SIMPLIFIED LANGUAGE INPUT: PERSPECTIVES OF PARENTS WITH CHILDREN
ENROLLED IN EARLY INTERVENTION

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ABSTRACT

SIMPLIFIED LANGUAGE INPUT: PERSPECTIVES OF PARENTS WITH CHILDREN
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We know little about how parents and caregivers view the issue of simplified language input, yet understanding their perspectives is critical for implementing evidence-based practice. Given the discrepancy between empirical evidence and clinical practice, it is particularly important to understand their views on the use of telegraphic input (which removes function words and grammatical markers). To address this gap in knowledge, the current study surveyed 77 parents of children enrolled in early intervention about their views on different types of simplified language input. Participants completed an online survey asking them about their beliefs on how altering language input benefits a child with a language delay. Overall, parents considered shortened utterances to be more beneficial than telegraphic utterances. However, over half of parents (52%) agreed that telegraphic input is beneficial for supporting language development. Parents viewed receptive language as the most important factor to consider in deciding how to speak to a child with a language delay. These findings highlight the importance of talking with parents about their views regarding modified language input, especially in parent-mediated intervention models.

AKNOWLEDGEMENTS

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Introduction

It is a common goal of parents, speech language pathologists, and teachers to provide a language environment that maximizes a child's growth. One way this can be done is by providing high quality language input. As stated by Paul, Norbury, & Gosse (2017), "When we deliver language intervention, one of our most important tools is our own linguistic input to the client… We need to think very carefully about the input we present to the child, in terms of both its meaning and its formal properties. Linguistic input can be manipulated in many ways to make it a more effective, efficient vehicle for encouraging change in the client's language use. As language pathologists, our linguistic signal is our richest and most flexible device for accomplishing this change. That's why we have to use it wisely." (p. 84). Though it is clear that language input matters in development, there is not much known about how adults can modify their language input to improve language development in populations with language disorders. For those with language disorders, language input may be modified or simplified in some way to stimulate growth. Debate has arisen regarding whether simplified input should either include all relevant features of grammar or should remove some grammatical features (van Kleeck et al., 2010).

First, simplified grammatical input refers to reducing sentence length and complexity, but keeping all the grammatical units of a sentence in place (Bredin-Oja & Fey, 2014). Using grammatical input means speaking to a child in sentences that follow the rules of grammar (i.e., include correct syntax and morphological markers). For example, phrases such as "she's running" or "you throw it" are simplified, grammatical utterances. It is important to note that while these phrases are grammatically complete, they are still concise and short. They do not contain more complex syntax such a passives, perfect tense, or multiple clauses.

On the other hand, telegraphic input (TI) is a style of speaking to a child that consists of removing some of the functional pieces of a phrase (Bredin-Oja & Fey, 2014; van Kleeck et al., 2010; Venker & Stronach, 2017), such as determiners, tense markers, or possessives. For example, instead of asking a child "do you want the ball?", one could simplify using TI and say "want ball?" (Bredin-Oja & Fey, 2014; van Kleeck et al., 2010; Venker & Stronach, 2017). It is important to note that TI is ungrammatical, meaning it contains grammatical errors. Table 1 compares examples of simple grammatical sentences with TI.

Table 1: Examples of Telegraphic Input

Unit Deleted	Grammatical Input	Telegraphic Input
ARTICLES	Can you find the cookie?	Can you find cookie?
DIRECT OBJECTS	Put it in	Put in
POSSESSIVE MARKER	Mommy's turn	Mommy turn
PREPOSITION	All done with snack	All done snack
AUXILIARY	Danny is running	Danny running
ARTICLE + COPULA + ARTICLE	The car is under the table	Car under table
COPULA +ARTICLE	Where is the dog?	Where dog?
ARTICLE +AUXILIARY	The baby is eating	Baby eating

Theoretical arguments can be made for both types of input, but until recent years this issue has not been studied empirically. Learning more about the potential benefits and drawbacks of each type of simplification is important for speech-language pathologists (SLPs) when providing services. The field of speech language pathology has been focused on providing services based on a model of evidence based practice (EBP). ASHA's Code of Ethics (2016) requires that "individuals who hold the Certificate of Clinical Competence shall use independent and evidence-based clinical judgment, keeping paramount the best interests of those being served." Therefore, compliance with EBP is an essential aspect of the profession and service

provisions (American Speech-Language-Hearing Association, 2016). The model for EBP is comprised of three components: (1) empirical evidence, (2) clinician expertise, and (3) patient or caregiver perspectives (American Speech-Language-Hearing Association, 2018). The three components of EBP all come together to ensure SLPs are providing quality services. In the past, empirical evidence or caregiver perspectives on the use of TI were not available, so SLPs were primarily relying on their expertise to make decisions about language input.

To date there has been research conducted on effects of input modification and clinical usage, but there are no known studies that address caregiver perspectives on input modification. It is likely that parents have opinions about their methods for delivering input and how other adults (i.e. teachers, therapists, paraprofessionals) provide input to their child. It is essential as speech-language pathologists to understand the perspectives of parents since early intervention models often instruct parents directly on how to provide input. The goal of the current study is to gather information from parents of children with language disorders about their personal beliefs on input modification.

Theoretical Basis for Both Sides of the Argument

TI Use

Interestingly, there are arguments to be made on both sides—in support of telegraphic input, and in support of grammatical input. Well known experts in the field, Jon Miller and Ann Kaiser promote using telegraphic input on the basis that it focuses attention to the most important parts of sentences, matches the child's level to expand later, increases comprehension, helps teach semantic relationships, and eases demands for repetition. Some therapy approaches for language disorders include, or have at one time included, specific instructions on how to simplify language telegraphically in treatment (van Kleeck et al., 2010; Eisenberg, 2014).

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Various treatment approaches that incorporate TI have successful outcomes for children. It is important to note that these approaches vary on the recommended amount of TI to provide. Some approaches are designed to be used by clinicians, and others are designed to be implemented by parents. These different models of training result in different levels of exposure to telegraphic structures.

One therapy approach that included explicitly teaching clinicians to use TI was Enhanced Milieu Teaching (EMT), a naturalistic child-based intervention implemented by clinicians and parents. EMT has been shown to have positive effects on language skills and social interactions for children with ASD (Hancock & Kaiser, 2002). Ann Kaiser, who promoted the use of TI in EMT, states some guidelines for TI use in the EMT program. Kaiser recommends using TI only with children with "significant delays" who are between 2.5 to 5 years old. (van Kleeck et al., 2010). Some explicit training given to SLPs instructs adults to model at the level the child's expressive language level 50% of the time, and the other 50% of the time model 1-2 word expansions of the child's language (Kaiser & Hampton, 2014). EMT instructs service providers that expansions should include "teaching words" only which are nouns and verbs (Kaiser & Hampton, 2014). Kaiser does not recommend using TI outside of therapy and also recommends that adults change their expansions as the child progresses (van Kleeck et al., 2010).

The Early Start Denver Model (ESDM) is a naturalistic developmental behavioral intervention (NDBI) that promotes the use of TI in therapy for children with autism spectrum disorder (ASD). The goals of the ESDM are to promote skills including: communication, imitation, emotion sharing, joint attention, play, social orienting, and attention (Vivanti, Paynter, Duncan, Fothergill, Dissanayake, & Rogers, 2014). The term "one-up-rule" has been used to train adults to modify language in this program (Rogers, Dawson, & Vismara 2012). For

example if the child is using 1-word utterances an adult should use 2-word utterances. This approach may be delivered by therapists or trained parents. Empirical studies evaluating ESDM have shown that children in this program significantly improve in cognitive skills, language ability, imitation, attentiveness, social initiations, and adaptive functioning (Vivanti et al., 2014; Waddington, van der Meer, & Sigafoos, 2016).

Another parent training program called Project ImPACT is another behavioral approach for children with ASD. Project ImPACT (Improving Parents As Communication Teachers) is a parent mediated model, parents can use these intervention techniques with their child in a range of environments. The goal of this approach is to promote social engagement, language, play, and social imitation (Ingersoll & Wainer, 2013). In this program, parents are trained to use some types of telegraphic input when speaking to their child. This program has been shown to be effective in training parents to use specific techniques and children have shown gains in spontaneous language use and in social communication (Ingersoll & Wainer, 2013; Stadnick, Stahmer, & Brookman-Frazee, 2015).

Theoretical knowledge alone is not sufficient to make treatment decisions or to make recommendations to families on how to provide input. It is important to consider external scientific evidence as well. As discussed by Dollaghan (2007), research studies vary in the quality of evidence they provide. The strongest levels of evidence are studies such as systematic reviews of randomized control studies, randomized control trials with narrow confidence intervals, and high quality cohort studies. Other levels of evidence rank intermittently, with the lowest ranked level of evidence being, "expert consensus without explicit critical appraisal" (Dollaghan, 2007). The opinion of experts in the field does not outweigh empirical research. Higher levels of evidence such as systematic reviews are necessary to accurately evaluate input

types.

