimes” while 5% (n=2) responded they “never” shorten their utterances in such scenarios. The “prefer not to answer” was an option used by 2% (n=1) of respondents. An additional question to assess practices and attitudes asked if participants shorten their utterances when describing a child's play (i.e., commenting, linguistic mapping). For example, saying, "ball go down" vs. "The ball is going down." All participants (n=44) responded to this reflection question. Data collected from the rating scale showed 5% (n=2) “always” shorten their utterances to describe a child’s play. A total of 23% (n=10) replied “most of the time”. The rating of “about half the time” was used by 27% (n=12) of respondents. About 23% (n=10) rated their use of short utterances during child’s play as “sometimes”. Those who responded “never” included 21% (n=9) of participants with 2% (n=1) choosing “prefer not to respond”. The final question that analyzed graduate students’ attitudes and practices with telegraphic communication asked if when speaking to a child with a language delay, do they produce utterances that contain content words but eliminate function words. In response to this reflection question, 7% (n=3) responded “always” while 18% (n=8) responded the “most of the

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time” use content words but eliminate function words with children with language delays.

“About half the time” received 16% (n=7) of participants vote. A total of 37% (n=16) responded “sometimes” while 21% (n=9) reported never using content u=words but eliminating function words. One participant (2%, n=1) chose that they “prefer not to answer”.

Table 2. Reported ratings for participants reflection on their clinical practices with young children with communication delays- When speaking to a child with a language delay do you shorten your utterances compared to utterances you would typically produce during adult conversations? -Do you shorten your utterances when describing a child's play? -When speaking to a child with a language delay, do you produce utterances that contain content words but eliminate function words?



Participants were then asked to rate according to their extents of agreement and disagreement with presented statements regarding telegraphic communication. Researchers created a rating

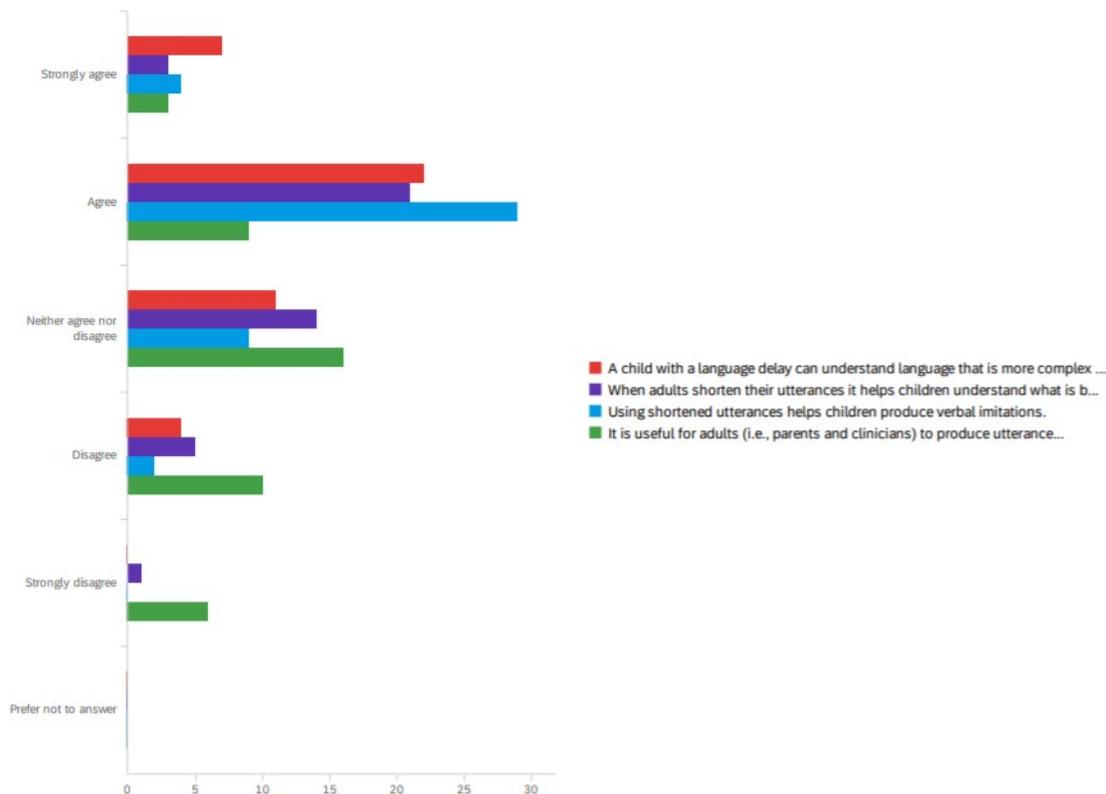
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scale that was displayed with the options as follows: “strongly agree,” “agree,” “neither agree or disagree,” “disagree,” “strongly disagree,” and “prefer not to answer.” The first statement participants were asked to rate was, “a child with a language delay can understand language that is more complex than what he or she can say.” A rating of “strongly agree” was chosen by 16% (n=7) of participants. A rating of “agree” represented 50% (n=22) of participants. Those who chose “neither” accounted for 25% (n=11) of participants. Disagree was 9% (n=4) of votes. “strongly disagree” and “prefer not to answer” received no responses (0%, n=0). The next statement was rated by participants: When adults shorten their utterances, it helps children understand what is being said. Ratings for this statement are as follows: 7% (n=3) stated “strongly agree”, 48% (n=21) responded “agree”, 32% (n=14) responded “neither agree or disagree”, 11% (n=5) chose “disagree”, 2% (n=1) rated “strongly disagree”, while 0% (n=1) chose “prefer not to answer”. “Using shortened utterances helps children produce verbal imitations” was the third statement participants were asked to rate their extent of agreement or disagreement on. Most participants rated this question “agree” with 66% (n=29). A rating of “neither agree or disagree” was noted to have the next highest data percentage of 21% (n=9). Next the rating of “strongly agree was chosen by 9% (n=4) of participants and about 5% (n=2) chose a rating of “disagree”. No participants rated: “strongly disagree” or “prefer not to answer” (0%, n=0). A final statement to address the research question of attitudes and practices was, “It is useful for adults (i.e., parents and clinicians) to produce utterances that contain content words but eliminate function words when speaking to a child with a language delay (e.g., "dog running" instead of "the dog is running").” Participants favored the rating of “neither agree or disagree at 37% (n=16), following a rating of “disagree” with 23% (n=10) of participants choosing it.

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“Agree” received a rating from 21% (n=9) of participants. About 14% (n=6) chose “disagree” and 7% (n=3) chose “strongly agree”. No participants chose “prefer not to answer (0%, (n=0)).

Table 3. Reports ratings for extent of agreement and disagreement with statements regarding the use and functions of telegraphic communication.



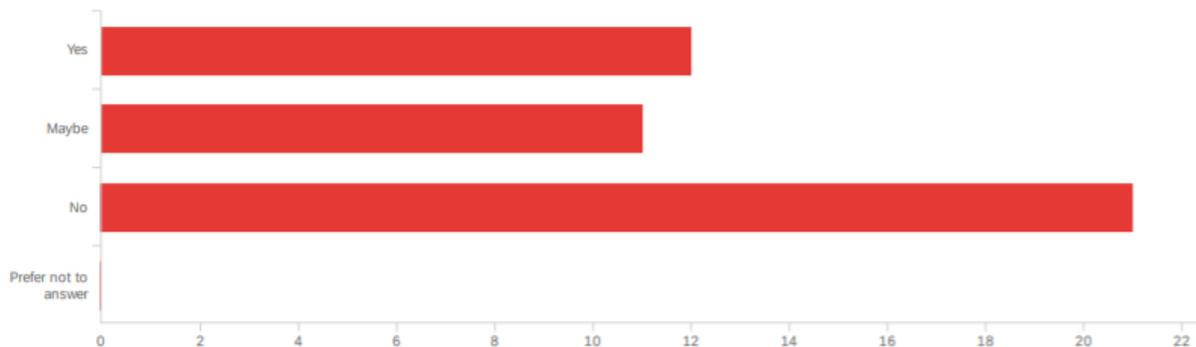
Terminology Exposure:

Our third research question looked at graduate students’ exposure to the term “telegraphic communication”. To analyze this research question, the survey included a question asking if participants have heard their professors use the term “telegraphic communication”. A total of 59% (n=26) answer “yes” replying that they have heard their professors use the term in their

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program. While 18% (n=8) responded “maybe” and 23% (n=10) responded “no”. All participants (n=44) responded to this question.