Grammatical Input Use

There is also a theoretical basis for providing grammatical input. The possibility exists that if children receive TI they are being exposed to less complex language, and therefore will continue to exhibit less complex language (Fey, Long, & Finestack, 2003; Paul, Norbury, & Gosse, 2018). Fey suggests systematically contrasting the child's telegraphic productions with correct grammatical models to enhance grammar development in children with SLI (Fey, Long, & Finestack, 2003). By recasting, an adult can bring correct production to the attention of the child (Fey, Long, & Finestack, 2003). Bredin-Oja and Fey (2014) caution adults against the use of TI because "telegraphic adult input may provide positive evidence to children that grammatical details are optional rather than obligatory, thus making them more difficult to learn" (p. 16).

One theoretical argument for use of grammatical language is that the acquisition of functional units of grammar pose a challenge to children with language delays or disorders. A study of language intervention targets for children with specific language impairment, developmental delay, or ASD in early education and elementary settings was conducted (Finestack & Satterlund, 2018). Results revealed the goals targeted most often in language therapy included functional morphemes of language, the highest reported target were plural -s, present progressive verbs, and regular and irregular past tense (Finestack & Satterlund, 2018). This evidence shows that despite their lack of saliency in language, functional units have been identified as important intervention targets. Therefore, it is reasonable to question the usefulness of leaving out functional units in our input to children. Providing TI to children lowers exposure to necessary units of language which could in turn make acquisition of these skills more difficult.

Relatedly, it is important to think about how exposure relates to acquisition of linguistic structures. A well-researched theory that has investigated frequency of language exposure and later acquisition is called the statistical learning theory (Aslin 2017; Erickson & Thiessen 2015; Kidd, 2012; Kuhl, 2000; Saffran 2001, 2003; Romberg & Saffran, 2011). In the statistical learning view of language acquisition it is believed that children make sense of the stream of input they receive by detecting statistical patterns in the input (Aslin, 2017; Erickson & Thiessen, 2015; Kidd, 2012; Kuhl, 2000; Saffran, 2001, 2003; Romberg & Saffran, 2011). By identifying these patterns they can use this knowledge to form structural units of language such as syllable structure or grammatical categories (Kidd, 2012; Kuhl, 2000). Studies using artificial languages have demonstrated that statistical learning mechanisms may aide in learning word segmentation and syntactic categories (Erickson & Thiessen, 2015; Reeder, Newport, & Aslin, 2017; Saffran, 2001; Schuler, 2017). Exposure to typical language input means that children will receive the statistical regularities observed in grammatical speech, but consistent exposure to grammatically incomplete models has unknown effects.

Young children can use their rudimentary understanding of language structure to their advantage in processes called bootstrapping. Children might use morphological, syntactic, or prosodic bootstrapping to derive meaning (Behrend, Harris, & Cartwright, 1995; Weissenborn & Höhle, 2001; Shipley, Smith, & Gleitman, 1969). Experiments that investigate bootstrapping have found that children in earlier stages of development use syntactic bootstrapping to fill in gaps in comprehension they experience in connected speech. As children age they tend to rely less on bootstrapping and more on their semantic knowledge (Behrend, Harris, & Cartwright, 1995; Shipley, Smith, & Gleitman, 1969). It has been found that children in the telegraphic usage stage of language expression understood commands less often when they were presented

telegraphically than when presented grammatically (Shipley, Smith, & Gleitman 1969). Therefore, there is an argument that children with weaker language skills need more complete input to aid in their understanding of utterances.

More arguments for increased grammatical complexity for the purpose of bootstrapping come from evidence for morphological bootstrapping: morphemes such as "-ing" or "-ed" can be used to signal the unfamiliar word they are attached belong to the category of "verb" (Behrend, Harris, & Cartwright, 1995). Also, using a head turn preference method it was found that children as young as 14 months use information from determiners in phrases to bootstrap novel words as nouns (Höhle, Kiefer, Schulz, & Schmitz, 2004). It has also been theorized that prosodic changes initiated by word or morpheme deletions might pose a challenge for children who rely on prosodic cues to bootstrap (Weissenborn & Höhle, 2001). Providing telegraphic input may limit structural and prosodic units that could be useful for bootstrapping meaning.

Even though theoretical evidence exists to support both sides of the argument on input type, without empirical evidence the most beneficial input type cannot be determined. Prior to 2010, few studies have looked at effects of input, but since that time several empirical studies have focused on this topic (van Kleeck et al., 2010).

Findings From Empirical Evidence

One study that is often cited by proponents of TI was conducted by Willer (1974). This study makes the claim that children with severe cognitive impairments benefit from TI because they are better able to respond to and imitate telegraphic phrases. The experiment showed that children given telegraphic input correctly responded to phrases significantly more than children given grammatical input. The experiment showed a trend that children could imitate telegraphic models better than non-telegraphic models, but findings did not reach significance (Willer,

1974). Additionally, there were no gains in comprehension for either the telegraphic or grammatical input groups. The main limitation with this study is the confound between length and grammaticality. The author addresses this problem saying "because of the length of nonreduced models, memory span alone might account for the differences." (Willer, 1974, p. 352). This study offers some information on effects of input, but more detailed studies are necessary.

Next, approaches such as Enhance Milieu Teaching, the Early Start Denver Model, and Project ImPACT serve as evidence that approaches that include TI are successful for improving social and language outcomes (Hancock & Kaiser, 2002; Ingersoll & Wainer, 2013; Kaiser, Hancock, Nietfeld, & To, 2000; Stadnick, Stahmer, & Brookman-Frazee, 2015; Waddington, van der Meer, & Sigafoos, 2016; Vivanti et al., 2014). These approaches have clear positive effects for children with language disorders. Although, these studies have not attempted to look at how program effectiveness changes when using complete input (van Kleeck et al., 2010). EMT creator Ann Kaiser states, "we do not have evidence regarding whether the TI component has contributed to our overall significant findings with EMT" (van Kleeck et al., 2010, p. 15).

Empirical evidence has found that children with ASD might be hindered more than other groups with language impairments if provided with telegraphic input. A metanalysis of 257 children looked at correlations between parental input length and outcomes for language (Sandbank & Yoder, 2016). Adult input length had a large effect on later language outcomes of children with ASD. The study also found positive correlations between input and language outcomes in other language diagnoses such as cognitive delay and Down syndrome, but the correlations for children with ASD were significantly stronger (Sandbank & Yoder, 2016). The authors of this study encourage clinicians to "reconsider intervention practices that prescribe

shorter, grammatically incomplete utterances, particularly when working with children with autism" (Sandbank & Yoder, 2016, p. 1).

There is evidence that children may process language that includes determiners faster than language that omits determiners. A study by Kedar et al. (2017) examined how typically developing infants process language under three different grammatical conditions. The conditions were: language with correct determiners, incorrect determiners, or omitted determiners. The study used a preferential looking tasks while these various conditions were presented to the subjects. Results found that these infants were able to orient quicker to semantic relationships when hearing grammatical language than they did for language that omits determiners. (Kedar, Casasola, Lust, & Parmet, 2017). From this evidence it can be assumed that grammatical input is favorable compared to TI to ease the load of semantic processing for typically developing infants. Although this study investigated typically developing children, it showed that inclusion of determiners facilitates language comprehension early in development.

Next, it has been found that TI does not prompt a child to repeat an adult's utterance. A study by Bredin-Oja & Fey (2014) looked at children between 2;6 and 4;3 who had an expressive language delay. The study examined potential differences between the children's ability to repeat grammatical phrases and TI phrases. Results showed that children are equally likely to repeat prompts that are grammatical as those that are ungrammatical (Bredin-Oja & Fey, 2014). Additionally, when provided with grammatical prompts, subjects tended to imitate a grammatical utterance. When modeled ungrammatical phrases subjects tended to imitate ungrammatical phrases. The results of this study strongly discourage the use of TI for eliciting verbal imitations. Bredin-Oja and Fey (2014) state that, "providing a telegraphic prompt to imitate does not offer any advantage as an intervention technique. Children are just as likely to respond to a

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grammatically complete imitation prompt. Further, including function words encourages children who are developmentally ready to imitate them" (p. 15).

Case study evidence shows that transitioning from telegraphic input to grammatical input improved a child's language and literacy skills. The case study involved a child with severe ASD who was receiving input that was primarily telegraphic from teachers, SLPs, and paraprofessionals who were explicitly trained to do so. After exposing this child to more complex input over a 20 month period, the child showed gains in receptive language, expressive language, and literacy skills (Emerson & Dearden, 2013). The author noted that a misjudgment of nonverbal children's language ability by adults might be the reason they choose to use TI instead of grammatical input even if the child may be capable of more (Emerson & Dearden, 2013). This case study suggests there are benefits for children with severe ASD to hear grammatical input, even if the child appears to an observer that they are not attending to language.

Another study about children with ASD and grammaticality of input was conducted by Venker et al. (2015). The study looked at interactions between 55 preschool aged children diagnosed with ASD and their parents. The study looked at the relationship between parental omission of determiners at time one and their child's language development and time two. The study found that children of parents that omitted more determiners had lower language outcomes later, even after the child's baseline language levels and nonverbal intelligence were controlled for (Venker, Bolt, Meyer, Sindberg, Ellis Weismer, Tager-Flusberg, 2015).

It has been found that higher parent MLUs are strongly related to language outcomes for children with ASD. Multiple studies have investigated how environmental exposure to more complex language effected later language outcomes for children with autism. Fusaroli et al.

(2019) compared groups of children with ASD to children who were typically developing. The researchers collected data from parent-child interactions that occurred during multiple home visits. They found that parents who used longer MLUs had children with richer language at time two regardless of diagnosis of ASD or TD (Fusaroli, Weed, Fein & Naigles, 2019). Fusaroli and colleagues suggested that providing complexity in input serves as data in acquiring language. Results also showed that having a diagnosis of ASD was not predictive of a child's trajectory of language development when observed in a naturalistic setting. Baseline expressive language accounted for a greater portion of development than diagnosis did (Fusaroli, Weed, Fein & Naigles, 2019). Bang and Nadig (2015) found similar positive correlations between parental MLU and later language development. Additionally, it was found that linguistic environments provided by parents did not differ between language matched TD and ASD children, suggesting parents may provide language input based on child language level despite a diagnosis (Bang & Nadig 2015). These studies suggest the importance of providing input based on language skills rather than diagnosis, as well as the significance of a rich language environment.

In Bang, Adiao, Marchman, & Feldman's metanalysis (2020), the term "language nutrition" is used to describe high quality language input. Findings revealed children with language disorders benefit from greater language nutrition in similar ways that typically developing children do. For the studied groups of children who were born preterm, had an intellectual disability, or had ASD greater language nutrition was shown to lead to positive long-term language outcomes (Bang, Adiao, Marchman, & Feldman, 2020). Authors discouraged use of telegraphic input stating, "caregivers should avoid overly simplified language, such as short phrases that lack grammatical markers" (p. 306). Additionally, it is important to note that these results do not claim or suggest language nutrition is a solution for existing language disorders,

instead it is claimed that language nutrition can "improve the trajectory of development and lead to improved functional outcomes in children with these clinical conditions" (p. 306). In all, the current evidence base is growing to showing rich language environments support language development for all children, not just typically developing children.

To learn more about SLP practices on TI a survey of SLPs was conducted by Venker, McDaniel & Yasick (accepted). The study surveyed SLPs to ask them about their practices of using telegraphic input and their perceived value of using it in therapy. The survey found that a majority of SLPs reported using telegraphic phrases in their practice. Although only 30% of those who reported using TI also reported that it was useful for children, SLPs reported that TI was useful felt that TI was beneficial for helping children imitate, learn semantic relationships, and for general comprehension. This study reveals that there is a discrepancy between the literature on TI and how professionals use telegraphic input.

Response to Emerging Empirical Evidence

In response to these recent studies, some therapy approaches that used TI have changed their methods to remove TI. One example is enhanced milieu teaching (EMT). As stated, EMT directed SLPs to use TI. Currently EMT's stance on TI is as follows: "Although early versions of MT and RI utilized telegraphic speech to model target-level language for children, EMT has evolved away from modeling the less natural, grammatically incomplete forms. Thus, although a target phrase may include only two words, the parent or clinician is encouraged to retain all articles and appropriate grammatical markers so that the target represents a portion of a grammatically correct phrase or sentence. For example, 'roll the ball' is preferable to simply 'roll ball' as part of the larger phrase 'I roll the ball to you.' In addition, the parent would retain grammatical morphemes by saying 'the ball rolls' rather than simply 'ball roll'" (Kaiser &

Hampton, 2017, p. 103-104). While this shows a major transition for the creators of EMT, practicing SLPs may be less aware of this new stance and continue to carry out EMT using TI (Venker, McDaniel & Yasick, accepted).
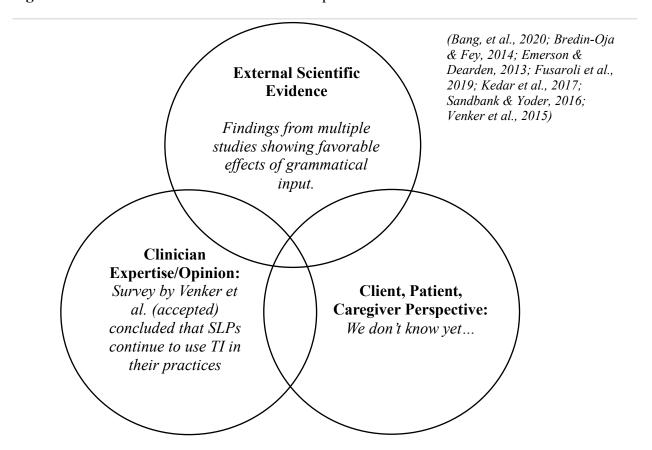
Language disorder textbooks used for training graduate students also make recommendations on this issue. A textbook by Paul, Norbury, and Gosse (2018) states that as language specialists, SLPs must be deliberate in modifying their language since it can have a major impact on development of grammar. In the text they state that "incorporating grammatical markers…gives children additional exposure to forms, as we've seen children with language impairments need higher levels of exposure before language forms are used." (p. 85) The text also suggests that "the linguistic input ought to be complete and well-formed" (p. 268).

Striving Toward Evidence Based Practice

To make informed decisions on input, all three components of EBP must be understood. SLP's have established clinical opinions on the subject of input modification that are supported in theory. It is known that many SLPs favor using telegraphic input (Venker, McDaniel & Yasick, accepted). The current empirical evidence on input modification has leaned in favor of grammatical input rather than telegraphic (Bredin-Oja & Fey, 2014; Emerson & Dearden, 2013; Fusaroli et al., 2019; Kedar et al., 2017; Sandbank & Yoder, 2016; Venker et al., 2015). The third crucial component of EBP, parent or caretaker perspectives, is unknown. Currently there is a discrepancy between empirical evidence and clinician opinion. This discrepancy poses a challenging situation for SLPs, who may struggle to know how to clinically provide input and instruct caretakers on providing input. Importantly, it is necessary for parent perspectives to be understood since early intervention programs heavily rely on parents to implement treatment at home. In order to provide the highest quality evidence-based speech and language intervention,

the perspective of parents and caregivers needs to be understood (see Figure 1). The current

study proposes a method to contribute to advancing our understanding of this issue between

empirical evidence and clinician expertise by providing evidence from the third and crucial

component of service provisions.

Figure 1: Evidence Based Practice Model for Input Modification

External Scientific Evidence

Findings from multiple studies showing favorable effects of grammatical input.

(Bang, et al., 2020; Bredin-Oja & Fey, 2014; Emerson & Dearden, 2013; Fusaroli et al., 2019; Kedar et al., 2017; Sandbank & Yoder, 2016; Venker et al., 2015)

Clinician Expertise/Opinion: *Survey by Venker et al. (accepted) concluded that SLPs continue to use TI in their practices*

Client, Patient, Caregiver Perspective: *We don't know yet...*

Research Questions

The current study will address multiple research questions: (1) To what extent do parents of

children in early intervention feel that it is beneficial for children with language delays to hear

simplified language input? It is hypothesized that parents will rate grammatical input as more

beneficial than telegraphic input. (2) To what extent do parents rate grammatical versus

telegraphic utterances as beneficial for a child with a language delay? It is predicted that parents

will rate utterances that are short and grammatical as the most beneficial, with longer

grammatical utterances and telegraphic utterances rated as less beneficial. (3) What child characteristics do parents view as most important for deciding how to speak to a child with a language delay? It is hypothesized that parents will view receptive language as the most important factor to consider when deciding how to speak.

Methods

Participants

Participants were recruited through Early On Michigan early intervention services. Early On is a state program that offers early intervention services for eligible children and their families. Classification for Early On services requires a child between birth and 35 months of age who meet qualifying criteria of: (1) Having an established condition (e.g., autism spectrum disorder, Down syndrome, cerebral palsy) diagnosed by a heath care provider or mental health care provider, or (2) a developmental delay in one or more developmental domains (self-help skills, cognitive skills, communication skills, physical development, social-emotional development) of 20% or 1 standard deviation below the mean (Michigan Department of Education, 2019). A recruitment flyer (see Appendix A) was distributed to a local Early On administrator. The flyer included survey purpose, length, compensation, contact information, and an anonymous link. Following approval of the study by Early On administrators, the flyer was distributed to interventionists who then directly informed their clients of the study through various means (see Table 2). Participants who met inclusion criteria of having a child currently enrolled in Early On in Michigan were asked to provide their email address in order to receive compensation, but this information was not linked with their responses. All eligible participants received a $30 Amazon gift card via email.