Table 4. Reported answers in reply to exposure to the term “telegraphic communication” from professors in speech-language pathology programs.



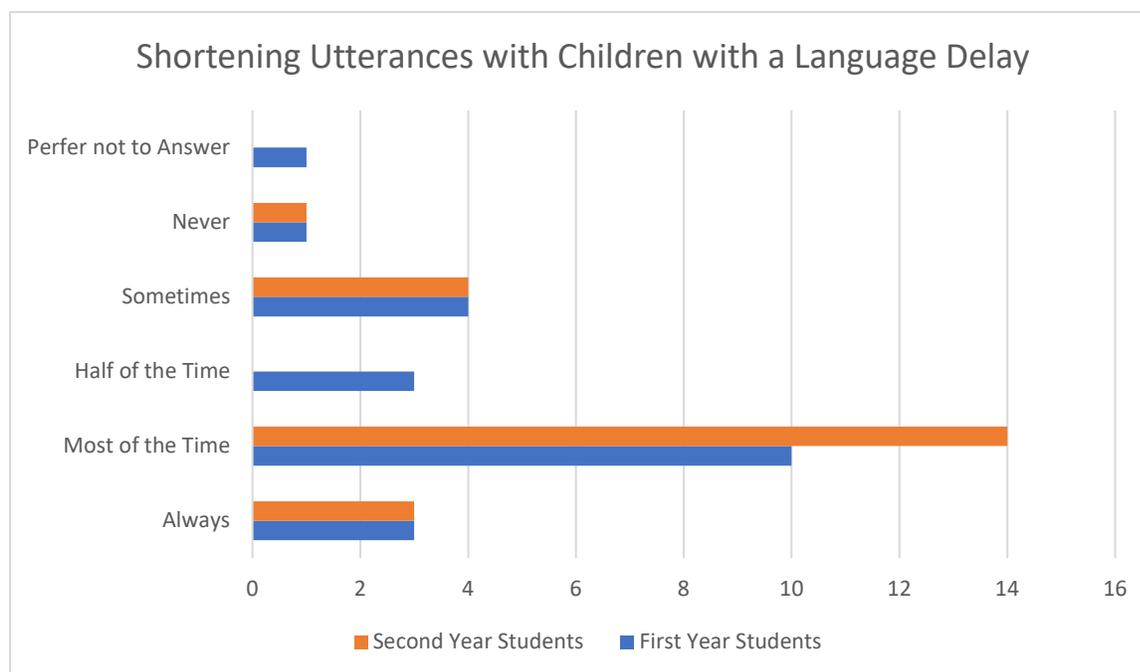
Comparison of First- and Second-Year Students

Our fourth research question analyzed the difference between attitudes and practices depending on if the student is in their first or second year of the graduate program. First year students were separated in the data to analyze their ratings for reflection questions that addressed attitudes and practices in telegraphic communication. Second years were separated as well as to depict comparison data. The first attitudes and practice reflection question was “When speaking to a child with a language delay do you shorten your utterances compared to utterances you would typically produce during adult conversations? When looking at first year graduate students, 14% (n=3) responded “always.” About 46% (n=10) chose “most of the time.” “About half the time” was chosen by 14% (n=3) of participants. “Sometimes” was rated by 18% (n=4) of participants while 4% (n=1) chose “never” using shortened utterances with children with a language delay. One participant (4%, n=1) chose to “prefer not to answer.” Comparing this same

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reflection question to second year graduate students, 14% (n=3) rated “always” which is the same compared to undergraduates. About 64% (n=14) chose “most of the time.” “About half the time” was reported with no ratings (0%, n=0). “Sometimes” was used by 18% (n=4) of second year graduate students which is the same percentage as first year students. Lastly, “never” was used by 4% (n=1) of participants with no participant choosing “prefer not to answer” (0%, n=0). The differences between categorical responses of first and second year students were not statistically significant ($\chi^2(4) = 4.789, p = 0.310$).