Table 2: How Participants Heard About the Survey

Variable	Response Count	Response Percentage	Total # of Respondents
From a family member or friend	7	9%	n=76
From an early intervention provider	47	62%	
Through social media	12	16%	
Other	10	13%	

The current study was determined to be exempt by Michigan State University's Institutional Review Board (IRB) on the basis that information disclosed by participants "would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation."

Participants were 77 parents of children currently enrolled in Michigan Early intervention services. Parents were invited to participate regardless of the reason their child qualified for early intervention. A majority (82%) of parents reported enrollment in speech-language therapy services. Participants ranged in age from 22-48 years old, with 59% reporting part-time or full time employment. The majority (95%) had only one child in enrolled in early intervention, while 5% had 2 children. Primary language spoken at home was English for 95% of participants, with remaining participants reporting multiple languages, including English, spoken at home. Table 3 presents full demographic information. Children enrolled in early intervention ranged from age 11 to 35 months of age. Children were reported to primarily communicate verbally, with signs, or with gestures, and a majority of the children were in the single-word stage of language expression. Additionally, a variety of diagnoses that impact speech and language were reported. For full child information see Table 4.

Table 3: Parent Demographics

Demographic variable	Category responses	Response count	Response percentage	Total number of respondents
Gender	Male	8	10%	n = 77
	Female	69	89%	
	Prefer not to answer	0	0%	
Primary language	English	73	95%	n = 77
	Mandarin	1	1%	
	Spanish	1	1%	
	Arabic	1	1%	
	Other	1	1%	
Race	American Indian or Native Alaskan	1	1%	n = 77
	Asian	2	3%	
	Black or African American	5	6%	
	White	67	87%	
	Other	1	1%	
	Prefer not to answer	1	1%	
Ethnicity	Hispanic or Latino	2	3%	n=77
	Non-Hispanic or Latino	74	96%	
	Prefer not to answer	1	1%	
Full-time or part-time employment	Yes	46	59%	n=77
	No	31	40%	
Highest degree obtained	Some high school	1	1%	n=77
	Completed high school (or GED	10	13%	
	Some college	16	21%	
	Associate's degree	13	17%	
	Bachelor's degree	20	26%	
	Master's degree	15	19%	
	Doctoral degree/professional degree	2	3%	
Number of children	1 child	73	95%	n=77
	2 children	4	5%	
Coursework in child development	Yes	34	44%	n=77
	No	43	56%	

Table 4: Child Information

Variable	Category responses	Response count	Response percentage	Total number of responses
Child age	Under 1 year	1	1%	n=74
	1 years old	20	27%	
	2 years old	53	72%	
Time in early intervention	Less than 6 months	22	29%	n=76
	6 months to 1 year	26	34%	
	1-year	17	22%	
	2-years	9	12%	
	3-years	1	1%	
	More than 3 years	1	1%	
Enrolled in speech-language services	Yes	60	82%	n=73
	No	12	16%	
	I don't know	1	1%	
Maximum utterance length	Not producing words	5	8%	n=64
	1-word at a time	34	53%	
	2-words at a time	17	27%	
	3-words at a time	6	9%	
	More than 3 words	2	3%	
Diagnosis	Autism Spectrum Disorder	3	4%	n=77
	Down Syndrome	0	0%	
	Global developmental delay	6	8%	
	Speech/language delay	57	74%	
	Communication delay	14	18%	
	Fine/gross motor delay	15	19%	
	Other	10	13%	

Survey

The online survey was created using Qualtrics Survey Software. Median time to complete the survey was 13.5 minutes. Response times were highly variable due to online format, which did not require completion in one session (Min: 311 seconds, Max: 481461 seconds, $SD =$ 79901; see Appendix A). The current survey was based on aspects of the survey developed by Venker, McDaniel & Yasick (accepted), that gathered SLP practices of simplifying language

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input. Specific additions and changes were made to address the role of caregivers. The survey included five sections, described in more detail below: parent and child information, utterance ratings, beliefs on language input, comfort level with modified language input, and experiences with language modification.

Parent and Child Information

The first section of the survey included standard demographic information about the parent such as age, gender, education level, native language, and employment. Additionally, participants were asked if they had ever taken courses in child development. In section two, participants were asked about their experience receiving Early On services, including time receiving services and number of children who have been enrolled in Early On. Next, participants were asked questions specifically about their child currently enrolled in early intervention. Information was collected on the child's age, method of communication (verbal, signs, AAC), typical utterance length, and diagnosis. These variables were deemed relevant to collect, as they could potentially have an influence on opinions about input modification.

Utterance Ratings

In the next section, parents were asked to rate 51 utterances based on "how beneficial" each utterance would be for supporting language development in children who are not yet producing spoken words, or who produce single or two-word utterances Response options ranged on a 5-point scale from, "Not at all" to "To a very large extent." The 51 utterances included utterances that were single words, telegraphic, short grammatical utterances (2-3 morphemes), or longer grammatical utterances. In Venker, McDaniel and Yasick (accepted), SLPs were asked to rate 43 similar utterances, however updated the current study adding

additional single word utterances in order to more accurately analyze differences in ratings between utterance length and utterance grammaticality.

Beliefs on Language Input

Participants were asked about their general beliefs on how modifying input impacts child comprehension and ability to repeat adult utterances. These questions from Venker and colleagues' recently published survey of SLP's practices and perspectives of TI were found to be appropriate and yielded valid responses from SLP participants (Venker, McDaniel & Yasick, accepted). These questions were modified for parents by defining "function words" and "content words" each time they appeared in a question in conjunction with examples for clarity (see Appendix A). Parents rated beliefs on shortened input and telegraphic input separately. Lastly, parents were asked about the importance of child characteristics (i.e. age, language ability, cognition, etc.) in deciding how to modify input.

Comfort Level

The current study has developed questions to address parent comfort levels when providing modified language input to a preverbal child. In this section, parents were asked to rank their own comfort with producing grammatical and ungrammatical utterances if all options were "equally beneficial" for language development. Participants were asked to rank order the 3 given utterances from least comfortable (1) to most comfortable (3).

Experiences

The final section was reserved for questions that inquired about personal experiences with language modification. These questions were presented last because they were deemed potentially influential for ratings on previous parts of the survey. Parents were asked about the relationship between a child's language production and their level of comprehension. Also,

participants were asked to write comments on recommendations they have received by

professionals regarding how to modify language input.

Results

Beliefs on Benefits of Simplified Language Input

Our first research question was: To what extent do parents of children in early intervention feel that it is beneficial for children with language delays to hear simplified language input? The survey focused on two types of simplified input: shortened utterances and telegraphic utterances. Participants were asked to indicate the extent to which they agreed that it is beneficial to "produce utterances that are shorter than utterances they would typically use during a conversation with an adult" (i.e., shortened utterances). Response options ranged from "Strongly Disagree (1) to "Strongly Agree" (5). Results showed that 63% of parents agreed, 29% disagreed, and 8% felt neutral (see Figure 2). On average, shortened utterances had a rating of 3.62 (between "Neither agree nor disagree" and "Somewhat Agree"; $SD = 1.36$). Participants were also asked to indicate the extent to which they agreed that is beneficial to produce "utterances that contain only content words but do not include function words or grammatical endings" (i.e., telegraphic utterances). Results showed that 52% of parents agreed, 36% disagreed, and 12% felt neutral (see Figure 3). On average, telegraphic utterances had a rating of 3.28 ("Neither agree nor disagree" and "Somewhat Agree"; $SD = 1.38$). Shortened utterances were rated significantly higher than telegraphic utterances, $t(76) = 2.25$, $p = .027$.

Parents who felt neutral or agreed that shortened utterances were beneficial for children with language delays were asked follow-up questions about circumstances in which these utterances may be beneficial. These parents were asked about the extent to which they agree shortened or telegraphic utterances "help children understand what is being said" and "help children imitate (i.e. repeat) what is being said." Response options again ranged from "Strongly Disagree" (1) to "Strongly Agree" (5). On average, parents rated shortened utterances to be

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significantly more beneficial for eliciting verbal imitation ($M = 4.6$, $SD = 0.6$) than for

supporting comprehension ($M = 4.43$, $SD = 0.7$, $p = 0.015$). For telegraphic utterances, there was

no significant difference between ratings for verbal imitation ($M = 4.3$, $SD = 0.7$) and supporting

comprehension ($M = 4.2$, $SD = 0.7$, $p = 0.2$).

Figure 2: Parent Beliefs on Shortened Input
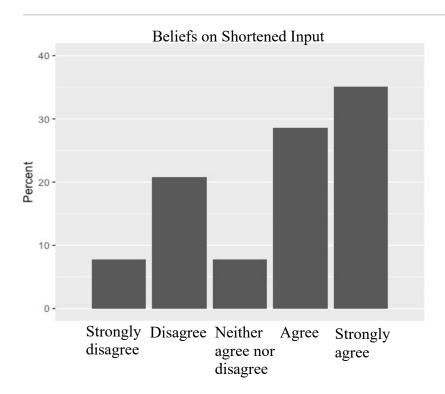
Figure 3: Parent Beliefs on Telegraphic Input
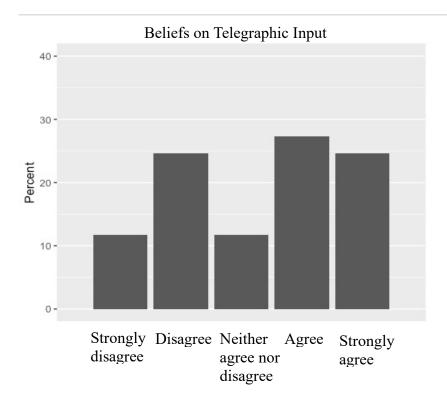
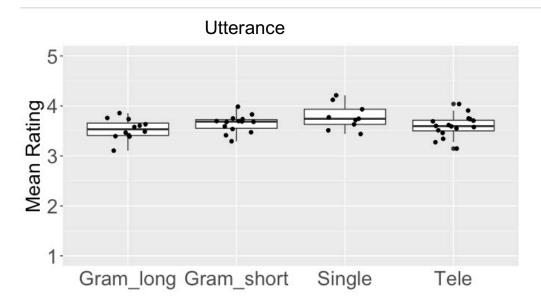

Beliefs on Telegraphic Input

Utterance Ratings

Our second research question was: To what extent do parents rate grammatical versus telegraphic utterances as beneficial for a child with a language delay? Parents were asked to rate a list of 51 utterances based on how beneficial they are for children who are preverbal or in the 1-2 word stage of language expression given a scale from "not at all" to "to a very large extent." Utterances presented to participants were coded for grammaticality as well as number of morphemes. Utterances consisted of 9 single-word utterances (MLU = 1), 16 telegraphic utterances (mean MLU = 2.44, SD = 0.63), 14 shorter grammatical utterances (mean MLU = 2.71, SD = 0.47, range 2-3 morphemes), and 12 longer grammatical utterances (mean MLU = 4.25, SD = 0.62, range 4-6 morphemes). Telegraphic utterances and shorter grammatical utterances did not significantly differ in length, $t(28) = 1.35$, $p = 0.19$). There was a statistically

significant difference in length between short grammatical utterances and long grammatical utterances, $t(24) = 7.17$, $p < 0.001$). ANOVA revealed no significant difference ($p = .142$) in parents' ratings between word types: single word utterances ($M = 3.79$, $SD = 0.26$), telegraphic utterances ($M = 3.59$, $SD = 0.22$), short grammatical utterances ($M = 3.65$, $SD = 0.18$), and long grammatical utterances ($M = 3.53$, $SD = 0.20$; see Figure 4).
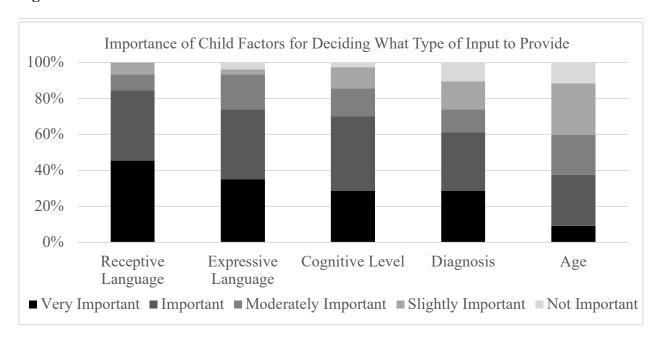
Figure 4: Utterance Ratings

Child Characteristics

Our last research question was: What child characteristics do parents view as most important for deciding how to speak to a child with a language delay? Parents were asked to rate the importance of five different child characteristics for deciding how to provide language input: expressive language level, receptive language level, chronological age, cognitive abilities, and diagnosis. Response options ranged from "Not Important" to "Very Important." There was a broad range of responses across parents for these five characteristics. Wilcoxon signed rank tests indicated that receptive language was reported as significantly more important than all other child characteristics (all $ps < .001$). Receptive language ($M = 4.23$, $SD = 0.87$), was rated as

"Very Important" or "Important" by 84% of respondents. On average, receptive language had a mean rating of 4.23 (between "Important" and "Very Important"; $SD = 0.87$). Receptive language was followed by expressive language ($M = 3.99$, $SD = 1.01$), cognitive level ($M = 3.82$, $SD = 1.06$), diagnosis ($M = 3.53$, $SD = 1.33$), and finally age ($M = 2.95$, $SD = 1.19$; see Figure 5). Age was reported to be the least important factor for deciding how to speak to a child, with 40.1% of respondents reporting that age was "Not Important" or only "Slightly Important."

Figure 5: Child Characteristics

Parents were also asked about their beliefs on the relationship between expressive language and receptive language. Specifically, they were asked: "Please indicate the extent to which you agree or disagree with this statement: A child with a language delay may understand language that is more complex than what they say." Response options ranged from "Strongly Disagree" to "Strongly Agree", with "Neither agree nor disagree" as the middle response. Results revealed an average rating between "Agree" and "Strongly Agree"($M = 4.48$, $SD = 0.77$, range $= 2 – 5$), with no participants responding "Strongly Disagree." Additionally, parents were asked: "A child with a language delay may understand the language that they hear, even if they

do not clearly show that they understand." Participant ratings were between "Agree" and "Strongly Agree" (M = 4.481, SD = 0.641, range = 3 – 5), with no participants responding "Disagree" or "Strongly Disagree"

Exploratory Results

Exploratory results were analyzed from 64 participants who wrote comments regarding recommendations they have received from professionals on language input. Reponses were coded for overlapping recommendations between participants. Also, responses were coded for method in which recommendations were relayed (i.e. handouts, in person explanation, modeling, etc.). Most cited recommendations included: simplify or shorten language, multiple repetitions of language, narrate actions and events, and use ASL or signs. See Table 5 for count and all recommendations cited by two or more participants. Parents reported receiving these recommendations through handouts, modeling, feedback, and explanation from their providers (see Table 5). Modeling and handouts were reported to be the most commonly utilized methods to deliver recommendations**.**

Table 5: Recommendations from Professionals

Information delivered via	Response Count
Handouts	22
Modeling	19
Explanation	15
Feedback	5
Recommendation	**Response Count**
Simplify/shorten	9
Repetition of self	8
Narration	7
ASL/signs	7
Give options	5
Visual aides	5
One-up rule	4
Label objects	4
Repeat Child	2

Discussion

To our knowledge, this is the first study to investigate how parents of children in early intervention view simplified language input. Current results of parent beliefs on simplified language input indicate that most parents viewed shortened utterances and telegraphic utterances to be beneficial for children who are not yet speaking, or at the 1-word or 2-word stages of language development. Specifically, 63% of parents reported that they "Agree" or "Strongly Agree" that shortened utterances are beneficial, and 52% reported that they "Agree" or "Strongly Agree" that telegraphic utterances are beneficial. However, as predicted, shortened utterances were rated significantly higher overall than telegraphic utterances. Interestingly, distribution of results tended to be somewhat polarized, with a relatively small percentage of respondents reporting feeling neutral about shortened and telegraphic utterances. Therefore, it does seem that parents have a preference on language input one way or another. This finding suggests that SLPs in clinical practice may find it valuable to ask parents about their personal preferences for language modification, so that these preferences and beliefs can be taken into account when providing suggestions and discussing rationale for different types of simplified input.

A surprising finding emerged that 37% of parents did not view shortened utterances (i.e., utterances that are shorter than utterances they would typically use during a conversation with an adult) as beneficial. This finding may suggest that many parents may speak in full, conversational sentences when talking to their young children with language delays. This practice of providing richer, more complex input to children with language delays aligns with recommendations from multiple studies on the relationship between parental MLU and development of child language (Bang & Nadig 2015; Bang, Adiao, Marchman, & Feldman 2020; Fusaroli, Weed, Fein, & Naigles 2019; Venker, Bolt, Meyer, Sindberg, Weismer, Tager-Flusberg

2015). Specifically, based on their scoping review of language input to children with language delays, Bang et al. (2020) recommended that "caregivers should be encouraged to speak to their child often, use full sentences with diverse vocabulary" (p 306).

However, providing richer input is not viewed as desirable in all intervention approaches, including those that utilize the "one up" rule, in which adult input should only be one word longer than the child's spoken language. In a study by Waddington and colleagues (2019), Parents trained to follow ESDM guidelines of the adult using "slightly more language than the child" were shown to have "low fidelity". This lack of fidelity was due to the fact that parents commonly provided "too much" language (i.e., their utterances were more than one word longer than the child's spoken utterances), which violated ESDM training guidelines (Waddington, personal communication with C. Venker, February 6, 2020). This may indicate that current practices by parents include more complex input. Prior to selecting programs that include language modification, it is important that clinicians discuss preferences and comfort. Many parents reported feeling that shortened and telegraphic utterances are useful both for verbal imitation and supporting children's comprehension. For parents who reported believing shortened utterances were beneficial, short utterances were rated as significantly more beneficial for eliciting verbal imitation of adult models than for comprehension. However, parents who rated telegraphic utterances as beneficial did not rate differently for comprehension or repetition. Additional work is needed to understand how parent (and clinician) views differ by clinical context or children's current therapy goals.