Table 5. Report of correlation between first year graduate students and second year graduate students on their practices with children with language delays. The survey question analyzed a rating scale method for those that shorten their utterances when speaking to children with language delays.



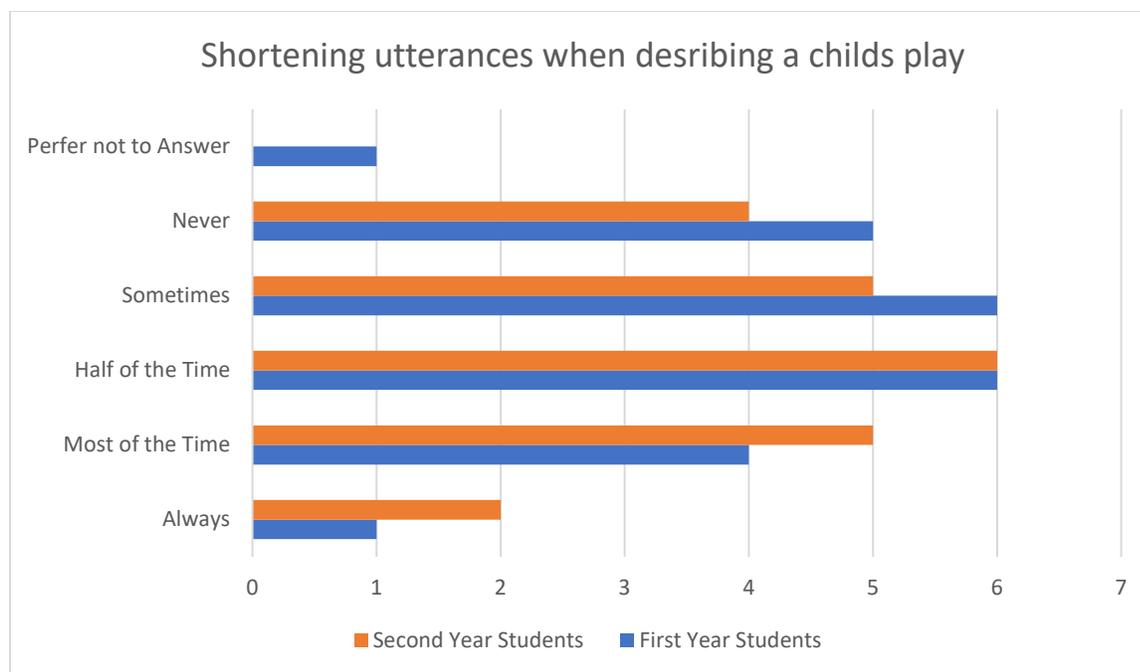
The second reflection question was, “Do you shorten your utterances when describing a child's play?” Compiling responses from first year graduate students, “always” was used by 4% (n=1) of

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participants. “Most of the time” was used by 18% (n=4) of participants. A rating of “half of the time” and “sometimes” reported the same percentage of rating being 27% (n=6). About 23% (n=5) of participants chose “never” using short utterances to describe play. One participant (4%, n=1) chose “prefer not to answer. When comparing the same reflection questions to second year students, a rating of “always” was chosen by 9% (n=2) of participants which slightly higher than first year students. A rating of “most of the time” was used by 23% (n=5) of participants which is slightly higher when compared to first year students. First and second year graduate students rated the same percentage for “half of the time.” The rating of “sometimes” was 4% lower than that of first year students (23%, n=5). The rating of “never” was lower compared to first year students with 18% (n=4) of second year participants. No participants responded “prefer not to answer (0%, n=0). As in the first question, the differences between categorical responses of first and second year students were not statistically significant ($\chi^2(4)=0.646, p = 0.958$).

Table 6. Reports a correlation between first year graduate students and second years graduate student practices in communication while describing a child’s play during therapy.