When asked to rate the benefit of telegraphic and grammatical utterances for a child with a language delay (preverbal, 1-word, or 2-word stage of language development), parents rated single words, telegraphic utterances, grammatical short utterances, and grammatical long

utterance similarly. Parental ratings on all grammatical forms and were between a mean rating of 3.5-3.8, aligning with a qualitative rating of being beneficial between "to a moderate extent" and "to a large extent". These high ratings for all grammatical forms may indicate that parents hold the belief that all forms of language input may be beneficial for a child with a language delay to hear. For this reason, parents might not place value on the grammatical structure or length of the input, rather just that input is being provided. These results suggest that parents may not be receiving specific or explicit information from professionals about what is the "most beneficial" way to shorten or modify their input. Considering the lack of certainty reported by SLPs regarding the benefits of telegraphic input (Venker, McDaniel & Yasick, accepted), it is possible that parents are not given explicit training or teaching about how to simplify their language.

It is interesting to consider how the current findings relate to SLPs' views about the benefits of different utterance types in the study by Venker and colleagues (2019). When rating telegraphic and grammatical utterances, SLPs displayed a greater distinction in ratings on the basis of grammaticality. Grammatical utterances were rated as significantly more "like something they would say" as compared to telegraphic utterances. This distinction was not present in the parent survey. Again, results may suggest an uncertainty among parents about the most beneficial ways to provide language models.

Results of important child factors when deciding how to provide input indicated that parents viewed receptive language to be the most important factor for deciding how they speak to a child (see Figure 5). These responses were consistent with SLP ratings in Venker and colleagues' (2019) survey, who also rated receptive language as the most important child characteristic to consider. It is possible that parents and clinicians believe it is more valuable to consider what children can understand, rather than what children can say.

The emphasis on receptive language (over expressive language) by both parents and professionals is interesting, given that recommendations from therapy programs such as the ESDM are predominately based on spoken language level (Waddington, van der Meer, Sigafoos, & Whitehouse, 2019). Clinicians implementing ESDM and other therapeutic models may benefit from understanding that parents commonly consider a child's receptive language abilities to be more important than expressive language level, as a basis for providing input. Despite its importance, utilizing receptive language as a reference point for language modification may pose a challenge for parents and SLPs, since receptive language level is difficult to accurately assess when delays in expressive language are present. Some parents may (consciously or unconsciously) adopt a perspective of presuming competence, rather than the opposite. Relatedly, a majority of parents in the current study reported believing that a child's receptive skills are greater than their expressive language and that children might understand language even if they "do not clearly show" their understanding. Overall, these results indicate that parental judgment of receptive language level may come from a combination of factors, rather than based on outward measurable signs of understanding.

Regarding other child characteristics of expressive language, age, diagnosis, and cognitive levels, SLPs (in Venker et al., accepted) and parents were not as unified. Parents rated expressive language as the next most important factor for how they provided input, whereas SLPs rated cognitive level as being more important than expressive language. It is possible that parents do not typically have a sense of children's cognitive level, relative to their language or social skills. Diagnosis was rated as "very important" or "important" by 61% of parents, suggesting that diagnosis may impact a parent's expectations of their child's abilities. In a survey of parent reactions to receiving an ASD diagnosis, some parents reported that receiving a diagnosis

allowed them to lower their expectations of their child (Mansell & Morris, 2004). Parents placed relatively little importance on a child's age for determining how to speak to them. Age was rated as "slightly important" or "not important" by 40% of parents, suggesting that they view children's ability levels as more important than chronological age.

Written comments from parents about recommendations from professionals revealed a variety of recommendations. Multiple parents reported receiving recommendations to increase the quantity of input and exposure to language to their child receives. For example, parents wrote "talking to him as much as possible", and "explain what I do while I'm doing it". Although parents were given recommendations to increase quantity on language input, many reported being told to decrease the complexity of their input. For example, "use short phrases…" and "try to make everythi g *[sic]* I say as somple *[sic]* as possible so my child can grasp it faster."

Several parents cited the commonly used "one-up rule" to simplify their spoken language. This rule instructs adults to speak in utterances that are add one additional word more than what the child typically uses (i.e. speak in 2-word utterances if child is at 1-word stage). One parent wrote "if you want the child to use 2-3 word phrases, starting *[sic]* talking to them in 3-4 word phrases. Talk to them one above where they are so they can learn the next step up". This displays an understanding of how to implement the one-up rule. This participant cited learning this rule through "explanation and examples".

Overall, these comments provided valuable insight into the professional dialogue between Early On providers and parents. It is clear that parental language input is being discussed in some capacity by providers, and the information provided is valuable to parents. The comments indicate many parents are being told to increase quantity of input and decrease complexity. Notably, very few participants cited specifics on how to simplify, and no parents commented on

the grammaticality of the input. Grammaticality of language input may not be a topic commonly discussed in early intervention. It is recommended that clinicians instruct parents in a way that clearly and accurately conveys how to implement input that is simple and grammatical. One method of instruction is to have parents ask themselves if the language they're using would be appropriate to say informally to an adult. If the language is judged as not appropriate for adults, it may be a sign that the language is ungrammatical (Bredin-Oja & Fey, 2014). Parent comments suggest an openness and willingness to learn and try new techniques, with many parents looking for ways to support their child. One participant stated "having a better understanding of what the child is capable of understanding and how we can foster that growth have all been very helpful".

Clinical Implications

With respect to EBP, it is important to note that available empirical evidence points to grammatical input having advantages over telegraphic input. Findings from empirical evidence suggest that instructing parents to utilize telegraphic input is not best practice for later language development, and should be avoided if possible (Bang & Nadig 2015; Bang, Adiao, Marchman, & Feldman 2020; Fusaroli, Weed, Fein, & Naigles 2019; Bredin-Oja & Fey, 2014; Venker, Bolt, Meyer, Sindberg, Weismer, Tager-Flusberg 2015). Perspectives of clinicians may vary, but a majority of professionals continue to utilize telegraphic input (Venker, McDaniel & Yasick, accepted). Importantly, more research is needed in this area, especially experimental studies that look at the effect of telegraphic input compared to shortened but grammatical utterances.
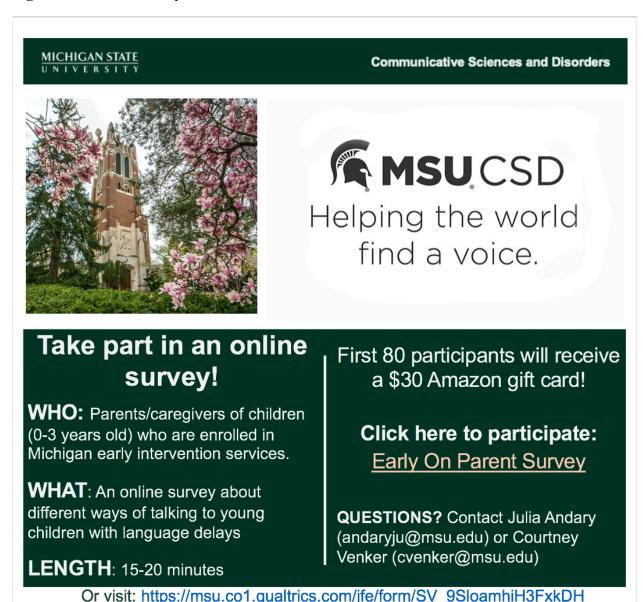
Results regarding the caregiver perspective of the EBP model indicate that beliefs about shortening language input and utilizing telegraphic input varied a great deal across individual caregivers. Individual opinions ranged from strongly believing telegraphic input was beneficial to disagreement that parents should shorten language. While SLPs and parents may have

similarities and differences in their beliefs about providing input, evidence based practice guides professionals to incorporate individual patient and caregiver perspectives into treatment practices. Parent views are especially important to consider when parents are responsible for implementing the intervention, as is the case in most early intervention programs. Based on current findings, it is suggested that SLPs in early intervention discuss specific methods for best practices on modifying language with families when discussing the role of input in language development. If a treatment approach that includes telegraphic input must be implemented, results from the current study suggest parents may require extra training and support in order to implement techniques with fidelity due to the basis by which parents already are modifying. Also, it may be important to train parents to increase language input as the child ages and language grows, so the child is not hearing telegraphic models for extended amounts of time. Another option to consider is whether a given intervention approach can be implemented with simplified, grammatical speech, instead of telegraphic (van Kleeck et al., 2010).

The current study had several limitations. First, the sample was limited in gender, racial, ethnic diversity which may limit generalization to other parent populations. Additionally, this sample represent parents in the state of Michigan, and potential differences based on geographic location are not known. Another limitation of the current study was the electronic survey methodology. Distribution of electronic surveys do not ensure equal access by all individuals in a population. In design, our survey may have been limited by some methodological decisions made. For instance, chosen sample telegraphic and grammatical utterances may have influenced ratings for reasons other than length or grammaticality. In choosing these utterances, we attempted to be as balanced as possible, but there is potential for variation.

APPENDICES

Figure 6: Recruitment Flyer

Intro
The goal of this research study is to better understand the beliefs and experiences of **parents and caregivers of children *currently* enrolled in early intervention in Michigan** (often referred to as "Early On"). Please note: early intervention in Michigan is for children who are birth to 35 months old (i.e., younger than 3). You will be asked to report some demographic information about yourself and your child/children. You will then be asked to answer questions about different ways of talking to children with language delays.

The survey is expected to take 15-20 minutes. Participation is voluntary. You may stop at any time. Participating in this survey will not affect any clinical services your child is currently receiving.

At the end of the survey, you will have the option to enter your email address to receive a $30 Amazon gift card. You should receive your gift card within 4 weeks of completing the survey. Your email address will be given to the Accounting department at Michigan State University's College of Communication Arts and Sciences. The college will not receive any information about your responses on this survey.

If you have any questions or concerns, please contact Courtney E. Venker, Ph.D., CCC-SLP at cvenker@msu.edu or 517-884-2259 or contact Julia Andary B.A. at andaryju@msu.edu.

Q177 Please check the box below

Page Break ————————————————————————————————————

Q164 Are you the parent or caregiver of a child or multiple children?

○ Yes (1)

○ No (2)

Q179 We appreciate your interest in our survey. However, we are looking for responses from parents/caregivers of children enrolled in early intervention. Thank you for your time.

participation_EO Are you the parent or caregiver of a child (0-35 months old) who is **currently** enrolled in early intervention?

○ Yes (1)

○ No (2)

Q178 We appreciate your interest in our survey. However we are looking for responses from parents/caregivers of children enrolled in early intervention. Thank you for your time.

Parent_Age What is your current age (in years)?

_____

Primary_Lang What is the primary language spoken in your home?

☐   English (1)

☐   Spanish (2)

☐   Mandarin Chinese (3)

☐   Arabic (4)

☐   Other (5) _____

Multiple_Lang Does your family speak more than one language in the home? If yes, please describe.

○ Yes (9) _____

○ No (8)

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

☐   American Indian or Native Alaskan (1)

☐   Asian (2)

☐   Black or African American (3)

☐   Native Hawaiian or Pacific Islander (4)

☐   White (5)

☐   I prefer not to answer (8)

☐   Other (9) _____

Parent_ethnicity Which ethnicity best describes you?

☐   Hispanic (1)

☐   Non-Hispanic (2)

☐   I prefer not to answer (3)

Parent_gender As which of the following do you most closely identify?

○ Female (1)

○ Male (2)

○ Non-binary (3)

○ I prefer not to answer (4)

Parent_ed What is the highest degree or level of schooling you have completed?

○ Some High School (1)

○ Completed high school (or GED) (4)

○ Some college (6)

○ Associate's degree (7)

○ Bachelor's degree (8)

○ Master's degree (9)

○ Doctoral degree/Professional degree (10)

Page Break

Q175 In what Michigan county do you currently live?

○ Ingham (1)

○ Clinton (2)

○ Shiawassee (3)

○ Eaton (4)

○ Jackson (5)

○ Livingston (6)

○ Other (7) _____

Parent_employment Are you currently employed (full-time or part-time)?

○ Yes (1)

○ No (2)

Parent_jobtitle Occupation/job title:

_____

Q165 What is your relation to the child/children?

_____

---

children How many children do you have?

_____

Parent_courses Have you ever taken classes/coursework in child development?

○ Yes (1)

○ No (2)

Q166 Please briefly describe the topics of this coursework.

_____

_____

_____

_____

_____

Q173 How did you hear about this survey?

○ From an early intervention provider (1)

○ From a family member or friend (2)

○ Through social media (3)

○ Other (4) _____

End of Block: Demographics

Start of Block: Early intervention

Time_EO How long has your family been involved with early intervention in Michigan?

○ Less than 6 months (4)

○ 6 months to 1 year (5)

○ 1 year (6)

○ 2 years (7)

○ 3 years (8)

○ More than 3 years (9)

_____

kids_EO How many of your children are **currently** enrolled in early intervention?

○ 1 (4)

○ 2 (6)

○ 3 (7)

○ 4 (8)

○ 5+ (9)

End of Block: Early intervention

Start of Block: Child specific

child We would like to know more about your child or children who are currently enrolled in early intervention.

Page Break

child_age How old is your child?

_____

child_speechtreatmen Does your child receive treatment/services for speech and language?

○ Yes (1)

○ No (2)

○ I don't know (4)

○ I prefer not to answer (3)

child_communicates Please indicate how your child communicates. Choose **all** that apply.

☐ Verbally (1)

☐ Signs/ Sign language (2)

☐ A speech generating device (3)

☐ Gestures (4)

☐ A picture exchange communication system (5)

child_uttlength
When your child uses spoken language to communicate independently (i.e., spontaneously; not when imitating another person's speech), they typically say:

☐   1 word at a time (e.g., Go, Toy) (2)

☐   2 words at a time (e.g., Want milk, My toy) (3)

☐   3 words at a time (e.g., I want milk, My toy please) (4)

☐   More than 3 words at a time (e.g., I want to go, Give me the toy) (5)

☐   My child does not yet produce recognizable spoken words (9)

- -

child_diagnosis Please select any/all of the following that have been used to describe your child

☐   Autism/Autism Spectrum Disorder (1)

☐   Down syndrome (2)

☐   Global developmental delay (3)

☐   Speech/language delay (4)

☐   Communication delay (5)

☐   Fine or gross motor delay (6)

☐   Other (8)

End of Block: Child specific

Start of Block: 2 children

2_child_age How old are your children who are **currently** enrolled in early intervention?

	Age (1)
Child 1 (1)	
Child 2 (2)	

2_speechtreatment For each child currently enrolled in early intervention, please indicate whether they receive treatment/services for speech and language.

	Yes (1)	No (2)	I don't know (5)	I prefer not to answer (6)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○

Q111 How does each child currently enrolled in early intervention communicate? Choose **all** that apply.

	Verbally (1)	Signs/ Sign language (2)	A speaking device (3)	Gestures (4)	A picture exchange communication system (5)
Child 1 (1)	☐	☐	☐	☐	☐
Child 2 (2)	☐	☐	☐	☐	☐

2_uttlength

When your child uses spoken language to communicate independently (i.e., spontaneously; not when imitating another person's speech), they typically say:

	1 word at a time (e.g., Go, Toy) (1)	2 words at a time (e.g., Want milk, My toy) (6)	3 words at a time (e.g., I want milk, My toy please) (2)	More than 3 words at a time (e.g., I want to go, Give me the toy) (3)	My child does not yet produce recognizable spoken words (9)
Child 1 (1)	☐	☐	☐	☐	☐
Child 2 (2)	☐	☐	☐	☐	☐

2_diagnosis Please select any/all of the following that have been used to describe each child currently enrolled in early intervention.

	Autism/ Autism Spectrum Disorder (1)	Down syndrome (2)	Global developmental delay (3)	Speech language delay (4)	Communication delay (5)	Fine/ gross motor delay (6)	Other (8)
Child 1 (1)	☐	☐	☐	☐	☐	☐	☐
Child 2 (2)	☐	☐	☐	☐	☐	☐	☐

End of Block: 5+

Start of Block: Utterance rating

Page Break ─────────────────────────────────

utt_ratings
Below are examples of things that adults (e.g., parents, teachers, clinicians) might say when talking to a young child with a language delay who is not yet producing spoken words, or who produces single words or two-word phrases. There are many different ways to speak to young children, and there are no "correct" answers to these questions. We are simply interested in your opinion.

Please rate how beneficial you think each phrase would be for supporting the development of language and communication in a child with a language delay who is not yet producing spoken words or who produces single words or two-word phrases.