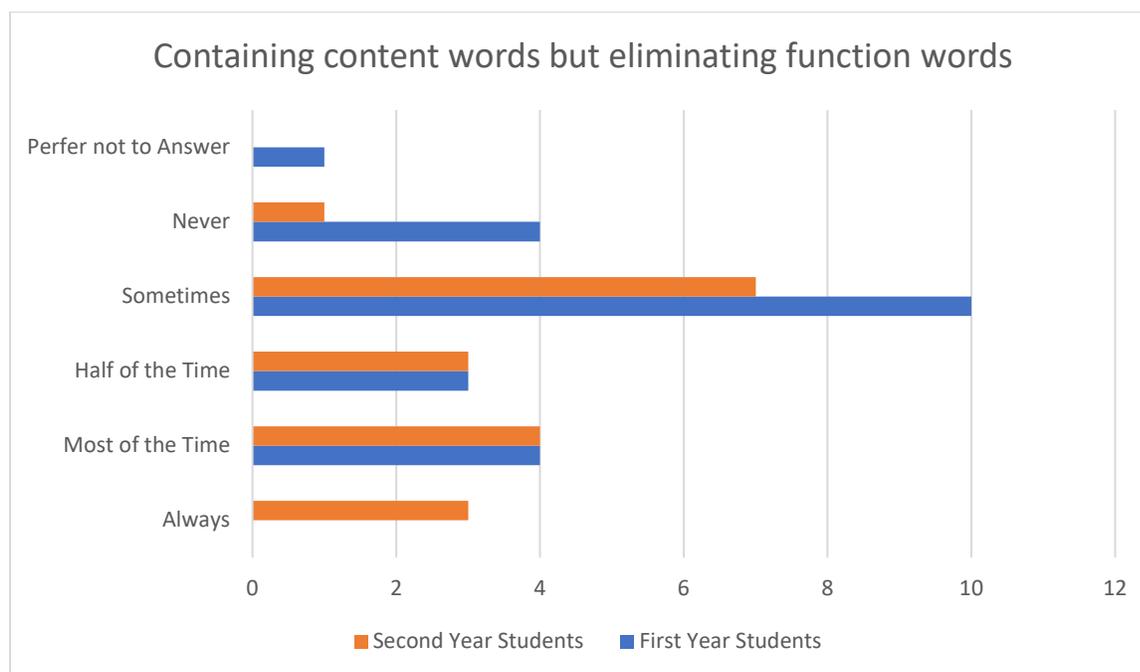
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The researchers last reflection question was, “When speaking to a child with a language delay, do you produce utterances that contain content words but eliminate function words?” First year student results are as follows: 0% (n=0) rated “always”, 18% (n=4) responded “most of the time”, 14% (n=3) rated “half of the time”, 46% (n=10) rated sometimes, never was 18% (n=4), and “prefer not to answer” was 4% (n=1). Data for second year graduate students showed an increase in the rating of “always” with 14% (n=3). Then rating of “most of the time” was the same between first- and second-year students (18% (n=4)) as well as the rating for “half the time” (14% (n=3)). A decrease in the rating for “sometimes” was noticed comparing second year graduate student to first year students (32% (n=7)). Lastly, “never” had a slight increase of 23% (n=5) with no responses for “prefer not to answer” (0%, n=0). The differences between categorical responses of first and second year students were not statistically significant ($\chi^2(4) = 3.619, p = 0.460$).

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Table 7. Reports correlational data between first year graduate students and second year graduate students and their practices of containing content words and eliminating function words when speaking with a child with a language delay.



Discussion

Current Clinical Knowledge

To examine the current clinical knowledge of SLP graduate students, researchers asked questions in relation to having currently known the term as well as quantitative data entries for their definition of the term. The results of our survey showed the majority of participants, 59% (n=26) responded “yes” as in knowing the term “telegraphic communication”. Definitions of the term ranged from qualifying as “simple communication”, “speaking short phrases”, “phrases omitting articles”, or responses under the area of “only using content words and not filler words”

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to not qualifying when stated that telegraphic communication was “using electronic resources”, “morse code”, “activities online”, “therapy through tele practice or email”. Our data for correct versus incorrect definitions showed the majority of participant, 79% (n=31), knew a general definition of telegraphic communication.