	Not at all (1)	To a small extent (2)	To a moderate extent (3)	To a large extent (4)	To a very large extent (5)
You want to play? (2)	○	○	○	○	○
Doggie running (30)	○	○	○	○	○
Throw ball (31)	○	○	○	○	○
All done (32)	○	○	○	○	○
Down (33)	○	○	○	○	○
Water on (34)	○	○	○	○	○
Yummy cookie (35)	○	○	○	○	○
Throw the ball (36)	○	○	○	○	○
Shoes on (37)	○	○	○	○	○
Bubbles are all done (38)	○	○	○	○	○
More bubbles (39)	○	○	○	○	○
Want to play? (40)	○	○	○	○	○
Put in (41)	○	○	○	○	○
See cookie? (42)	○	○	○	○	○
We're all done (43)	○	○	○	○	○

Running (44)	○	○	○	○	○
The car went under (45)	○	○	○	○	○
All done snack (46)	○	○	○	○	○
He's running (47)	○	○	○	○	○
Turn water on (48)	○	○	○	○	○
You want a cracker? (49)	○	○	○	○	○
Throw (50)	○	○	○	○	○
See the cookie? (51)	○	○	○	○	○
Car under table (52)	○	○	○	○	○
Cookie? (53)	○	○	○	○	○
Cookie yummy (54)	○	○	○	○	○
Put your shoes on (55)	○	○	○	○	○
The cookie's yummy (56)	○	○	○	○	○
Throw it (57)	○	○	○	○	○
It's yummy (58)	○	○	○	○	○
Bubbles all done (59)	○	○	○	○	○

More bubble (60)	○	○	○	○	○
All done (61)	○	○	○	○	○
The ball fell down (62)	○	○	○	○	○
See it? (63)	○	○	○	○	○
Fell down (64)	○	○	○	○	○
Under the table (65)	○	○	○	○	○
Doggie (66)	○	○	○	○	○
All done with snack (67)	○	○	○	○	○
In (68)	○	○	○	○	○
The car's under the table (69)	○	○	○	○	○
Doggie run (70)	○	○	○	○	○
The doggie's running (71)	○	○	○	○	○
Ball (72)	○	○	○	○	○
Put shoes on (73)	○	○	○	○	○
The water's on (74)	○	○	○	○	○
Ball down (75)	○	○	○	○	○

Put it in (76)	○	○	○	○	○
Want cracker? (77)	○	○	○	○	○
Want the cracker? (78)	○	○	○	○	○
Turn the water on (79)	○	○	○	○	○

belief_intro
Please indicate the extent to which you **agree** or **disagree** with each statement below.

Note: "Utterances" refer to things that people say. Utterances could include single words like "no," short phrases like "more cookie," or sentences like "the doll's under the bed."

- -

belief_short When speaking to a child with a language delay who is not yet saying words or produces single words or two-word phrases, it is beneficial for adults (e.g., parents, teachers, clinicians) to produce utterances that are **shorter** than utterances they would typically use during a conversation with an adult.

○ Strongly disagree (26)

○ Somewhat disagree (27)

○ Neither agree nor disagree (28)

○ Somewhat agree (29)

○ Strongly agree (30)

- -

belief_short_comp Shortened utterances are beneficial because they help children **understand** what is being said.

○ Strongly disagree (18)

○ Somewhat disagree (19)

○ Neither agree nor disagree (20)

○ Somewhat agree (21)

○ Strongly agree (22)

belief_short_imitate Shortened utterances are beneficial because they help children **imitate (i.e., repeat)** what is being said.

○ Strongly disagree (18)

○ Somewhat disagree (19)

○ Neither agree nor disagree (20)

○ Somewhat agree (21)

○ Strongly agree (22)

belief_tele

When speaking to a child with a language delay who is not yet speaking or produces only single words or two-word phrases, it is beneficial for adults (e.g., parents, teachers, clinicians) to produce utterances that **contain only content words** (like nouns and verbs) but do not include function words (e.g., a, the) or grammatical endings (e.g., plural s, -ing).

For example: "Ball down" rather than "The ball is down."

○ Strongly disagree (18)

○ Somewhat disagree (19)

○ Neither agree nor disagree (20)

○ Somewhat agree (21)

○ Strongly agree (22)

belief_tele_comp

 Utterances that contain content words but eliminate function words ("Ball down" rather than "The ball is down") are beneficial because they help children understand what is

being said.

   ○ Strongly disagree (18)

   ○ Somewhat disagree (19)

   ○ Neither agree nor disagree (20)

   ○ Somewhat agree (21)

   ○ Strongly agree (22)

belief_tele_imitate
Utterances that contain content words but eliminate function words ("Ball down" rather than "The ball is down") are beneficial because they help children imitate
(i.e., repeat) what is being said.

   ○ Strongly disagree (18)

   ○ Somewhat disagree (19)

   ○ Neither agree nor disagree (20)

   ○ Somewhat agree (21)

   ○ Strongly agree (22)

Q169 When speaking to a child with a language delay who is not yet saying words or produces single word or two-word phrases, it is beneficial for adults (e.g., parents, teachers, clinicians) to emphasize certain content words by making them louder and

longer than function words (e.g., "The DOG is RUN-ing!" "THROW the BALL!" "PUT it IN!").

○ Strongly disagree (1)

○ Somewhat disagree (2)

○ Neither agree nor disagree (3)

○ Somewhat agree (4)

○ Strongly agree (5)

Q170 Emphasizing content words is beneficial because it helps children understand what is being said.

○ Strongly disagree (1)

○ Somewhat disagree (2)

○ Neither agree nor disagree (3)

○ Somewhat agree (4)

○ Strongly agree (5)

Q171 Emphasizing content words is beneficial because it helps children imitate (i.e., repeat) what is being said.

○ Strongly disagree (1)

○ Somewhat disagree (2)

○ Neither agree nor disagree (3)

○ Somewhat agree (4)

○ Strongly agree (5)

child_characteristic When deciding how to speak to a child with a language delay, how important are the following factors?

	Not important (1)	Slightly Important (2)	Moderately Important (3)	Important (4)	Very Important (5)
The child's spoken (expressive) language skills (25)	○	○	○	○	○
The child's language comprehension skills (receptive language) (26)	○	○	○	○	○
The child's age (27)	○	○	○	○	○
The child's cognitive abilities (memory, nonverbal problem solving skills) (28)	○	○	○	○	○
The child's diagnosis (e.g., autism, Down syndrome, general language delay) (32)	○	○	○	○	○

End of Block: Belief questions

Start of Block: Comfort level

comfort_intro The questions below ask you to consider how comfortable you would feel saying different types of utterances to a young child with a language delay who is not yet producing spoken words or produces single words or two-word phrases. Each

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question asks you to rank 3 utterances from **least** comfortable (1) to **most** comfortable (3).

---

comfort_throw_ball If you knew that all options were equally beneficial, how comfortable would you feel saying each of the utterances below? Rank order them from **least** comfortable (1) to **most** comfortable (3).
_____ Throw ball (1)
_____ Throw the ball (2)
_____ Ball (3)

---

comfort_alldone
If you knew that all options were equally beneficial, how comfortable would you feel saying each of the utterances below? Rank order them from **least** comfortable (1) to **most** comfortable (3).
_____ All done snack (1)
_____ All done (2)
_____ All done with snack (6)

---

comfort_cookie If you knew that all options were equally beneficial, how comfortable would you feel saying each of the utterances below? Rank order them from **least** comfortable (1) to **most** comfortable (3).
_____ The cookie's yummy (8)
_____ Yummy cookie (2)
_____ Cookie yummy (1)

---

comfort_spoon If you knew that all options were equally beneficial, how comfortable would you feel saying each of the utterances below? Rank order them from **least** comfortable (1) to **most** comfortable (3).
_____ Spoon fell down (1)
_____ The spoon fell down (9)
_____ Fell down (7)

---

comfort_doggie If you knew that all options were equally beneficial, how comfortable would you feel saying each of the utterances below? Rank order them from least comfortable (1) to most comfortable (3).

_____ Doggie run (4)
_____ The doggie's running (6)
_____ Doggie (1)

End of Block: Comfort level

Start of Block: Influence questions

influence_intro Following are a few final questions about your beliefs and experiences.

comp_adv Please indicate the extent to which you agree or disagree with this statement: A child with a language delay may understand language that is more complex than what they can say.

○ Strongly disagree (18)

○ Somewhat disagree (19)

○ Neither agree nor disagree (20)

○ Somewhat agree (21)

○ Strongly agree (22)

comp_hidden
Please indicate the extent to which you agree or disagree with this statement: A child

with a language delay may understand the language that they hear, even if they do not clearly show that they understand.

○ Strongly disagree (1)

○ Somewhat Disagree (2)

○ Neither agree nor disagree (8)

○ Somewhat agree (3)

○ Strongly agree (4)

EO_rec
Have early intervention professionals ever provided you with recommendations about the most beneficial ways of speaking to your child to support language and communication?

○ Yes (1)

○ No (3)

○ I don't know (4)

EO_rec_details
What kinds of recommendations did you receive about the most beneficial ways of speaking to your child to support language and communication? For example, what kinds of strategies were recommended? What professional(s) provided these recommendations? How were these recommendations taught to you (e.g., through explanation, modeling, feedback, handouts, etc.)?

_____

_____

_____

_____

Prior_thoughts Before taking this survey, how much had you thought about how adults speak to children with language delays?

○ Not at all (1)

○ A little bit (2)

○ Some (4)

○ A great deal (6)

Q182 How often does an early intervention professional visit your home? (Please answer this question to the best of your ability.)

_____

Q180 For security measures, please select B as your response to this question.

○ A (1)

○ B (2)

○ C (3)

○ D (4)

Add_comments If you have any remaining questions or comments, please write them here. We are especially curious about whether taking this survey led to any new thoughts or questions. Thank you so much for your time!

_____

_____

_____

_____

_____

Q172 Please type your preferred email address into the box below to receive your $30 Amazon Gift card. Please allow up to 4 weeks for processing. Thank you for your participation!

_____

End of Block: Influence questions

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