Attitudes and Practices

Our data for current attitudes and practices was analyzed in a rating scale method. Reflection questions used the following scale: “Always”, “Most of the time”, “About half the time”, “Sometimes”, “Never”, and “Prefer not to answer”. Questions were in relation to a similar study conducted by Venker, C. E., Yasick, M., & McDaniel, J. (2019). Our first question asked if when speaking to a child with a language delay do you shorten your utterances compared to utterances you would typically produce during adult conversations. The majority of participants, 55% (n=24), reported that they shorten their utterances “most of the time.” In comparison to Venker et al., study, practicing SLPs were provided a similar question in which the vast majority of participants (82%) reported using telegraphic input (Venker et al., 2019). It can be noted that both studies relay a high percentage of telegraphic input usage. An additional question to assess practices and attitudes asked if participants shorten their utterances when describing a child's play (i.e., commenting, linguistic mapping). For example, saying, "ball go down" vs. "The ball is going down. The rating of “about half the time” was used utilized by the most participants with 27% (n=12) closely followed by about 23% (n=10) rating their use of short utterances during child’s play as “sometimes”. Such low percentages have a parallel correspondence with the Venker et al., study. Their research showed SLPs reporting use of telegraphic input more frequently when prompting for verbal imitations than when describing play or providing a directive/request (2019). The final question asked if when speaking to a child with a language

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delay, do you produce utterances that contain content words but eliminate function words. In response to this reflection question, the majority of participants, 37% (n=16), responded “sometimes” while in close second 21% (n=9) reported “never” using content words but eliminating function words. Such variations in ratings with this question suggest the need for more purposeful clinical decision making when providing telegraphic input.

Overall, the first question serves as an overview of clinician language in graduate students. It serves the purpose of comparing that the majority of participants use shortened utterances “most of the time” but yet report “sometimes” when describing play and eliminating function words. This suggests graduate clinicians are using shortened utterances beyond during play in therapy sessions. Perhaps mainly for use in verbal imitations as reported by the participants in the Venker et al., study. The definitional variance in ratings may be due to the question phrasing of “shortened utterances” in question one and “content words but eliminating function words” in the third question. This highlights the misinterpretation among graduate students’ understanding of the term “telegraphic communication”. Surprisingly, even practicing SLPs don’t understand the terms significance and effects. Only 30% of SLPs who reported using telegraphic input felt that it was useful (Venker et al., 2019). That was a reported percentage out of the 88% of participants who reported using telegraphic input.

Terminology exposure

Our data revealed that the majority of participants, 48% (n=21), responded “No” when asked if their professors in their graduate program have used the term “telegraphic communication. This indirectly correlated with the majority of responses being “yes” when asked if the graduate students know the term. Researchers suggested that the term was gathered

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from other sources beyond professors at the participants graduate program or, if not heard from graduate professors, the term may have been used in undergraduate courses.

Study Strengths and Limitations:

Strengths of this study include distribution of the survey to graduate programs across the United States included those in the Midwestern regions, East coast, and Southern states. Another strength is that of the 20 questions asked in the survey, only 3 questions did not receive full completion by some of the participants which results in consistency and accuracy of data across questions. A strength that also assisted in correlational data accuracy was the even distribution of first year graduate student participants (n=22) and second year graduate student participants (n=22).

Limitations of this study include the small sample size of participants. Efforts were made to generate a larger number of participants by conducting follow-up emails of the survey link to the University of Wisconsin-River Falls as well as creating weekly posts in graduate student social media pages of the link. Its limitation in being only accessible electronically may have impacted those who do not use social media outlets. Although the survey was able to cover graduate programs across the United States, it was limited to just one country. Additional limitations include limited variation amongst demographic information. The majority of participants were white and not Hispanic or Latino. All participants were female. Therefore, this study lacked demographic and cultural variances that maybe linked to knowledge, attitudes and practices, and terminology exposure of telegraphic communication.

Future Research

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Future research should obtain larger sample size with populations of demographic variance within and outside of the United States. The varying attitudes towards telegraphic communication was analyzed but generating data on the knowledge of how it could hinder language development in children with language impairments was not assessed in this research project. Also, gathering information on where participants have gained their current attitudes towards telegraphic communication would help locate whether graduate clinicians are using evidence-based practice when using telegraphic communication.

Implications and Conclusions

Our survey resulted in valuable information about current graduate clinician knowledge, attitudes and practices, and terminology exposure of telegraphic communication. A significant finding is that the majority of graduate student's report knowing the term, while a majority of the participants reported using shortened utterances with children with language impairments; concluding that graduate students can define telegraphic communication but are unaware of its affects of children with language impairments. Additionally, most of the participants reported not gaining knowledge of the term telegraphic communication from their professor suggesting that they have received their knowledge from alternate sources. Reliability of these sources could alter clinical practices and attitudes towards telegraphic communication if not exposed to hindering aspects in has on children's language development. This shows that continued exposure to the term telegraphic communication needs to be implemented in graduate programs as well as followed-up with evidence of its use when implementing it in therapy sessions.

References

- Bredin-Oja, S. L., & Fey, M. E. (2014). Children's responses to telegraphic and grammatically complete prompts to imitate. *American Journal of Speech-Language Pathology*, 23(1), 15-26.
- Fernald, A., & Hurtado, N. (2006). Names in frames: Infants interpret words in sentence frames faster than words in isolation. *Developmental science*, 9(3), F33-F40.
- Fey, M. E., & Loeb, D. F. (2002). An evaluation of the facilitative effects of inverted yes-no questions on the acquisition of auxiliary verbs. *Journal of Speech, Language, and Hearing Research*, 45(1), 160-174.
- Lorang, E., Venker, C. E., & Sterling, A. (2020). An investigation into maternal use of telegraphic input to children with Down syndrome. *Journal of Child Language*, 47(1), 225-249.
- Prizant, B. M., & Duchan, J. F. (1981). *The functions of immediate echolalia in autistic children*. *Journal of speech and hearing disorders*, 46(3), 241-249.
- Qualtrics. (2014). [Computer software]. Provo, UT: Author.

RUNNING HEAD: Saying too Little can Make a Big Impact

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education, 2*, 53.

van Kleeck, A., Schwarz, A. L., Fey, M., Kaiser, A., Miller, J., & Weitzman, E. (2010). Should we use telegraphic or grammatical input in the early stages of language development with children who have language impairments? A meta-analysis of the research and expert opinion. *American Journal of Speech-Language Pathology, 19*(1), 3-21.

Venker, C. E., & Stronach, S. T. (2017). When Is Simplified too... Simple? Emerging research points to benefits of using simple, grammatically correct sentences with children with delays. *The ASHA Leader, 22*(1), 42-47.

Venker, C. E., Bolt, D. M., Meyer, A., Sindberg, H., Ellis Weismer, S., & Tager-Flusberg, H. (2015). Parent telegraphic speech use and spoken language in preschoolers with ASD. *Journal of Speech, Language, and Hearing Research, 58*(6), 1733-1746.

Venker, C. E., Yasick, M., & McDaniel, J. (2019). Using telegraphic input with children with language delays: A survey of speech-language pathologists' practices and perspectives. *American journal of speech-language pathology, 28*(2), 676-696.

Willer, B. (1974). Reduced versus nonreduced models in language training of MR children. *Journal of Communication Disorders, 7*, 343-355.

Appendix A

Telegraphic survey

Study Title: IRB-FY2021-3

Telegraphic Communication

Graduate Research

Researcher Names/Department Contact Information

1. Sheri Stronach, PhD2
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We are asking you to participate in our research study. Participation is voluntary and you may stop at any time, including skipping any questions you do not want to answer for any reason. If you choose not to participate or stop participating, or skip any questions, there will be no negative consequences to you. Participating will not change anything about your relationship with the researchers or our Departments. Overview of the Research Purpose of the Study, This survey project explores the understanding and use of telegraphic communication amongst graduate students enrolled in speech-language pathology programs. What you will be asked to do. You will be asked questions about yourself and your program and about telegraphic communication. Amount of time it will take you to participate. This survey should take 5-10 minutes to complete. Risks to you if you choose to participate. Risks associated with confidential on-line surveys are minimal but include emotional responses to the questions or content area. What we will do to reduce the risks. You may skip any question or stop participating at any time. Benefits to you or others if you choose to participate. Your responses may be used to guide future research and potentially help improve graduate education in the area of language intervention. Confidentiality and Data Protection Who will see my answers/information? The information collected will be used for the stated purposes of this research project only and will not be provided to any other party for any other reason at any time except and only if required by law. Where will my answers/ information be stored? Your original survey will be stored on a password protected

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web platform for one year. Your de-identified responses will be stored in a file shared only by the investigators for up to seven years following the conclusion of data collection. How will my answers /information be protected? You should be aware that although the information you provide is confidential, it is transmitted in a non-secure manner. There is a remote chance that skilled, knowledgeable persons unaffiliated with this research project could track the information you provide to the IP address of the computer from which you send it. However, your personal identity cannot be determined. Mandated Reporting Requirements We are mandated reporters and if we suspect a child or vulnerable adult is being abused or neglected, we are required by law to report this information to local child protection or adult protection agencies or to the police. Protection of Human Research Subjects. If I have questions about this research I should contact: Sheri Stronach at sheri.stronach@uwrf.edu. If I have questions or want to complain about my rights or how I was treated as a research participant I should contact: Institutional Review Board Chair University of Wisconsin River Falls: 410 S. Third St. River Falls, WI 54022715-425-0629 irb@uwrf.edu. Please choose yes or no if you agree to participate in this survey. If you choose "Yes" you will be taken to the survey. If you choose "No", you will exit out of this survey. You may skip any question you do not want to answer by choosing "Prefer not to answer" or leaving your response blank. If you want to stop answering questions, please just close your web browser.

Yes (1)

No (2)

Are you currently in a communication sciences and disorders master program?

Yes (1)

No (2)

Type the name of the university in which you are attending graduate school (you may leave this question blank if you prefer not to answer).

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What year of graduate school are you in?

- First year (1)
- Second year (2)
- Other (3) _____
- Prefer not to answer (4)
-

How much clinical experience have you acquired within your graduate program thus far (i.e., hours of direct speech services)? (Leave blank if you prefer not to answer)

What is your gender?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to answer (4)
-

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Which race category(ies) best describe(s) you? You may choose more than one.

- American Indian or Alaska Native (1)
 - Asian (2)
 - Black or African American (3)
 - Native Hawaiian or other pacific islander (4)
 - White (5)
 - Other (6) _____
 - Prefer not to answer (7)
-

What ethnicity best describe you?

- Hispanic or Latino (1)
 - Not Hispanic or Latino (2)
 - Prefer not to answer (3)
-

Do you know what telegraphic communication is?

- Yes (1)
 - Maybe (2)
 - No (3)
 - Prefer not to answer (4)
-

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Have your professors in your graduate program used the term telegraphic communication (or telegraphic speech)?

- Yes (1)
- Maybe (2)
- No (3)
- Prefer not to answer (4)
-

Have your clinical instructors in your graduate program used the term telegraphic communication (or telegraphic speech)?

- Yes (1)
- Maybe (2)
- No (3)
- Prefer not to answer (4)
-

Using prior knowledge or an assumption, how would you define/describe telegraphic communication in relation to speech-language services?

For the following questions, reflect on your clinical practices with young children with communication delays.

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When speaking to a child with a language delay, do you produce utterances that contain content words but eliminate function words? For example using "dog running" instead of "the dog is running" or using "throw ball" instead of "throw the ball." (8)



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To what extent do you agree or disagree with the following statements, based on what you have learned in your coursework and clinical experiences.

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It is useful for adults (i.e., parents and clinicians) to produce utterances that contain content words but eliminate function words when speaking to a child with a language delay (i.e. "dog running" instead of "the dog is running") (4)



End of Block: Default Question Block
